



Children's Food Consumer Socialisation: The Impact of Food Advertising, Parents, Peers, and Social Norms on Children's Food Preferences, Food Consumption, and Obesity

by

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Abstract

This study addresses an ongoing debate about the influence of food advertising on children through the development of a comprehensive, yet parsimonious conceptual framework which pulled together extant gaps from the public health and marketing literatures and integrated the influence of external agents and child-related factors on children's dietary behaviour and weight. The framework has undergone an extensive validation process, including qualitative refinement and quantitative assessment, relying on a randomised controlled experiment with children, a survey of children, and a survey of their parents. The analysis of variance shows that when children were exposed to a food advertisement, their preference for an advertised snack was influenced by their brand evaluation and friends' preferences for a similar snack. Understanding of the advertisement's selling and persuasive intents and nutritional knowledge did not reduce preference for, and evaluation of, the advertised product. This most likely occurred because most respondents grasped advertisement intent, resulting in insufficient variance for empirical analysis. In contrast, preference for a healthier snack (apple) amongst children exposed to the experimental advertisement was influenced by an evaluation of healthier snack's taste, higher preferences for a similar snack amongst their friends, and more frequent parent-child communication about foods and food advertising. Overall, no statically significant differences were detected between experimental and control groups, suggesting that research which solely relies on experimental exposure while investigating the effect of food advertising on children does not account for a bigger picture of factors influencing children.

Structural Equation Modelling showed that while parents' social norms about fast foods, friends' preferences for burgers, and social acceptability of burgers were related to children's consumption of less healthy foods, more frequent parent-child communication about foods and food advertising and parents' higher nutritional knowledge reduced unhealthy dietary behaviour. Exposure to fast food advertisements resulted in more positive evaluation of burgers, French fries, and soft drinks, which, in turn, were related to less healthy dietary behaviour. Nutritional knowledge and understanding of selling and persuasive intents in food advertisements (advertising literacy) exerted small, mediating effects on children's dietary behaviour through attitudes, confirming the importance of these cognitive defences. A positive relationship was also detected between children's dietary behaviour and weight. Across all models, brand evaluation/evaluations of food exhibited the strongest influence on

children, followed by peers (experimental data) or parents' social norms about fast foods (cross-sectional data), pinpointing parents' crucial role in fight against childhood obesity provided that parents hold less positive social norms, possess higher nutritional knowledge, and communicate with their children about food and food advertising. The current study shows that parents who are frequently exposed to fast food advertising, or have lower education, or reside in an area where residents hold lower education and occupations, tend to exhibit more positive social norms about fast foods, which, in turn, are related to children's more frequent consumption of a number of less healthy foods. This study has identified important indirect pathways to childhood obesity through parents, peers, social norms, food advertising, and children's attitudes that have important implications for public policy and social marketing.

Statement of Declaration

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

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Liudmila Tarabashkina

August 27, 2013

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Abbreviations

ABS – Australian Bureau of Statistics

BMI – Body Mass Index

CQ – Children’s Questionnaire

CFA – Confirmatory Factor Analysis

EFA – Exploratory Factor Analysis

ERST – Event Rates Estimation Tool

EST – Ecological Systems Theory

IPT – Information Processing Theory

IRT – Item Response Theory

HREC – Human Research Ethics Committee of the University of Adelaide

GNKQ – General Nutrition Knowledge Questionnaire

NKT – Nutritional Knowledge Test

PQ – Parents’ Questionnaire

SEM – Structural Equation Modelling

SES – Socio-economic status

WFA – World Federation of Advertisers

WHO – World Health Organization

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Chapter One: Introduction

1.1. Background to the Research

Food is inherently embedded in our lives – it is a source of sustenance, occasional indulgence, and a way to define oneself or a culture (Rappoport 2003). Over time, economic development has led to an increase in the variety of available foods and grocery items (Drewnowski 1997) which has also coincided with a worldwide increase in rates of adult overweight and obesity (Benton 2004), reaching epidemic levels (Pettigrew and Roberts 2007; WHO 2006c). Amongst children, the overweight and obesity rates have also recently increased (Lobstein, Baur, and Uauy 2004) and continue growing fast compared to the adult population (Allman-Farinelli, Chey, Bauman, Gill, and James 2008). The public health literature states clearly that overweight and obesity developed during the early stages of childhood predispose children to risks of Type 2 diabetes and high blood pressure (Carter 2006; WHO 2006c). Overweight or obesity which extend into puberty can cause different types of cancers (Lobstein et al. 2004). Higher weight in adulthood is associated with further health complications when in addition to Type 2 diabetes, high blood pressure, and cancer the risks of heart diseases (WHO 2006b), strokes (Phipps, Burton, Lethbridge, and Osberg 2004), respiratory and gastrointestinal problems, orthopaedic problems (Shunk and Birch 2004) also increase.

The marketing literature suggests that childhood is an important stage for the formation of consumer habits (Nestle 2002). Also, it represents an important stage for the development of food preferences according to the public health and nutrition literature (Birch 1999). Many chronic diseases take decades to develop and are rooted in childhood (CSPI 2003). If obesity develops during childhood it significantly increases the risks of obesity in adulthood which is associated with further health problems (Carter 2006; Venn et al. 2007; WHO 2006c). From the public health perspective, diagnosis, treatment, and prevention of obesity incur very high costs (Booth et al. 2009; Access Economics 2008; ABS 2009b) which is why prevention of obesity during childhood and early adolescence represents an important public health goal (Reisch and Gwozdz 2011).

A successful intervention program to curb childhood obesity would require an in-depth understanding of factors that influence the development of unhealthy lifestyles leading over time to overweight or obesity in children. Despite long research efforts in this area, extant knowledge about factors influencing children's food preferences or food consumption leading

to weight gain remains fragmented and descriptive, lacking a comprehensive conceptual framework (Hastings et al. 2003) and solid empirical evidence about cognitive processes influencing children's dietary behaviour in addition to the influence of external factors. A brief overview of extant literature about the causes of childhood obesity and recent changes in children's consumer roles is outlined below, providing a background for this study and demonstrating the need for more comprehensive research about children's food consumer socialisation.

1.2. Causes of Childhood Obesity

Weight gain and obesity develop when consumed energy exceeds expended calories (WHO 2006b). Obesity has both genetic and environmental origins, where the latter represents an outcome of prolonged poor lifestyle habits (Caroli, Argentieri, Cardone, and Masi 2004; Drewnowski 1997). Although having obese parents certainly represents a risk factor for young children who have not yet developed obesity (Wardle, Guthrie, Sanderson, Birch, and Plomin 2001), scholars seem to agree that the worldwide increase in rates of childhood obesity support an environmental rather than genetic explanation for current obesity trends in younger population (Hill, Wyatt, and Peters 2003; Hill, Wyatt, and Melanson 2000; Tremblay and Willms 2003).

Several factors have been identified in the literature as possible causes of childhood obesity, including reduced physical activity, snacking, and food advertising. The influence of food advertising on children has been a subject of a heated debate for a long time (Lewis and Hill 1998; OfCom 2004; Rich and Bar-on 2001; Roberts and Pettigrew 2007; WHO 2006a; WHO/FAO 2003) because children do not represent independent or fully developed consumers (Buijzen, Schuurman, and Bomhof 2008; Seiders and Petty 2007). Numerous studies have exposed the intensity of food advertising targeting children worldwide (Cairns, Angus, and Hastings 2009; Chapman, Nicholas, and Supramaniam 2006; Desrochers and Holt 2007; Hastings, McDermott, Angus, Stead, and Thomson 2006; Hastings et al. 2003; Page and Brewster 2007; Powell, Szczypka, and Chaloupka 2007; Roberts and Pettigrew 2007; WHO 2006a). Very often, food advertisements have poorly reflected dietary recommendations (Byrd-Bredbenner 2002), raising concerns about their effects on children (WHO 2006a; WHO/FAO 2003). The current debate, however, is based on fragmented empirical evidence lacking a parsimonious and straightforward conceptual framework. Because food advertising represents only one of several factors influencing children (Young

2003), it is important to define the dimensions of its influence on young consumers and explain why children have recently attracted the attention of food manufacturers.

1.3. Defining the Influence of Food Marketing and Children’s Importance to Food Industry

Marketing literature distinguishes between three desired influences of advertising on customers, namely: 1) their knowledge; 2) attitudes; and 3) behaviour (Hastings et al. 2003). As shown in Figure 1, in the context of food advertising, each of the above-mentioned influences correspond to children’s knowledge about foods (which foods are “good” and “bad” and knowledge about a balanced diet and nutritional value of different products), attitudes (liking of advertisements), and dietary behaviour in a form of food preferences or food consumption (Hastings et al. 2003). Previous systematic reviews have concluded that food advertising exerts modest effects on children (Hastings et al. 2003; Livingstone and Helsper 2004) and that influences take place both at brand and product category levels (Ambler 2006; Carter 2006; Young 2003). The industry was quick to react to the increasing social concerns. The World Federation of Advertisers (WFA), in particular, has confirmed that food advertising influences children’s food preferences, but has also argued that extant literature does not provide sufficient support for a link between food advertising and childhood obesity (WHO 2006a). In 2010, the WFA has concluded that food marketing exerts a small effect on children’s food choices and represents only one factor amongst a complex web of other influences (WFA 2010). Since the link between food advertising and childhood obesity still remains tenuous (Jolly 2011), the role of food advertising in causing childhood obesity spurs a lot of criticism worldwide.

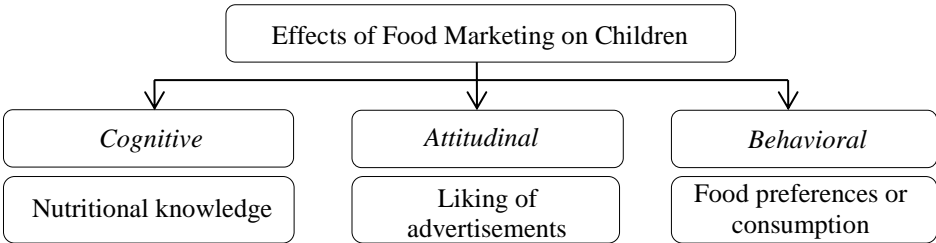


Figure 1: Food Marketing and Its Effects on Children

Children perform three roles in a market. They influence their parents’ consumer behaviour. They will be future consumers (Martin and Bush 2000) and they already exercise considerable spending power (McNeal 1994; 1999). In the food market, children do not represent fully-fledged independent consumers and a lot of their consumer activities take

place within families (Young 2003). Yet, they have substantial purchase influence over food in comparison to non-food product categories (Andersen, Tufle, Rasmussen, and Chan 2008; Duff 2004; Ghani 2004; Kaur and Singh 2006; McDougall and Chantrey 2004; McNeal 1994; IOM 2006). Overall, children represent a fast-growing and attractive market segment for the food industry (Livingstone and Helsper 2006; Nestle 2002) and advertisers (Raju and Lonial 1990). In contrast to toys, clothes, and digital products, food items, in particular, are more accessible to children through their own pocket money and purchase requests addressed to parents (Harris, Brownell, and Bargh 2009). Hence, it is not surprising that the food industry actively engages in “cradle-to-grave marketing” to build long and sustainable relationships with children (Hastings et al. 2003).

The advent of television and children’s programs have dramatically changed the nature and the scope of advertising to this group (Schor 2004). As children have become more important for advertisers/marketing (Cook 2000; Valkenburg 2000), food advertising to children has increased (Byrd-Bredbenner 2002; John 1999b; Livingstone and Helsper 2006) and outnumbered other product categories, at least on television (Hastings et al. 2006; Lewis and Hill 1998; Neville, Thomas, and Bauman 2005). Children’s buying power has also noticeably increased (Calvert 2008; Guneri, Yurt, Kaplan, and Delen 2009; Lindstrom and Seybold 2003; McDougall and Chantrey 2004) and recent research suggests that generation Y consumers, those born between 1980 and 1994, represent the most profitable future consumer segment (Lazarevic 2012).

The media environment has become more diversified (Cairns et al. 2009; Kraak and Pelletier 1998; Livingstone and Helsper 2006) and as a result, research into food appeal to children has increased (Barrey, Baudrin, and Cochoy 2012; de la Ville, Brougère, and Boireau 2010; Hémar-Nicolas and Gollety 2012; Kraak and Pelletier 1998; Mathiot 2010) and new marketing strategies have been launched to reach out to children (Schor 2004), including cross-promotion, athletic sponsorship, novel packaging, tie-ins with movies, and use of characters to name a few (Cairns et al. 2009; Harris et al. 2010; Kelly, Hattersley, King, and Flood 2008). Finally, the advertising landscape has also changed dramatically since the 1970s, showing a decrease in cereal, deserts, and sweets categories targeting children and an increase in fast food and snacks advertisements (Desrochers and Holt 2007). A comparison between 1994 and 1996 in the UK also shows an increase in the pre-prepared convenience foods category (Lewis and Hill 1998). Altogether, the above-mentioned change in the media

environment and children's consumer roles require a deeper understanding of drivers behind childhood obesity.

1.4. Research Questions and Contributions

While the debate about the role of food advertising in the childhood obesity does not seem to lessen, our knowledge about children's susceptibility to food advertising still remains limited because available evidence does not provide enough support for indirect pathways leading to childhood obesity. Currently, four areas need improvement in our understanding of factors leading to the development of childhood obesity. First, a comprehensive conceptual framework that explains children's food socialisation and its impact on childhood obesity is still missing. A recent approach to childhood obesity highlights multi-factoral nature of factors that simultaneously influence children, operating both on individual and social levels (family and peers) (Livingstone and Helsper 2004). Children start learning about foods from their parents (Benton 2004), but as they grow up, socialisation dynamics become more complex, when in addition to parents (Birch and Fisher 1998), television and food marketing (Brand 2007; Carter 2006; Hastings et al. 2003), as well as peers (Birch 1980; Hill, Casswell, Maskill, Jones, and Wyllie 1998) start influencing their food choices (Birch and Fisher 1998). The absence of parsimonious conceptual framework impedes research efforts in the field and explains why earlier studies provided fragmented evidence about the factors influencing children's food preferences/ consumption and were unable to demonstrate a pathway from food advertising, and other external agents on children's weight through food consumption.

Second, the effects of food advertising on children have been previously examined using bi-directional associations, resulting in poor understanding of the linkage between food advertising, attitudes, dietary behaviour, and, most importantly, health (weight). Third, as mentioned above, food advertising represents only one of several factors influencing children (Young 2003). Yet, our knowledge about the magnitude of influence of food advertising, alongside other external agents, while controlling for children's nutritional knowledge and advertising literacy, remains limited due to a lack of proper empirical estimation and appropriate data. While a multi-factoral nature of influences on children certainly underlines methodological complexity surrounding the childhood obesity (Livingstone and Helsper 2004), the knowledge about the relative impact of each socialisation agent is vital for successful interventions.

Fourth, children's ability to understand advertisements' intent (i.e., advertising literacy) remains central in the debate about food advertising to children (Martin 1997), where children's cognitive defence against advertising on its own has also been the focus of a long academic debate (Rozendaal, Buijzen, and Valkenburg 2009). Regretfully, most previous research has concentrated on the developmental stage in which the understanding of advertising intent emerges and, to a lesser extent, on the application of such knowledge to food preferences or consumption. As result, the empirical evidence is insufficient to determine conclusively if advertising literacy, as well as nutritional knowledge, significantly reduce the impact of food marketing.

To address the above-mentioned four omissions, two research questions have been formulated to guide this study:

RQ₁: How do internal drivers, such as brand evaluation/evaluation of less healthy foods (attitudinal), advertising literacy, and nutritional knowledge (cognitive) interact with external drivers, such as, food advertising, parents, peers, and other people in influencing children's food preferences and food consumption (dietary behaviour)?

RQ₂: How do internal and external factors influence children's body weight (health outcome)?

To answer the above-mentioned research questions this study has developed a comprehensive yet parsimonious conceptual framework, which is based on the review of theoretical and empirical literatures and incorporates extant gaps in our knowledge about children's food preferences/consumption. The framework focuses on cognitive, attitudinal, and behavioural dimensions of children's food socialisation to provide a comprehensive assessment of all influences on children's dietary behaviour (Figure 2). The evaluation of brand and non-branded foods were chosen for the current study as a more relevant attitudinal component representing an alternative against liking of advertisements. Behavioural component encompasses food preferences and food consumption. Food preferences were chosen because they exert influence on the formation of future consumer behaviour. Food consumption, on the other hand, has direct implications for diet-related health outcomes.

Furthermore, this study looks into the drivers behind the consumption of advertised foods high in calories as potential precursors to weight gain (Niemeier, Raynor, Lloyd-Richardson, Rogers, and Wing 2006; Paeratakul, Ferdinand, Champagne, Ryan, and Bray 2003), while controlling for biological predisposition through parents’ biometric data. By mapping out the effects of previously overlooked cognitive defences, such as advertising literacy and nutritional knowledge (internal drivers), and also the influence of food advertising, parents, social norms, and peers (external drivers), the framework gives a more comprehensive explanation of children’s food consumption dynamics, providing a theoretical contribution to social marketing and public health disciplines. In contrast to previous frameworks, the developed conceptual framework is suitable for direct empirical estimation.

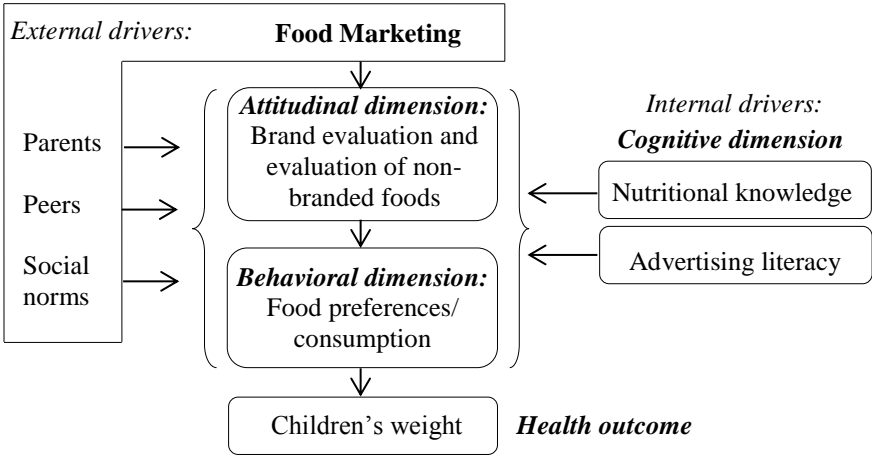


Figure 2: Research Focus of This Study

Methodological contribution of the current study pertain to the use of a mixed method design, a combination of qualitative and quantitative methods, which resulted in an in-depth study of factors influencing children’s food preferences/consumption (dietary behaviour). Also, both parents and their children took part in a quantitative study, yielding rich data. The quantitative stage of the current study consisted of three components – a survey of parents, a randomised controlled experiment with children which looked at the influence of food advertising on children’s food preferences, and a post-experimental survey of children which disentangled a wider range of causal factors influencing children consumption of less healthy foods. Experimental and cross-sectional data came from the same sample of children, allowing a unique opportunity to examine children’s dietary behaviour in an experimental and cross-sectional settings

The empirical contribution pertains to the application of two empirical techniques, analysis of variance (ANOVA) and Structural Equation Modelling (SEM) to the analysis of collected data. Despite substantial statistical advantages (Mackenzie 2001), modelling of complex interdependence relationships with SEM has been rarely applied to children's food preferences/consumption (Worsley 2002). The current study is the first one to provide new empirical contributions about both direct and indirect influences of external and internal factors on children in a field currently dominated by correlational and bi-directional empirical evidence. Additionally, the developed conceptual framework was tested not only with experimental data (children's preference for an advertised branded food product and a healthier non-branded food), but also with cross-sectional data (children's general consumption of three less healthy foods). Importantly, the magnitude of influence of each socialisation agent was assessed to provide advice for the implementation of successful intervention programs.

Finally, the study was conducted in Australia, where the evidence available for the public policy-makers, parents, and nutritionists about the precursors of childhood obesity and about the role of food advertising on children's dietary behaviour is still scarce. Yet, available research suggests that Australian children are exposed to an extensive promotion of food across multiple channels, including television (Chapman, Nicholas, and Supramaniam 2006; Dibb 1996; Hill and Radimer 1997; Morton, Stanton, Zuppa, and Mehta 2005; Neville et al. 2005), children's magazines (Kelly, Cretikos, Rogers, and King 2008), supermarkets (Chapman, Nicholas, Banovic, and Supramaniam 2006), and children's popular websites (Kelly, Bochynska, Kornman, and Chapman 2008). The diet portrayed in food advertisements has been proven to be poorly balanced (Hill and Radimer 1997) and recent data suggest an overall increase in rates of fast food advertisements between 2009 and 2010 despite the introduction of the Quick Service Restaurants Industry Initiative for Responsible Advertising and Marketing to Children in Australia in 2009 (Hebden, King, Kelly, and Chapman 2011). Market spending by separate companies on food advertising to children also pinpoints substantial budgets (Jolly 2011). Recent estimates suggests that if on average an Australian child watched two and a half hours of commercial television every day, he or she would be exposed 11 "junk" food advertisements per day, and around 77 of them per week (Neville et al. 2005).

Similar to other countries, the rates of childhood overweight and obesity have increased in Australia between 1980 and 2000 (Booth, Dobbins, Okely, Denney-Wilson, and Hardy 2007; Booth et al. 2001; Cameron et al. 2003) and have been classified as high according to the international standards (Magarey, Daniels, and Boulton 2001). While in 1995, 5% of all Australian children were obese, in 2007-2008 this rate has increased and reached 8% (ABS 2009a). National statistics suggest that around one-quarter of all Australian children were overweight or obese in 2007-2008, which corresponded to 600,000 children aged between seven to 15 years. Currently, most research about the antecedents of childhood obesity and factors influencing children's food preferences/consumption comes either from the USA (Clark, Goy, Bissell, Blank, and Peters 2007; Livingstone 2004) or the UK (Hastings et al. 2003). Despite the increasing childhood obesity rates, the studies conducted in Australia mostly concentrate on demographic variables as precursors to childhood obesity (see Burke, Beilin, and Dunbar 2001; Dixon, Scully, Wakefield, White, and Crawford 2007; Gibson et al. 2007; Jones, Okely, Gregory, and Cliff 2009; O'Dea 2008; Timperio, Crawford, Telford, and Salmon 2004; Wake, Nicholson, Hardy, and Smith 2007; Wang, Patterson, and Hills 2002).

Concerns about increasing childhood obesity rates have led to a resurgence of research about its causes, a search for better research methods (Livingstone 2007), and evaluation of available empirical evidence about children's vulnerability to advertising (see Cairns et al. 2009; Cairns, Angus, Hastings, and Caraher 2013; Hastings et al. 2003; Young, Webley, Hetherington, and Zeedy 1996). Given children's extensive exposure to food advertising, our lack of knowledge about the influence of food marketing on children and its connection to gain is alarming. This study provides a comprehensive analysis of the drivers behind children's food preferences/consumption leading to obesity, yielding original insights for Australian policy-makers, parents, and medical practitioners about the role that parents, peers, food marketing, social norms, and children-related factors play in children's food consumer socialisation.

1.5. Demarcation of Relevant Literatures

This study builds upon the insights from public health and marketing literatures while examining which factors influence children's food preferences/consumption and how children acquire consumer skills. While both disciplines contribute to the extant knowledge base, each concentrates on a different aspect of children's dietary behaviour. The public health literature, for example, covers the development of food preferences and precursors of weight gain. The

marketing discipline, on the other hand, offers insights about children's consumer socialisation, that is children's acquisition of consumer skills and understanding of intent in advertisements (advertising literacy). The current study uses insights from both disciplines to develop a conceptual framework which results in a more comprehensive study of childhood obesity.

1.6. Research Stages of the Current Study

This study employed a mixed method approach, which combined qualitative and quantitative research techniques (Creswell and Clark 2007) to produce new theoretical and empirical contributions. Altogether, this study consisted of four stages (Figure 3).

Stage 1: Literature Review

First, a detailed review of the public health and marketing disciplines studies was carried out, covering both theoretical and empirical literatures. A number of important gaps were identified and used to develop a new conceptual framework. During this stage, ethics clearance was obtained from the Human Research Ethics Committee (HREC) of the University of Adelaide to conduct an exploratory study with children (see Appendix 1).

Stage 2: Exploratory Study

The exploratory study was used to preliminary test and refine the developed conceptual framework, and probe for the mediating effects of children's nutritional knowledge and advertising literacy. It also helped determine if additional factors should be included in the conceptual framework (Churchill 1979). Two focus groups were carried with children aged between ten to 13 years and a number of changes were made to the developed conceptual framework based on these interviews.

Stage 3: Development of Instruments

Following the preliminary validation of the conceptual framework, two research instruments (Children's Questionnaire and Parents' Questionnaire) were developed. After the ethics clearance was granted for the quantitative study (Appendix 2), both questionnaires were sent to two nutritionist experts for a review and pre-tested qualitatively and quantitatively with children and parents. Before the full-scale administration of the instruments, they were modified again based on the results of pilot tests and additional review of empirical literature.

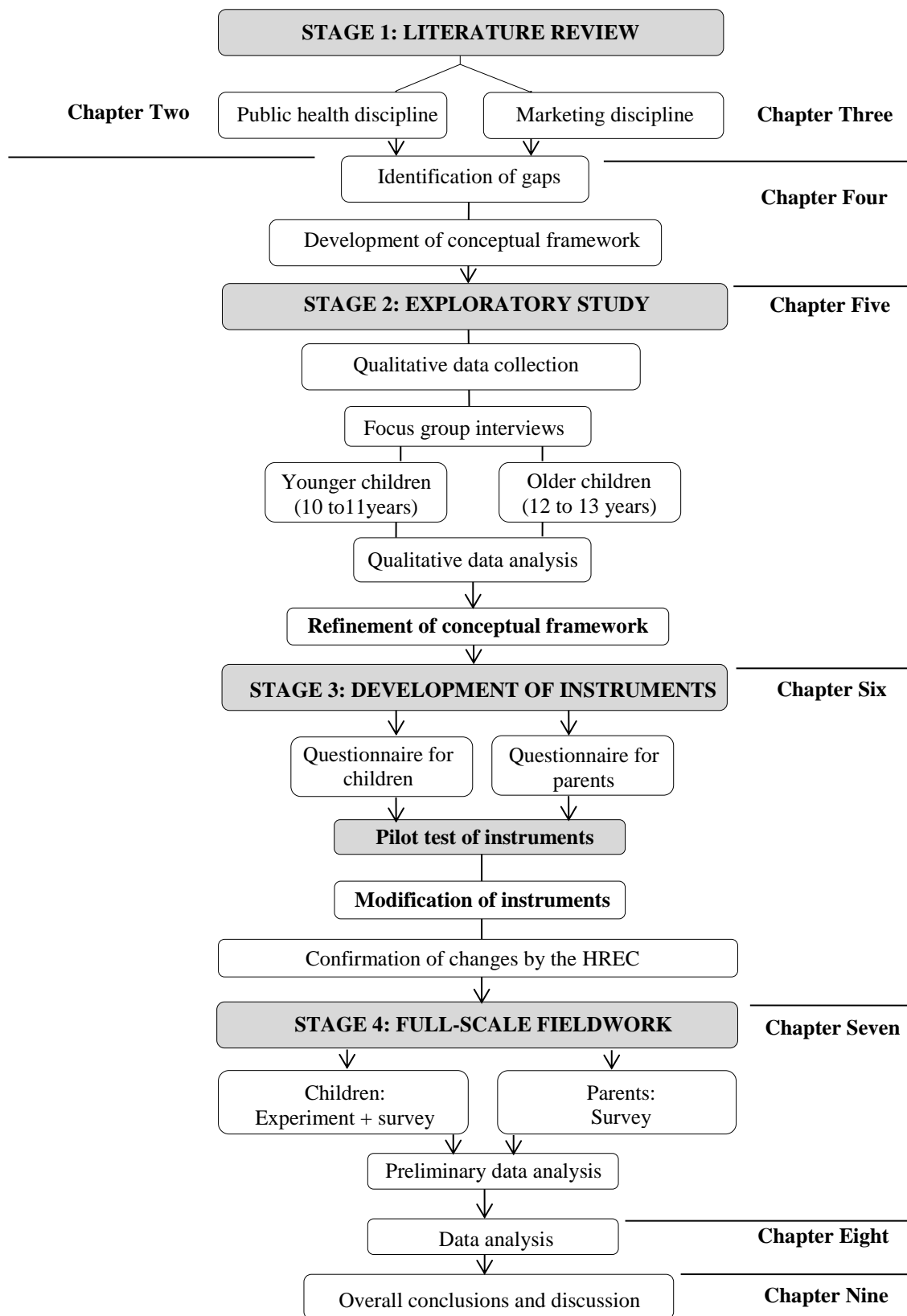


Figure 3: Research Stages of This Study

All modifications, as well as the research protocol for the main study were approved by the HREC (Appendix 3).

Stage 4: Full-Scale Fieldwork

The data for the main study were collected at an annual event in Adelaide, which is traditionally visited by families with children representative of the South Australian population. Children took part in a specially designed experiment and completed post-experimental surveys. The data from parents were collected using a self-administered survey. Experimental and cross-sectional data from parents and children were subsequently used to model the latent constructs and estimate interdependence relationships postulated in the framework.

1.7. Organisation of the Thesis

There are seven chapters in this thesis, which follow the research stages outlined in Figure 3. Chapter One sets the research context for this study. It discusses health complications associated with obesity and highlights the complexity of factors influencing children's food preferences/consumption. It discusses the research focus of the current study, draws attention to the lack of evidence base about the causes of childhood obesity in Australia, and outlines the research stages undertaken in the current study. Chapter Two presents a critical review of relevant theoretical and empirical literatures from the public health disciplines. The key studies about children's consumer socialisation from the marketing discipline are reviewed in Chapter Three.

Chapter Four explains gaps in extant knowledge about the precursors to children's food preferences/consumption leading to weight gain. Causal relationships were mapped out, depending on the outcome variable and discipline, highlighting the influences, which have not yet been estimated or have yielded mixed empirical results. The discussion of gaps is followed by the formulation of research questions and development of a conceptual framework. Then, the chapter discusses the hypotheses and explains the research methodology. Chapter Five discussed the objectives and results of a qualitative study undertaken to refine the conceptual framework. Chapter Six explains what instruments were developed for the current study and what procedures were undertaken to pre-test them. The issues of face, construct, and predictive validities and reliability of the instruments are discussed alongside the results of all pilot tests.

Chapter Seven explains the design of the experiment with children and procedures employed during the full-scale fieldwork. The issues of construct validity and reliability of the measures were also discussed in the chapter, followed by the explanation of scale construction, recoding, and preliminary data analysis. Chapter Eight explains how the proposed conceptual framework was tested empirically and which statistical techniques were chosen to analyse data. Five empirical models are discussed – four, using experimental data (preferences for an advertised food and a healthy non-branded alternative) and one with cross-sectional data (consumption of non-branded less healthy foods). Chapter Nine summarises key findings across five empirical model and highlights our theoretical, methodological, and empirical contributions together with recommendations for policy-makers, parents, and public health practitioners. Limitations are also addressed together with directions for future research and overall conclusion.

Chapter Two: Review of Public Health Literature: Theoretical Foundations of and Empirical Findings about Factors Associated with Children's Food Preferences/Consumption and Childhood Obesity

2.1. Introduction

This chapter reviews the literature on extant theoretical foundations of and empirical findings about the factors influencing children's food preferences/consumption and obesity existing in the public health discipline. This review of theoretical foundations highlights the complexity of children's food consumption environments. The review of empirical findings shows that extensive work has been carried out in the public health discipline to explore which factors are associated with children's food consumption and weight gain. Most empirical research, however, has been carried out without a solid theoretical background (Rasmussen et al. 2006). Only recently was a summary of appropriate theories applicable to, or previously used in, public health studies published (Fitzgerald, Heary, Nixon, and Kelly 2010). These theories are discussed prior to the review of the empirical literature to set the background for the empirical enquiry. Previous research methodology is also discussed to highlight the fragmented nature of extant empirical knowledge in this area.

2.2. Theoretical Foundations

Two theories have frequently been used in the public health discipline to explore how children learn about food and nutrition and identify the factors that might influence children's learning processes. First, the Social Cognitive Theory (SCT) (Bandura 1986) has been applied to examine how individuals acquire behavioural patterns and learn social values in general. According to the SCT, persons' behaviour consists of both inborn and learned behavioural patterns, where both external and internal factors (i.e., cognitive maturation) influence individuals' behaviour. The environment in which an individual is immersed shapes and controls his or her behaviour. Hence, most human behaviour is learnt through observational modelling (Bandura 1986). Children learn either from the models presented to them (Bandura 1986) or through their own observations of individuals present in their immediate social environment (Bandura 2002). Individuals are also surrounded by multiple behavioural models and need to choose from available alternatives, where the latter might vary from parents to mass media (Bandura 1977).

The SCT also explains that an individual can reflect upon the validity of her or his thoughts and actions by comparing them to the behavioural models present in her or his environment – shown by the media (vicarious modelling) or what others believe to be acceptable or unacceptable (social verification). Hence, good matches corroborate an individual's beliefs, whereas mismatches refute them (Bandura 2002). Distorted media representation of behaviour can, thus, reinforce misconceptions about specific behavioural patterns (Hawkins and Pingree 1982) by communicating distorted norms about products or brands, leading to a change in an individual's values (Bandura 2002). In the context of food advertising to children, this theory has also been used to suggest that food advertising might negatively influence children by teaching them that eating unhealthy foods is acceptable, socially desirable, and that there are few negative consequences, such as gaining weight and poor health (Harris and Graff 2012). Additionally, the SCT highlights that learning is influenced by cognitive maturation (Bandura 1986), which has been confirmed in relation to children's ability to differentiate between meals and snacks, understand digestion (Contento 1981), distinguish between fruit and vegetables, and reason about health (Zeinstra, Koelen, Kok, and de Graaf 2007).

Another theory which has been applied to study factors influencing children's learning about foods is the Ecological Systems Theory (EST) (Bronfenbrenner 1979). Previously, this theory has been used to research childhood obesity (Jones et al. 2009), health promotion programs (McLeroy, Bibeau, Steckler, and Glanz 1988), eating behaviour (Story, Neumark-Sztainer, and French 2002), and consumption of fruit (Cullen et al. 2001; Reynolds, Hinton, Shewchuk, and Hickey 1999). The EST concentrates on the hierarchy of influences and describes individual development as an interactive process consisting of interactions between an individual and his/her environment. Similar to the SCT, this theory suggests that an individual's development is embedded in an environmental context, but in contrast to the SCT, it proposes that the influences occur through environmental sublevels (Davison and Birch 2001).

The first environmental influence occurs through the microsystem, which consists of the interrelations within the individual's immediate environment. The second environmental level, the mesosystem, encapsulates interrelations between two or more settings in which the developing person actively participates (e.g., home, school, or neighbourhood peer groups). The next level, the exosystem, does not involve an individual directly, but still affects her or

him through other people. This, for example, includes parents' place of work or parents' network of friends. The last level, the macrosystem, encapsulates subcultures or culture. Compared with the SCT, which emphasises the importance of learning and observations from models present in general environment (Bandura 1986), the EST looks more into the hierarchy of agents influencing learning to understand how particular behavioural patterns develop (Davison and Birch 2001).

In 2001, using the EST, Davison and Birch (2001) proposed an ecological framework to explore the factors that might lead to the development of childhood obesity (Figure 4). This framework combines child-related risk factors (e.g., child's dietary intake, gender, age, sedentary behaviour, physical activity, and familial susceptibility to weight gain), family risk factors (child feeding practices, type of food available at home, parents' dietary intake, peer-sibling interactions, parental monitoring of TV watching), and also societal characteristics, such as ethnicity, school lunch programs, and socio-economic status. As shown in Figure 4, the proposed conceptual framework does not specify causal paths or interactions between the variables or the levels. The directions of any potential interactions (i.e., direct or indirect) are also not clear. Nonetheless, the framework has placed the child in a broader context, demonstrating the multiplicity of factors that can influence weight gain due to food consumption.

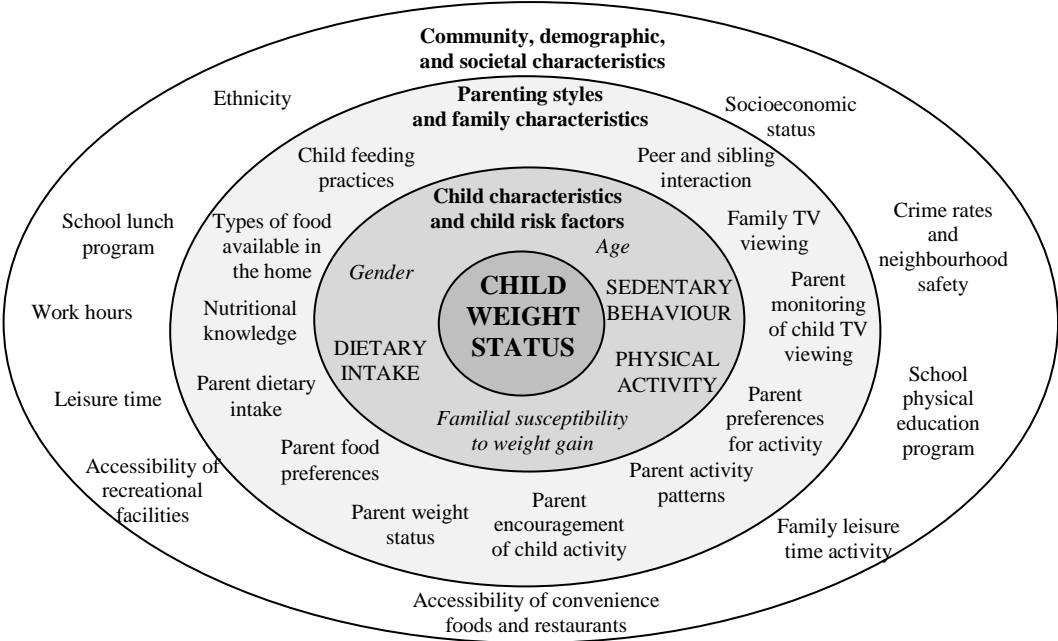


Figure 4: Ecological Framework of Factors Influencing Childhood Overweight (Davison and Birch 2001, p. 161)

Another framework for the study of children’s food choices, habits, and health outcomes was proposed by Livingstone and Helsper (2004). Similar to the theories discussed above, there are several levels of influential factors, which include individual, parental, social, and cultural dimensions as shown in Figure 5. This framework outlines for the first time direct and indirect influences of food advertising and parents on children. It also highlights the importance of children’s understanding of food-related messages in advertising (advertising literacy) and the interaction between factors operating on different levels (e.g., peer pressure and exposure to TV) (Livingstone 2006; Livingstone and Helsper 2004). Most importantly, the framework highlights the connection between children’s food habits and health, which advances theoretical knowledge by connecting childhood obesity to dietary behaviour. In contrast to previous frameworks, additional mediating variables have also been highlighted, such as children’s advertising literacy, school, and peers (Livingstone and Helsper 2004). The paths of influence, however, remain cumbersome in this framework and more parsimonious approach is desirable to the study of children’s dietary behaviour.

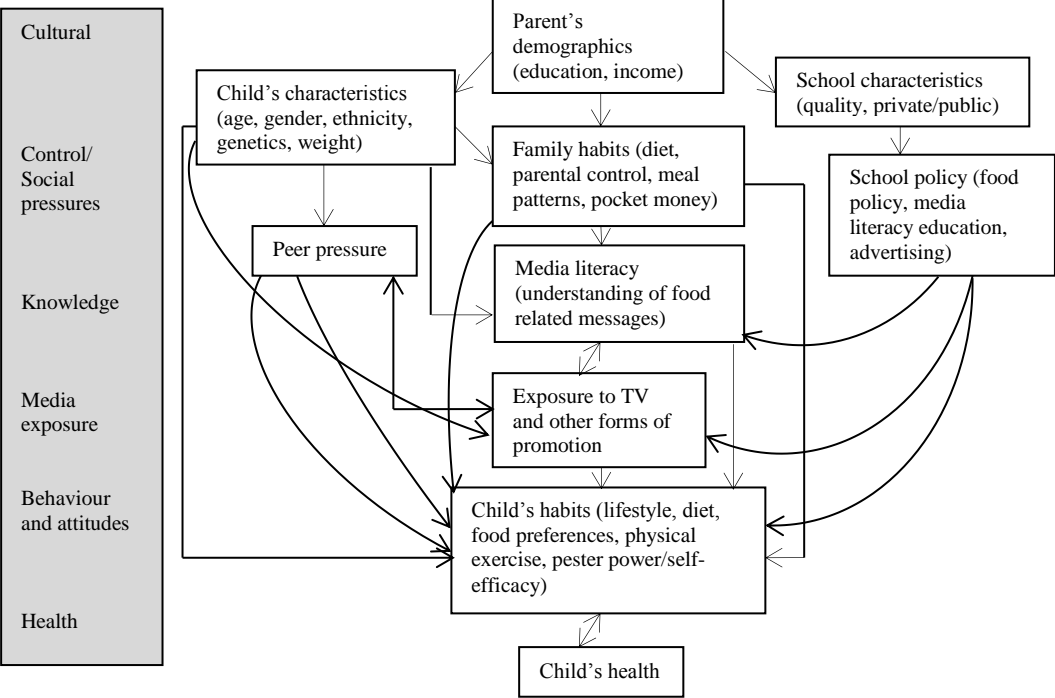


Figure 5: Conceptual Framework of Factors Influencing Children’s Food Choices, Habits, and Health (Livingstone and Helsper 2004, p. 34)

Several points emerge from the review of theories and previous frameworks that should be considered during the formulation of a conceptual framework to guide this study. First, recent obesity-centred theoretical frameworks (Birch and Davison 2001; Livingstone and Helsper 2004), which rely on the SCT and EST, emphasise multi-factoral causes of childhood obesity. Such multi-factoral approach certainly represents a more comprehensive strategy to identify

which factors lead to the development of childhood obesity, which will be also followed in this study. Second, the link between food preferences/consumption and children's weight, as an important health outcome, needs to be solidly incorporated into the framework as previously done by Livingstone and Helsper (2004). Third, indirect effects of food marketing need to be assessed controlling for the mediating effects of child-related factors, such as advertising literacy as suggested by Livingstone and Helsper (2004). Finally, in contrast to previous works (see Davison and Birch 2001; Livingstone and Helsper 2004), a new conceptual framework should be more suitable for direct empirical estimation. The next section provides a review of extant empirical findings on factors influencing children's food preferences/consumption and weight gain.

2.3. Empirical Findings

The public health literature has concentrated on a wide range of factors influencing children's food consumption and weight gain. Therefore, to better differentiate between the sources of influence, this review is divided into external and internal influences. External factors include: 1) parents, who create the primary and predominant food environment for children; 2) food advertising, whose aim is to influence attitudes and dietary behaviour; and 3) peers, who influence food choices outside the home. Internal factors, on the other hand, capture the personal influences which relate to children.

2.3.1. External factors

Parents

Parents play a crucial role in children's overall food socialization (Benton 2004; Gable and Lutz 2000) and empirical evidence confirming their influence on children's food consumption is abundant (Horst et al. 2007; Patrick and Nicklas 2005; Pearson, Biddle, and Gorely 2008; Rasmussen et al. 2006; Story et al. 2002). Parents provide first direct experiences with foods (Scaglioni, Salvioni, and Galimberti 2008) and altogether, three distinct parental roles have been outlined in the literature, which are reviewed below.

Household Food Availability

First, as food providers, parents control the type of food and its quantities available in a household (Birch and Fisher 1998). A number of studies have highlighted the link between the physical availability of foods and children's consumption of similar foods. Such relationship has been observed in relation to: 1) the availability of sweets and chips/salty snacks and

children's consumption of "junk" foods (Gable and Lutz 2000); 2) the availability and consumption of fruit and vegetables amongst younger children (Cullen et al. 2003; Cullen et al. 2001; Reynolds et al. 1999); and 3) the availability and consumption of fast foods amongst adolescents (Bauer, Larson, Nelson, Story, and Neumark-Sztainer 2009). Likewise, a similar positive relationship has been observed between the accessibility of fruit and vegetables (i.e. cutting up fruit and vegetables) and children's consumption of these foods (Bere and Klepp 2004; Cullen et al. 2003) (see Appendix 4 for more detail).

Food Consumption Modelling

Second, children mimic eating habits of individuals with whom they share their meals. Parents, in particular, are considered to represent one of the most important models (Birch and Fisher 1998; Golan and Crow 2004; Pettigrew and Roberts 2007). The literature suggests that eating in a family environment, such as companionship during mealtimes and positive home atmosphere are positively related to children's more frequent consumption of fruit and vegetables (Videon and Manning 2003) and the overall quality of children's diet (Gillman et al. 2000; Stanek, Abbott, and Cramer 1990). The similarity between parents' and children's food consumption seems well established in the literature in relation to fruit (Bere and Klepp 2004; Cullen et al. 2001; Gibson, Wardle, and Watts 1998; Kratt, Reynolds, and Shewchuk 2000), soft drinks (Grimm, Harnack, and Story 2004), snacks (Brown and Ogden 2004), fats (Francis, Hofer, and Birch 2001), nutrient intake (Oliveria et al. 1992), and general food intake (Feunekes, de Graaf, Meyboom, and van Staveren 1998; Ogden et al. 2002). Parents' fat and salt avoidance is also associated with children's lower energy intake (Zive et al. 1998).

Parental Control and Teaching

The third parental role includes educating children about foods and nutrition, encouraging consumption of different foods, and food controlling (Gable and Lutz 2001; Pettigrew and Roberts 2007). In this case, research suggests that mothers' nutritional knowledge is positively related to children's nutritional knowledge, children's intake of fruit and fibre (Gibson et al. 1998), and overall adherence to dietary guidelines (Vereecken and Maes 2010). Mothers' nutritional knowledge has also been found to be negatively associated with children's total energy and fat intake (Contento et al. 1993; Gibson et al. 1998). Parents' knowledge about salt consumption has demonstrated an inverse relationship with sodium consumption amongst children aged between three to five years (Zive et al. 1998). An econometric study has also shown a positive effect of mothers' nutritional knowledge, enhanced by educational

attainment, on children's diet (Variyam, Blaylock, Lin, Ralston, and Smallwood 1999). However, non-significant associations have also been observed between parents' nutritional knowledge and children's (three to 11 years) intake of micronutrients, consumption of vegetables and confectionery (Gibson et al. 1998), and their general diet (five to 17 years) (Variyam et al. 1999), preventing a definitive conclusion about the effects of parents' nutritional knowledge on children's dietary behaviour.

Child-feeding practices, such as control over food intake, restrictions, and pressure to eat in an attempt to improve children's eating habits have also been studied extensively. Control over food intake refers to encouragement to eating up all food, consumption of food only at mealtimes, or consumption of disliked foods (Robinson 2001). Overall, controlling has shown to exert a short-term effect on children, leading to the development of negative behaviour in a longer perspective (Johnson 2000; Johnson and Birch 1994). Such practices, in particular, are inversely related to weight gain amongst girls (Robinson 2001) and energy intake amongst younger children (three to five years) (Zive et al. 1998). Control over children's diet, measured in terms of how much freedom a child is granted in food selection and what she or he is allowed to eat, has been found to be positively related to the consumption of both healthy and unhealthy foods (Brown and Ogden 2004). Encouraging children to eat at mealtimes rather than in response to hunger, and encouraging them to finish all their food, seem to lead to their decreased ability to regulate food intake (Johnson and Birch 1994). Restrictions over the consumption of specific foods are also associated with an increased interest in, and actual consumption of, restricted items (Fisher and Birch 1999a, 1999b, 2000), increase in children's weight (Kaur et al. 2006; Lee, Mitchell, Smiciklas-Wright, and Birch 2001), and eating in the absence of hunger (Fisher and Birch 2002).

Socio-Demographic Characteristics

Traditional socio-demographic variables have also been shown to be related to children's dietary behaviour. Parental educational attainment, for example, is positively related to children's healthy eating patterns (Ambrosini et al. 2009), dietary adequacy (compliance with food recommendations) (Vereecken and Maes 2010), and children's consumption of nutrients (Variyam et al. 1999). There is also abundant evidence suggesting that parents with higher education have children with lower weight (Dennison, Erb, and Jenkins 2002; Robinson, Kiernan, Matheson, and Haydel 2001; Wake, Hardy, Sawyer, and Carlin 2007). Additional research shows that higher education is inversely related to children's TV watching (Hesketh,

Ball, Crawford, Campbell, and Salmon 2008) and television being on during meals (Coon, Goldberg, & Rogers, 2001). As expected, mothers with higher levels of education also possess better nutritional knowledge (Variyam et al. 1999). Parents' age is also inversely related to children's consumption of "junk" foods (Northstone and Emmett 2005).

Available evidence suggest that children belonging to higher socio-economic status (SES) watch TV less (Mueller, Koertringer, Mast, Languix, and Frunch 1999), and consume fewer fried food, fizzy drinks (Kopelman, Roberts, and Adab 2007), and "junk" foods (Northstone and Emmett 2005). A similar trend was observed amongst adolescents, where again individuals from higher socio-economic families consumed fewer fast foods (Ambrosini et al. 2009; Larson et al. 2008). With a few exceptions for boys (Burke et al. 2001), higher rates of childhood obesity have been observed amongst children from lower socio-economic backgrounds in Australia (Booth, Denney-Wilson, and Okely 2006; Burke et al. 2001; O'Dea 2003, 2008; Wake, Hardy et al. 2007). As another measure of family social background, income has shown to have a reverse effect on children's weight (Gable and Lutz 2000; Wake, Hardy et al. 2007; Wang et al. 2002) and was linked to children's healthier eating patterns (Ambrosini et al. 2009). Another risk factor for the development of obesity relates to being in a single parent family – children in such families, in particular, have been shown to have more unhealthy diets (Ambrosini et al. 2009) and a greater risk of obesity (Gable and Lutz 2000; Gibson et al. 2007). In such families, the TV has also been found to be turned on more often during mealtimes (Coon, Goldberg, Rogers, and Tucker 2001).

Parents' Weight

In addition to the socio-demographic variables, the relationship between children's and parents' weight and children's food consumption has also been explored in depth. Research in Australia, for example, shows an association between parents' and children's Body Mass Index (BMI) (Gibson et al. 2007; Magarey, Daniels, Boulton, and Cockington 2003; Wang et al. 2002). In another study, obesity in fathers was associated with a four-fold increase in the risk of obesity in their children, with an independent eight-fold increase if mothers were also obese (Burke et al. 2001). Having an overweight mother doubles, and an obese mother triples, the odds that a child will have a higher BMI, compared to a child with a non-overweight mother (Wake, Hardy et al. 2007). Similar associations have also been observed in other countries (Francis et al. 2001; Gibson et al. 2007; Maes, Neale, and Eaves 1997). Tracking changes in the BMI of five-year-old American girls over a period of four years confirmed an

increase in weight amongst children from overweight families (Francis, Lee, and Birch 2003). Parental obesity is also related to higher risks of obesity in adulthood, both for obese and non-obese children (Whitaker, Wright, Pepe, Seidel, and Dietz 1997).

While the above-mentioned studies might be interpreted as favouring a genetic explanation of obesity, scholars have warned about the potential confounding effect of lower income, lack of physical activity, and higher food intake in obese families (Davison and Birch 2002). In particular, there is some evidence suggesting lower preferences for vegetables, higher preferences for fatty foods and sedentary activities amongst children from obese families (Wardle et al. 2001). Additionally, the increasing rates of childhood obesity worldwide provide support for an environmental, rather than genetic, explanation for childhood obesity (Hill et al. 2003; Hill et al. 2000; Tremblay and Willms 2003).

The review of empirical literature provided in this section highlights parents' importance in creating food environments for children. Not surprisingly, parents have been nominated as key players in the treatment of children's weight-related diseases and childhood obesity (Benton 2004; Golan and Crow 2004; Lindsay, Sussner, Kim, and Gortmaker 2006; Pettigrew and Roberts 2007). Parents' influence can either lead to the development of obesogenic characteristics or foster healthier eating in children (Benton 2004; Scaglioni et al. 2008). Extant knowledge unequivocally suggests that parents' weight plays an important role, and hence needs to be controlled for alongside the influence of other parental variables. Parents' role in the formation of obesity-related environments is examined in the current study, but in more depth. Having discussed extant empirical knowledge about the influence of parents on children's dietary behaviour and weight gain, the next section discusses the influence of another external factor, food marketing.

Food Marketing

For a long time food advertising has been accused of "causing" childhood obesity (Lewis and Hill 1998; OfCom 2004; Rich and Bar-on 2001; WHO 2006a; WHO/FAO 2003). This has been termed as the "food advertising effects hypothesis," which assumes that children exposed to food promotion dominated by energy-dense foods, will also prefer less healthy diets (Buijzen et al. 2008). Numerous studies have exposed the prevalence of advertisements for foods poor in nutritional value targeting children on television (Desrochers and Holt 2007; Dibb 1996; Hastings et al. 2006; Powell, Szczypka et al. 2007), in supermarkets (Chapman,

Nicholas, Banovic et al. 2006), in children’s magazines (Kelly and Chapman 2007), outdoors (Kelly, Cretikos et al. 2008; Yancey et al. 2009), and on the Internet (Hawkes 2007; Kelly, Bochynska et al. 2008; Moore and Rideout 2007; Vandewater, Shim, and Caplovitz 2004). Advertising foods to children has been shown to be rather deliberate (Nestle 2002), relying heavily on animation, fantasy (Hastings et al. 2003), premium offers, emotional appeal of fun (Lewis and Hill 1998), bright packaging, puzzles, and popular children’s film heroes (Jones et al. 2007). Marketing aims to elicit favourable response towards promoted products amongst consumers (IOM 2006) and the nature of food marketing to children is rather complex as it aims to influence children’s knowledge (cognitive dimension), attitudes, and dietary behaviour (Brand 2007; Hastings et al. 2003; IOM 2006). Over time, each of the above-mentioned effects, including the influence on weight, has been an aspect of extensive empirical literature, including both experimental and cross-sectional studies (see Figure 6 and Appendix 5).

A) Focus of Experimental Studies		B) Focus of Cross-Sectional Studies, TV Watching	
<p>Cognitive dimension</p> <p>No empirical evidence is available</p>	<p>Attitudinal dimension</p> <p>Taste rating</p>	<p>Cognitive dimension</p> <p>Nutritional knowledge</p>	<p>Attitudinal dimension</p> <p>Attitudes about “junk” food</p>
<p>Health dimension</p> <p>Weight status on:</p> <ol style="list-style-type: none"> 1. Recall of advertisements 2. Food consumption 3. Food preferences 	<p>Behavioral dimension</p> <ol style="list-style-type: none"> 1. Post-experimental food choice for advertised/non-advertised foods 2. Food preferences 3. Purchase requests 	<p>Health dimension</p> <p>Weight status</p>	<p>Behavioral dimension</p> <p>Consumption of less healthy foods</p>

Figure 6: Summary of Previous Research

The cognitive dimension encompasses the influence of food marketing on consumers’ knowledge (Hastings et al. 2003). To the author’s knowledge, there is no evidence to confirm experimentally that exposure to food advertising negatively affects children’s nutritional knowledge (see Figure 6A). Nonetheless, cross-sectional studies suggest that there is a positive relationship between the time children (six to 11 years) spend watching TV and the development of incorrect knowledge about what constitutes a nutritious breakfast (Signorielli and Lears 1992). Research suggests a reverse relationship between television viewing time and children’s understanding of nutritional phraseology and nutritional knowledge (Wiman and Newman 1989) (see Appendix 4 and Figure 6 for more detail). A similar reverse association between TV watching and nutritional knowledge has also been reported in a

sample of Australian adolescents aged between 15 to 16 years (Gracey, Stanley, Burke, Corti, and Beilin 1996).

Although consumers' favourable attitudes towards a product represent a second desirable outcome of marketing, the evidence about the influence of food marketing on children's attitudes remains scarce. A few experiments have shown that children aged between two to six years (the research on older children is non-existent) tend to exhibit more favourable taste preferences if they believe foods belong to a popular brand (e.g., McDonalds) (Robinson, Borzekowski, Matheson, and Kraemer 2007) or to the nationally advertised, more familiar brands (Hite and Hite 1995) (see Appendix 5). The effect of exposure on children's attitudes has been examined experimentally only once and no such effects were observed in relation to attitudes (boring/fun, yucky/yummy, and unfamiliar/familiar) or intentions favouring unhealthy foods (Dixon et al. 2007). One cross-sectional study (Dixon et al. 2007) reports a positive relationship between children's TV viewing time and their liking of fizzy drinks, chocolate and fast food, the perception that children of their age eat "junk" food often (social norms), and that "junk" food is healthy. Overall, while there is some empirical evidence about the influence of TV watching on attitudes about food, much less is known about the influence of advertising on children's food preferences/consumption through attitudinal, indirect pathways. Likewise, little is known about children's attitudes about food brands or attitudes about foods in general, which represents a gap in our understanding of the process by which advertising influences children (Harris et al. 2009).

Changing consumption behaviour in favour of an advertised product represents another important goal of marketing communication, which in the case of foods can take the form of food consumption (food intake) or food preferences (hypothetical food choice or motivation to consume different foods). Despite a few exceptions (Heslop and Ryans 1980; Resnik and Stern 1977), most experimental studies (Appendix 5) suggest that short-term exposure to food advertisements can affect children's post-experimental selection of foods (Galst 1980; Gorn and Goldberg 1982), can lead to increased energy intake after the exposure (Halford, Boyland, Hughes, Oliveira, and Dovey 2007; Halford et al. 2007), result in the selection of advertised food products (Roedder, Sternthal, and Calder 1983), and have an impact both on a brand and product category levels (Resnik and Stern 1977).

Cross-sectional studies, which have relied on the amount of time spent watching TV as a proxy for advertising influence, also offer some insights in relation to the consumption of healthy and less healthy foods. For example, TV watching has been shown to be negatively associated with adolescents' (12 to 15 years) consumption of fruit and vegetables in Australia (Woodward et al. 1997) and negatively related to younger children's consumption of the above-mentioned foods in the USA (Boynton-Jarrett et al. 2003; Grossnickle and Raskin 2001) (see Appendix 4). The amount of time spent watching TV is associated with children's increased consumption of foods high in fat and sugar, such as biscuits, sausages, meat pies, soft drinks, and hot chips (Woodward et al. 1997). It is also associated with increased energy intake (Crespo et al. 2001; Zive et al. 1998), snacking (Snoek, van Strien, Janssens, and Engels 2006), and frequent trips to fast food restaurants amongst adolescents (French, Story, Neumark-Sztainer, Fulkerson, and Hannan 2001).

A positive relationship between TV watching and poor eating habits has also been confirmed amongst younger children (Signorielli and Lears 1992). TV watching seems to be related to the consumption of commonly advertised foods, such as soft drinks, hamburgers, French fries (Utter, Scragg, and Schaaf 2006), branded foods (Buijzen et al. 2008), sugared beverages, salty snacks, fried potatoes, sweet snacks, candy, fast food-type main courses (Wiecha et al. 2006); and pizza (Coon et al. 2001). More recent research shows that exposure to 100 sugared advertisements is associated with a 9.4% increase in children's consumption of soft drinks and a 1.1% increase in children's consumption of fast foods (Andreyeva, Kelly, and Harris 2011). A rare longitudinal study of US adolescents also suggests that TV watching at age 15 is associated with a 30% increase in intake of fast foods at age 20 amongst girls. However, no such effect has been observed amongst boys (Larson et al. 2008). As for food preferences, experimental studies unequivocally suggest the exposure to food advertising influences children's preferences in favour of advertised foods (Borzekowski and Robinson 2001; Roedder et al. 1983) or less healthy sugared foods (Goldberg, Gorn, and Gibson 1978; Kaufman and Sandman 1984). Likewise, the evidence from cross-sectional studies suggests that TV watching influences children's preferences for less healthy foods (Dixon et al. 2007; Signorielli and Staples 1997).

While previous experiments have successfully demonstrated that advertising influences children's food consumption, they have paid little attention to children's advertising literacy or their nutritional knowledge (these cognitive defences are discussed in the upcoming section).

Also, most studies were conducted in the 1980s, when television represented the main exposure medium and fewer sources of information were available to children. Changes in the marketing communication environment and children's transformation into more active consumers require new insights to fight childhood obesity effectively. The extant experimental knowledge also largely applies to very young children aged between two and ten years (see Appendix 5). Hence, the effects of food advertising on children's food consumption need to be examined with children aged between eight years and older to provide more practical insights for policy-makers.

It should also be mentioned that cross-sectional studies have looked predominantly into associations (correlations) and could not assess the magnitude of influence of food advertising on children controlling for the influence of other external factors. Even though some studies have employed a regression approach (Ambrosini et al. 2009; Boynton-Jarrett et al. 2003; Wiecha et al. 2006), with the exception of Utter et al. (2006), they have concentrated on older children (11 years and above) and the applicability of such results to younger children is questionable. Next, previously TV watching has been used as a popular proxy to measure the influence of food advertising on children. The assumption was that this measure reflected children's exposure to advertisements promoting foods high in sugar, salt, and fat. However, this measure could not confirm such influence with certainty due to the confounding effect of sedentary lifestyle (Lowry, Wechsler, Galuska, Fulton, and Kann 2002), children's lower physical activity (Gable and Lutz 2000; Robinson et al. 1993; Snoek et al. 2006), and snacking during TV watching (Coon et al. 2001; Grimm et al. 2004; Lowry et al. 2002; Mueller et al. 1999), all of which have been empirically confirmed. Hence, self-reported accounts of exposure to food advertising serve as a better estimate of the extent of children's exposure to food advertising.

Amongst all the effects discussed above, the influence of food marketing on weight represents by far the most important outcome – it is directly related to health and demonstrates a pathway from food advertising to health through diet. This influence, however, is one of the hardest to establish empirically (Hastings et al. 2003) because it requires the assessment of a series of interdependence relationships. The extant literature provides insights only for bi-directional relationships. There is some evidence suggesting an influence of weight on post-experimental food choice due to obese children's heightened alertness to food-related cues (Halford, Boyland, Hughes, Stacey et al. 2007; Halford, Gillespie, Brown, Pontin, and Dovey 2004) and

their higher preferences for branded items high in fat (Halford et al. 2008). However, no effect of weight on food selection (Halford, Boyland, Hughes, Oliveira et al. 2007) has also been reported (see Appendix 5). Experimental studies discussed above have looked into the influence of weight on children's food consumption after exposure to food advertisements (i.e., weight → dietary behaviour). The literature (IOM 2006), however, clearly suggests that food consumption should act as a pathway to diet-related diseases, such as weight gain to establish a link to a health outcome (i.e., dietary behaviour → weight). This link is examined in depth in the current study.

Cross-sectional studies, on the other hand, have concentrated on the amount of time children spend watching TV, again as a proxy for advertising influence and its link to weight (IOM 2006). Except for a few studies (DuRant, Baranowski, Johnson, and Thompson 1994; Robinson et al. 1993; Utter et al. 2006; Vandewater et al. 2004; Zimmerman and Bell 2010), most research supports a positive association between TV watching and children's weight (Andersen, Crespo, Bartlett, Cheskin, and Pratt 1998; Bernard, Lavalley, Graydonald, and Delisle 1995; Crespo et al. 2001; Dennison et al. 2002; Dietz and Gortmaker 1985; Eisenmann, Barteel, and Wang 2002; Jackson, Djafarian, Stewart, and Speakman 2009; Jago, Baranowski, Baranowski, Thompson, and Greaves 2005; Kaur, Choi, Mayo, and Harris 2003; Lowry et al. 2002; O'Brien et al. 2007; Proctor et al. 2003; Tremblay and Willms 2003; Viner and Cole 2005; Zimmerman and Bell 2010). Still, similar to the influence of food advertising on children's attitudes and dietary behaviour discussed above, there are certain limitations to the use of TV watching as an estimate of advertising influence. That is TV watching cannot effectively capture the extent of children's exposure to food advertising due to the additional factors of sedentary lifestyle and snacking during TV watching (Hastings et al. 2003).

Peers

A lot has been written about "peer pressure" (Livingstone and Helsper 2004; Monge-Rojas, Nunez, Garita, and Chen-Mok 2002) and peers' influence on children's food choices has been also emphasised for a long time (Dennison and Shepherd 1995). As children grow older, external factors become more influential (NHMRC 2003; Skinner et al. 1998) and the influence of peers on children's alcohol, tobacco, and drug use has been well documented (Kilmer et al. 2006; Perkins 2003; Perkins, Haines, and Rice 2005; Perkins, Meilman, Leichter, Cashin, and Presley 1999). The influence of peers on children's dietary behaviour, however, has received lesser empirical assessment. "Peer pressure" has been operationalised

in two different ways in the literature. First, as an observational modelling examined by means of experiments and second, as children's self-reported perceptions about their friends' frequency of food consumption.

To the author's knowledge, there has been only one experimental study, which demonstrated that preschoolers' vegetable choice could change within four days after children started having lunch with peers who had different vegetable preferences (observational learning) (Birch 1980). More evidence is available from the cross-sectional studies which have looked into perceived food consumption resemblance between friends. In the first study conducted with Australian adolescents (12 to 15 years), the similarity in food consumption has been observed only in relation to a limited number of foods consumed outside normal meal times (chips and meat pies) (Williams et al. 1993). Another study with adolescents' best friends in the Netherlands has shown a similar trend for peers' influence, which, however, was still weaker compared to the influence exerted by parents. Peers' influence applied only to 19% of consumed foods, such as soft drinks, low-fat cheese, fried sausages, French fries, beer, and minced meat (Feunekes et al. 1998), which are generally consumed outside the home. In another study with children aged between eight to 13 years in the USA a positive association was observed between children's and their friends' consumption of soft drinks (Grimm et al. 2004). Overall, the extant body of knowledge about the role of peers in children's food consumption remains scarce in stark contrast to the body of knowledge about the influence of parents and food marketing (see Appendix 5, Table 3). Having discussed the external influences, the next section examines internal, child-related factors that affect their food preferences, food consumption, and weight.

2.3.2. Internal Child-Related Factors

In addition to parents, food advertising, and peers, the public health literature suggests that several internal, child-related drivers play important role in children's food consumer socialisation. The first one is children's nutritional knowledge, which refers to the knowledge of nutrients and nutrition (Kersting et al. 2008; Parmenter and Wardle 2000; Worsley 2002). The role of nutritional knowledge in preventing childhood obesity is still not well understood (Rasnake, Laube, Lewis, and Linscheid 2005) due to a frequently observed dissonance between adolescents' nutritional knowledge and their food consumption (Hill et al. 1998; Mirmiran, Azadbakht, and Azizi 2007; Pich, Ballester, Thomàs, Canals, and Tur 2010). Also, mixed empirical results have been reported about the influence of children's nutritional

knowledge on food intake (Gibson et al. 1998; Gracey et al. 1996; Zive et al. 1998) and weight (Reinehr, Kersting, Chahda, and Andler 2003). Nonetheless, there is some evidence suggesting that children with lower nutritional knowledge are five times more likely to be obese (Triches and Giugliani 2005). A meta-analysis of available studies with adults also suggests a small association between nutritional knowledge and dietary intake (Axelson, Federline, and Brinberg 1985). Extant knowledge does not provide conclusive support whether nutritional knowledge mitigates the effects of food advertising on children's attitudes and dietary behaviour, undermining our understanding of the role of this factor in the prevention of childhood obesity. Obviously, more research is required about the role of children's nutritional knowledge in the context of food advertising.

A number of socio-demographic variables, such as children's gender and age have also been shown to influence children's dietary behaviour. Teenage girls, for example, tend to exhibit healthier eating patterns (Ambrosini et al. 2009), higher liking of fruit and vegetables (Cooke and Wardle 2005), higher nutritional knowledge (Mirmiran et al. 2007), and greater ability to identify healthy and unhealthy foods correctly in comparison to boys (Kopelman et al. 2007). Gender differences in dietary behaviour have been consistently reported, where adolescent boys in particular reported more frequent consumption of fast foods (Larson et al. 2008). Furthermore, the literature provides support for age differences in dietary behaviour. First, older girls tend to be more health conscious than younger girls (Warwick, McIlveen, and Strugnell 1999). Second, younger children report consuming more fruit and fewer soft drinks in comparison to their older counterparts (Warwick et al. 1999) perhaps due to children's increasing independence from parents in eating habits with age and the increasing influence of peers (IOM 2006). Overall, while the extant bi-directional evidence suggests an influence of gender and age on food consumption, the evidence about gender and age acting as a pathway to food consumption and attitudes through nutritional knowledge and understanding of advertising (indirect pathway) are missing.

2.4. Summary

This chapter has provided a review of theories and factors from the public health discipline in relation to factors influencing children's food preferences, food consumption, and weight. It has shown that a number of factors have been previously considered in the literature, suggesting complex cause-and-effect relationships, which will be considered during the development of the conceptual framework for this study. The next section looks at the

contribution of the marketing discipline to our understanding of children's consumer development. Similar to this chapter, the literature review starts with relevant theories followed by relevant empirical studies.

Chapter Three: Review of Marketing Literature: Theoretical Foundations of and Empirical Findings about Children's Consumer Socialisation and Advertising Literacy

3.1. Introduction

This chapter discusses consumer socialisation – a theoretical framework introduced by Ward (1974) in the 1970s to study children's consumer maturation, which has been recently further enriched by marketing scholars. Also, the chapter reviews theories about the development of children's understanding of purposes of advertising, where the latter represents a crucial aspect of children's overall consumer maturation and also discusses the importance of attitudes for consumer behaviour. The chapter then discusses extant empirical evidence about socialisation agents that transfer consumer values and attitudes to children and looks in more detail at children's understanding of advertising. Finally, the chapter explains how the insights from the public health and marketing disciplines were combined in this study to provide a more comprehensive, interdisciplinary approach to the problem of childhood obesity and children's food consumer socialisation.

3.2. Theoretical Foundations: Consumer Socialisation and Attitudes

The origin of consumer socialisation research dates back to the 1970s – a period when children became a target of rigorous marketing research (John 1999a). Consumer socialisation refers to the process through which young individuals acquire skills, knowledge, and attitudes relevant to their future functioning as consumers in the marketplace (Ward 1974). The socialisation approach builds upon two theories – the Social Cognitive Theory and Piaget's theory of children's cognitive development (Moschis and Churchill 1978). As discussed above, the SCT has also been applied in public health to research childhood obesity. In the marketing context, however, the SCT has been employed to introduce the concept of socialisation agents who transfer social norms to children (Moschis and Churchill 1978).

The socialisation approach suggests that consumer learning consists of qualitative changes in cognitive development from childhood to adulthood (physiological changes) which take place through interactions with socialisation agents (social process) (Moschis and Churchill 1978; Ward, Wackman, Faber, and Lesser 1974). As shown in Figure 7, the acquisition of consumer skills (learning), such as saving, spending, and brand decisions, represents an outcome of a socialisation process, which is influenced by social structural variables (social class and

gender), children’s age, and socialisation agents (“agent-learner relationships”). Socialisation agents are involved in the transmission of values to children and adolescents and can take different forms, ranging from institutions or organisations to individuals (Moschis and Churchill 1978). Four main socialisation agents have been emphasised in the marketing literature for children – parents, peers, school, and mass media (Beaudoin and Lachance 2006; John 1999a; Moschis and Moore 1979a). Due to the scarcity of research dedicated to schools (Bartrina and Perez-Rodrigo 2006), this agent was not included in the current study.

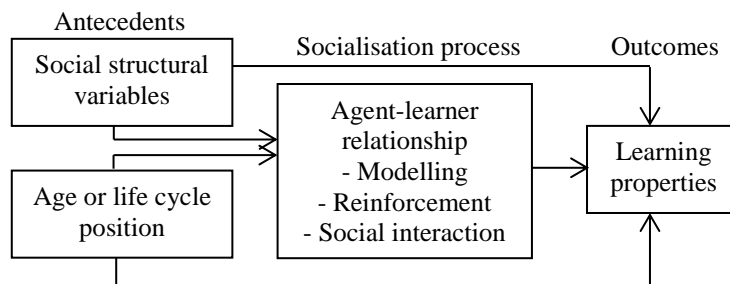


Figure 7: Conceptual Framework of Children’s Consumer Socialisation (Moschis and Churchill 1978, p. 600)

The consumer socialisation approach was re-examined by John (1999a), who delineated three stages of children’s consumer development, based on the social development theories in addition to the cognitive development framework. Again, age was used as the main determinant of cognitive and social maturation. This re-conceptualised approach postulates that children’s consumer socialisation is marked by dramatic cognitive and social changes during which individuals pass through three developmental stages (Figure 8). During the first, perceptual stage, which starts around three years of age and ends around seven years, consumer knowledge is characterised by perceptual features based on a single dimension or an attribute (e.g. price). Children are aware of such concepts as brands but do not fully understand them. Decisions are made based on limited information and children’s actions are based on their own perspectives. As children move to the second, analytical stage (seven to 11 years), information processing increases and leads to more complex understanding of advertising and brands. Concepts are analysed using more than one dimension, building upon individual’s own experiences. Children between 11 to 16 years, enter into a reflective stage and their cognition about the marketplace and brands becomes more complex. This stage is characterised by reflective thinking and reasoning about social space and symbolism. At this stage, consumer decisions and actions are more adaptive and depend on a context (John 1999a).

By combining both cognitive and social development, the above-mentioned approach emphasises that children’s knowledge and perspective-taking skills mature with time. Although this classification does not involve socialisation agents, John (1999) noted that consumer development occurs in the context of family, mass media, peers, and various marketing institutions. The next important contribution in the field of consumer socialisation pertains to the introduction of the “relative influence” concept for the socialisation agents by Hota and McGuiggan (2006) (Figure 9). Similar to the original work (Ward 1974), this framework includes parents, peers, and mass media amongst the socialisation agents. However, it proposes that the consumer socialisation occurs under the simultaneous influence of several agents. Therefore, some socialisation agents might exert a stronger influence than others on children (Hota and McGuiggan 2005).

<i>Characteristics</i>	Perceptual stage, 3 to 7 years	Analytical stage, 7 to 11 years	Reflective stage, 11 to 16 years
<i>Knowledge structures:</i>			
<i>Orientation</i>	Concrete	Abstract	Abstract
<i>Focus</i>	Perceptual features	Functional/underlying features	Functional/underlying features
<i>Complexity</i>	Uni-dimensional Simple	Two or more dimensions Contingent ("if-then")	Multidimensional Contingent ("if-then")
<i>Perspective</i>	Egocentric (own perspective)	Dual perspectives (own + others)	Dual perspectives in social context
<i>Decision-making and influence strategies:</i>			
<i>Orientation</i>	Expedient	Thoughtful	Strategic
<i>Focus</i>	Perceptual features Salient features	Functional/underlying features Relevant features	Functional/underlying features Relevant features
<i>Complexity</i>	Single attributes Limited repertoire of strategies	Two or more attributes Expanded repertoire of strategies	Multiple attributes Complete repertoire of strategies
<i>Adaptivity</i>	Emerging	Moderate	Fully developed
<i>Perspective</i>	Egocentric	Dual perspectives	Dual perspectives in social context

Figure 8: Conceptual Framework of Consumer Socialisation (John 1999a, p. 186)

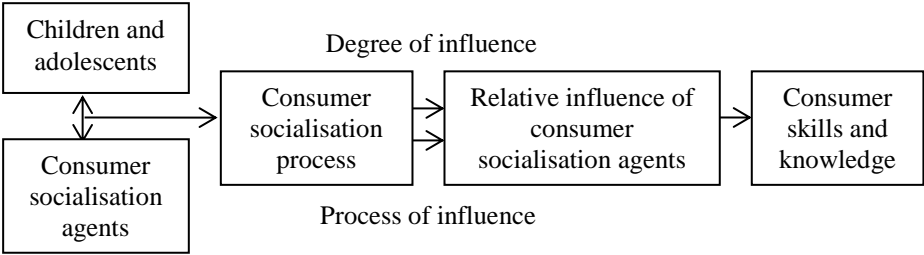


Figure 9: Conceptual Framework of Magnitude of Influence of Different Socialisation Agents (Hota and McGuiggan 2005, p. 120)

In addition to the social component, consumer socialisation approach draws attention to children's cognitive and psychological maturation as a part of consumer development process. As mentioned above, Piaget's (1952) theory of cognitive development was originally used by Moschis and Churchill (1978) to explain how children acquire consumer skills. Piaget (1952) proposed four stages of children's cognitive development: 1) sensorimotor (birth to two years); preoperational (two to seven years); concrete operational (seven to 11 years); and operational (11 to adulthood). The preoperational stage is characterised by centration, when children concentrate on a limited amount of available information, focus on one dimension, and have difficulty determining the relationship between two equally relevant dimensions (e.g. the child considers two objects equal when using the height and ignoring the width). Concrete operational children can focus on several dimensions at the same time, can relate the dimensions (length and width of an object), and can reverse the direction of thoughts. Further developments are expected to take place during the operational stage when children are able to deal with hypothetical propositions (Piaget 1952). While each stage consists of a sequence of underlying structural processes (Ginsburg and Opper 1979) and some children may pass through some stages more rapidly, the sequence of stages is believed to be constant (Flavell 1985).

Other theories have also been considered in the marketing discipline to examine how children develop as consumers. The social perspective approach developed by Selman (1980), for example, concentrates on children's biological age and links it to overall social development, which is defined as an ability to perceive perspectives of other persons. In this approach, children aged between three to six years are expected to be unaware of other individuals' intentions as they concentrate only on their own perspective (egocentric stage). Between six and eight years, children start to realise that people might have different opinions (role taking stage), but assume that these differences result from differences in information, not in motives. From eight to ten years, children are capable of considering another person's point of view (self-reflective role taking stage), but this ability, however, fully emerges only between ten and 12 years, which is called mutual role taking stage. Finally, older children aged between 12 to 15 years can understand another person's perspective and relate it to the broader social environment (social and conventional role taking ability) (John 1999a).

The Information Processing Theory (IPT) also relies on age, but in contrast to the general biological classification, it uses children's information storage and retrieval processes to

explain underlying cognitive processes and differences in children's understanding. The IPT also proposes a three-stage classification of children's consumer development. Children under eight years, for example, are called limited processors as they have difficulty using storage and retrieval strategies even when they are prompted to do so. Children between eight to 12 years, on the other hand, can use strategies to enhance information storage and retrieval and are called cued processors. They, however, experience production deficiencies and need to be aided by prompts or cues. Finally, strategic processors (13 years and older) can use a variety of strategies for storing and retrieving information (verbal labelling and rehearsal) and can use retrieval cues for memory search (Roedder 1981).

Despite the widespread criticism (see Calder, Robertson, and Rossiter 1975; Chestnut 1979; Macklin 1983; Macklin 1987; Moses and Baldwin 2005; Sanft 1986), of all theories discussed above, Piaget's approach has dominated marketing research on children for a long time (Moses and Baldwin 2005). Nonetheless, it was proposed that age represents a crude proxy for children's cognitive development (Macklin 1987), and children's knowledge about advertising was nominated as a more suitable approach (Sanft 1986). The literature review has shown that another theory, known as the Persuasion Knowledge Model (PKM) (Friestad and Wright 1994) is suitable for the current study as it explains how consumers' persuasion knowledge influences their responses to advertising. The PKM specifically concentrates on consumers' understanding of, and coping with, advertising. It suggests that individuals develop knowledge about persuasive advertising techniques through cognitive maturation and relevant social experience (Friestad and Wright 1994).

The PKM posits that persuasion knowledge, which is defined as a set of interrelated beliefs about persuasion, causes and effects, and the extent to which individuals can control their responses to persuasive attempts, can be accumulated from many sources, including third-party observations of persuasion attempts on other consumers (Friestad and Wright 1994). This knowledge helps consumers recognise, analyse, interpret, evaluate, and remember persuasion attempts and also performs a coping tactic when necessary as shown in Figure 10. As consumers' coping abilities increase, the amount of cognitive effort to perform coping tasks decreases, coping behaviour becomes automatic, and knowledge about marketers' persuasion attempts becomes more refined and accurate (Friestad and Wright 1994). Although the above-mentioned framework was originally intended for adult consumers, Friestad and Wright (1994) argue that persuasion knowledge develops gradually. It starts in childhood

when children form beliefs, which eventually turn into more abstract and complex judgemental skills (Friestad and Wright 1994). The PKM advances our knowledge about children’s vulnerability to advertising – it goes beyond simple age classification and emphasises an ability to comprehend intentions of advertising, and thus was chosen for this study to examine the factors influencing children’s food consumption leading to obesity.

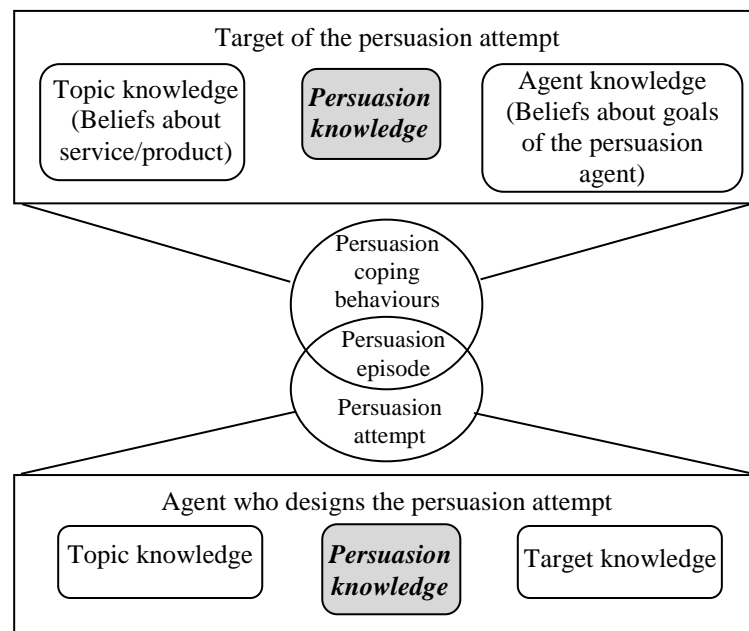


Figure 10: Persuasion Knowledge Model (Friestad and Wright 1994, p. 2)

Despite the above-mentioned advantages, the PKM does not address all aspects of consumers’ susceptibility to persuasive marketing. Rozendaal et al. (2009), in particular, have explained that the cognitive defence assumption usually suggests that children’s knowledge can function as a filter of advertising messages, making them less susceptible to the persuasive influence of advertising. Still, even savvy adult consumers might be affected by advertising when they are aware of the persuasive tactics used (Rozendaal et al. 2009). Therefore, this study applies the tenets of the PKM, but also complements the research by other explanatory factors, such as children’s attitudes about products’ fun and social appeal alongside children’s cognitive defences as suggested by Rozendaal et al. (2009). Attitudes represent an important concept in social psychology (Allport 1935) and have been extensively used in the persuasion and attitude change research (Petty and Cacioppo 1982). Attitudes are defined as evaluations of entities or objects either with favour or disfavour (D’Alessio, Laghi, and Baiocco 2009; Fishbein and Ajzen 1975). They have been considered preeminent in the social psychology due to their expected ability to influence subsequent consumer behaviour (Petty and Cacioppo 1982). A number of theories have been developed to address how attitudes lead to an action,

including the Theory of Reasoned Action (Ajzen and Fishbein 1980), Theory of Planned Behaviour (Ajzen 1991) alongside the more comprehensive frameworks of consumer actions (Bagozzi, Gurhan-Canli, and Priester 2002). Despite some conceptual differences, all of them support the link between attitudes and action (i.e., attitudes → behavioural outcomes), which was also used during the formulation of the conceptual framework for this study.

As shown above, several marketing theories can be applied to examine how children develop as consumers. First, the consumer socialisation theory explains that consumer learning represents a continuous and complex process influenced by external socialisation agents (John 1999a). Recent re-consideration of the classical socialisation approach by Hota and McGuiggan (2005) highlights that socialisation agents exert simultaneous influences on children, suggesting that the reliance on, or the prevalence of, particular agents can result in different socialisation outcomes in children. While Hota and McGuiggan (2005) have looked into general process of consumer socialisation, their re-consideration of the “relative influence” of external agents needs to be addressed both on the conceptual and empirical levels in the context of children’s food consumer socialisation and childhood obesity.

Second, the marketing discipline also clarifies how children accumulate knowledge about advertising and marketing. The theories used by the scholars suggest that while age plays some role in children’s ability to interpret and analyse marketing messages as a product of cognitive development (see Piaget 1952), consumer maturation represents a continuous process which continues even in adulthood (Friestad and Wright 1994). Currently, it is assumed that older children are more resistant to food advertising as they have already passed certain age threshold and are equipped with skills to grasp persuasive intent in advertisements (Seiders and Petty 2007). Nevertheless, the role of advertising literacy in protecting consumers from advertising is still not clear (Rozendaal et al. 2009) and requires further research. Finally, marketing literature alludes to the importance of attitudes that children might hold about foods, which needs to be examined in relation to behavioural outcomes. The next section discusses relevant empirical findings, which are discussed in the sequence of the theories reviewed above.

3.3. Empirical Findings

3.3.1. Socialisation Agents

Most empirical research about the role of socialisation agents originates from the work of Moschis and colleagues, who suggest that children learn the basics of consumption from: 1) parents (Moschis and Moore 1979a) through observations or direct communication (Beaudoin and Lachance 2006); 2) mass media via vicarious learning; and 3) peers through communication about consumption (Moschis and Churchill 1978). These influences are discussed in detail below.

Parents

The literature unequivocally states that parents represent the primary socialisation agents in children's learning of consumer skills (Moschis and Churchill 1978). Since observational learning is subtle and hard to measure, most marketing studies have concentrated on the frequency of communication between parents and children as a measure of parental influence (Moschis and Moore 1979b). Altogether, the impact of parents has been assessed across a wide range of consumer skills, suggesting that frequency of communication is positively related to adolescents' perception of the importance of conspicuous consumption, self-expression through conspicuous consumption, and knowledge about consumer legislation, marketing, and pricing (Moschis and Churchill 1978). All these studies stress the importance of parent-child communication, which represents an educational channel for children. While the above-mentioned evidence pertains mostly to consumer outcomes rather than dietary behaviour, the extant empirical evidence from the public health discipline discussed in Chapter Two (Bassett, Chapman, and Beagan 2008; Benton 2004; Gable and Lutz 2000; Zive et al. 1998) also pinpoints the overall relevance of parents for children's learning about foods.

Mass Media

When the socialisation approach was introduced, it was also proposed that consumer values are transferred to children and adolescents through TV programs and advertising (Moschis and Churchill 1978). Most research about this socialisation agent, however, has been carried out with adolescents aged between 12 to 18 years. The influence of mass media has been operationalised as the amount of time spent watching TV, which has been consistently reported in the literature as a significant predictor of behavioural outcomes. For example, research suggests that adolescents who spend considerable time watching TV tend to exhibit higher social motivation for consumption, which represents the knowledge about products'

social symbolism (Moschis and Churchill 1978). A similar positive association has been observed for adolescents' materialistic attitudes ("money can buy happiness") (Moschis and Churchill 1978) and brand preferences (Moschis and Moore 1979a; Moschis, Moore, and Stanley 1984). Overall, the influence of TV watching on adolescents' consumption values, which has been used as a proxy for vicarious learning seems to be confirmed in the literature.

Peers

Marketing research suggests that peers' influence starts around the mid-childhood (McNeal 1994) and increases in adolescence (Campbell 1969) when children become more sensitive to peer influence (Bachmann, John, and Rao 1993). The importance of peer groups reflects a need to identify oneself with significant others and can occur through the purchase and use of particular products or brands (Bearden, Netemeyer, and Teel 1989). This effect, however, has been observed mainly for conspicuous goods, such as public luxuries (Bachmann et al. 1993). Research also shows that the communication between parents and children decreases with age, and increases between children and their peers (Moschis, Moore, and Smith 1984). It was also observed that adolescents still tend to rely on parents' competency for products associated with higher perceived risks (e.g. price or performance), whereas peers act as sources of information for products that have social acceptability importance (Moschis, Moore, and Smith 1984).

Extant literature suggests that the frequency of general consumer communication amongst adolescents is associated with higher social motivation for consumption and more materialistic values (Moschis and Churchill 1978). The frequency of interaction with peers has also been found to be positively associated with TV watching (Moschis, Moore, and Stanley 1984) and increased reliance on peers' preferences while evaluating products (Moschis and Moore 1979a). This research, however, goes back to the early 1980s and more up-to-date insights are required about the role of peers particularly in the context of food consumption.

Magnitude of Influence of Several Socialisation Agents

Previously, only five studies have specifically looked into the effects of several socialisation agents on children's dietary behaviour. They vary substantially in the methodology used and the socialisation agents studied. In the first study, fourth graders were exposed to salty snacks advertisements and to an unfamiliar peer-model. In a peer-similar condition, the peer

suggested that salty snacks were popular amongst children, whereas in the peer-dissimilar condition, the peer pointed to foods other than snacks. The experiment has shown that children exposed to the salty snacks advertisements and the peer-model endorsing the snack, exhibited a higher preference for the advertised food (Stoneman and Brody 1981). Although this study looked into the influence of two factors, the relative impact of each agent could not be empirically estimated due to experimental design.

The second study was a survey of children aged between two to 11 years, which examined the impact of television viewing and parents' snacking on children's snacking behaviour (Bolton 1983). Using the Structural Equation Modelling, this study has shown that parents' influence accounted for 29% of variance in children's dietary behaviour, while TV watching explained only 2% of variance in the data. The third study applied the Theory of Planned Behaviour to examine the effects of peers' and parents' normative beliefs ("My [referent] would approve if I ate healthily/of my being physically active" and "my [referent] is a healthy eater") on adolescents' attitudes about eating ("help me control my weight," "give me more energy," "help me feel good about myself," etc.) and physical activity ("help me be fit/in shape," "help me control my weight," "help me be physically strong," etc.). The study showed that peers' beliefs exerted a much stronger influence on attitudes than parents, both amongst boys and girls (Baker, Little, and Brownell 2003).

Another study examined the impact of seven motivational factors on food preferences of children and adolescents. The predictors included foods' healthiness, parents serving this food, peers' consumption of similar foods, price, accessibility, taste, and television advertising. Using a stepwise regression, the authors demonstrated that taste represented by far the strongest motivational factor predicting food preference, followed by television advertising, peers' consumption, parents serving it, accessibility, and foods' healthiness (Norton, Falciglia, and Ricketts 2000). This study, however, relied on a small sample consisting of 35 respondents with a diverse age range between nine to 18 years and the reliability of the results is questionable.

Finally, in the last study, parents of children aged between four to 12 years were surveyed about their children's consumption of different advertised foods and their exposure to food advertising, measured as a combination of children's television viewing and advertising broadcast data from Nielsen (Buijzen et al. 2008). All the analysis was carried out using

hierarchical regressions which showed that socio-demographic variables (children's age and family income) and food advertising accounted for different amounts of variance in children's consumption of advertised foods and energy-dense drinks. Amongst all variables, children's age and family income explained more variance in the dependent variables as compared to the exposure to food advertising (see Buijzen et al. 2008).

The empirical studies looking at the magnitude of influence of external agents have recently been assessed and the influence of food advertising on children's food consumption and health status has been evaluated as a modest, but not as a significant independent determinant (Cairns et al. 2013). Not a single reviewed article, however, examined the relative influence of food advertising controlling for the influence of parents, food advertising, and peers. While the debate about the influence of food advertising on children relative to other factors remains essential for the policy-making, the extant literature offers limited insights about the influence of each socialisation agent relative to the internal, child-related factors, such as understanding of the intent in advertising, nutritional knowledge, and attitudes about foods. The next section discusses empirical findings about children's advertising literacy.

3.3.2. Children's Understanding of Advertising (Advertising Literacy)

Two concepts exist in the marketing literature referring to a similar cognitive process amongst the consumers. The first concept is persuasion knowledge which designates a set of interrelated beliefs about persuasion, causes and effects, and the extent to which individuals can control their responses to persuasive attempts (Friestad and Wright 1994).

The second concept, advertising literacy, was introduced by Young (2003) and refers to children's ability to acquire and utilise an understanding about advertising and an ability to understand advertiser's point of view. Even though both concepts entail higher cognitions amongst consumers in relation to persuasive intent in a promotion action, this study employs the second concept as an operational definition of children's ability to critically process advertising, because it has been previously consistently used in the childhood obesity literature (see Livingstone and Helsper 2004; Livingstone and Helsper 2006; Oates, Blades, and Gunter 2001; Rozendaal, Buijzen, and Valkenburg 2011; Young 2003).

The short- and long-term effects of food advertising on children and the unfairness of persuasive tactics have been discussed in the literature for a long time (Martin 1997), shaping the agenda for social debate worldwide (Rozendaal et al. 2009). Children's ability to

understand intent in advertising has remained central in this debate (Martin 1997). Generally, it is assumed that older children are more resistant to food advertising because they have passed a certain age threshold and hence are equipped with necessary skills to grasp bias in advertising (Seiders and Petty 2007). This assumption extends from the belief that knowledge about advertising serves as a filter during the exposure making children less susceptible to advertising (Rozendaal et al. 2009). Although the research about children's comprehension of advertising started more than 30 years ago, the empirical findings provide a less than clear picture of children's application of their advertising literacy in consumer space.

Overall, the literature suggests that before children can understand the intent in advertisements, they first need to distinguish them from other forms of mass media content, such as programs (Robertson and Rossiter 1974). Because scholars have aimed to determine the age when children start understanding the intent in advertisements, past research has predominantly concentrated on age differences in comprehension and has largely relied on Piaget's work (1952). A vast amount of literature has been accumulated about children's incremental ability to attribute selling intent to advertisements as a function of age (see Carter, Patterson, Donovan, Ewing, and Roberts 2011; Macklin 1987; Martin 1997; Oates et al. 2001; Owen, Lewis, Auty, and Buijzen 2009; Robertson and Rossiter 1974; Rozendaal et al. 2011; Ward 1972; Ward, Reale, and Levinson 1972). An understanding of reasons why advertisements are shown also becomes more sophisticated with age (i.e., "to make people buy this/to sell the product") (Kelly 1974) and corresponds to less credence in claims made in advertisements (D'Alessio et al. 2009).

Currently, a number of reviews concur that between four to five years children cannot distinguish advertisements from programs and perceive both as a source of information or a form of entertainment (Hastings et al. 2003; John 1999a; Livingstone and Helsper 2004; Young 2003). This ability develops between four to seven years. An ability to grasp the persuasive intent emerges around eight years, although it fully develops only after 11 to 12 years (Livingstone and Helsper 2004). The empirical literature also suggests that the above-mentioned skills are linked in a hierarchical manner (Bijmolt, Claasen, and Bruss 1998), where children who cannot identify intent in advertisements also fail to distinguish them from programs (see Robertson and Rossiter 1974).

The literature distinguishes between two intents that children need to recognise in advertisements. The selling intent refers to an understanding of commercial promotion of a product through presentation of product's features. In contrast, the persuasive intent reflects an understanding of the advertiser's attempt to increase products' appeal specifically to a child (Roberts 1983). Although selling and persuasive intents have been used interchangeably, it is the understanding of the persuasive intent that is expected to equip children with appropriate cognitive defences against advertising (Carter et al. 2011). A recent study which investigated this issue suggests that the understanding of selling intent emerges in children between seven to eight years, whereas the understanding of persuasive intent continues to develop until 11 or 12 years (Carter et al. 2011). Given this distinction, the inclusion of both selling and persuasive intents in research represents a more sophisticated tool for the assessment of children's vulnerability to food advertising.

Although more is known about the age at which children start distinguishing programs from advertisements (Livingstone and Helsper 2004) or start grasping commercial intent in advertising (Carter et al. 2011; Martin 1997), children's advertising literacy and its link to dietary behaviour and their attitudes has received less attention. There have been only few studies which have looked into children's application of such knowledge and they offer rather mixed results. Some studies have demonstrated that children who understand persuasive intent in advertisements exhibit lower preferences for promoted products or tend to like advertisements less (Robertson and Rossiter 1974; Rossiter and Robertson 1974). Others do not provide empirical support for such an effect (Mallinckrodt and Mizerski 2007; Ross et al. 1984). In one case, the mitigating effect of advertising literacy on children's desire for frequently advertised food was observed amongst older children, while a reverse effect was reported amongst younger children (Rozendaal et al. 2009).

To date there has been little agreement about the role of children's advertising literacy in protecting children against food advertising and current empirical evidence remains insufficient to conclude whether it can reduce the influence of food advertising (IOM 2006). John (1999a) suggests that children's knowledge about advertising might not be sufficient to reduce children's desire for a snack or a toy. It was also proposed that children of all ages can be influenced by advertising, but that the strength of this effect will depend on their levels of advertising literacy (Livingstone and Helsper 2006). While previously sufficient training has shown to reduce children's susceptibility to tobacco and alcohol advertising (Austin and

Johnson 1997; Primack, Gold, Land, and Fine 2006), similar evidence in relation to food advertising is not available (Harris et al. 2009). The increasing rates of childhood obesity and the use of alternative promotion channels have increased scholars' interest in children's advertising literacy (McAlister and Cornwell 2009), calling for more research about the link between children's advertising literacy, dietary behaviour, and attitudes.

3.3.3. Attitudes about Food

Taste, fun, health, and social appeal are extensively used to advertise foods to children (Folta, Goldberg, Economos, Bell, and Meltzer 2006; Hastings et al. 2003; Lewis and Hill 1998) in order to induce favourable food brand evaluations. Yet, little research has been dedicated to the role of these attitudes in influencing children's dietary behaviour, limiting our knowledge about the influence of food advertising on children. The importance of the inclusion of children's attitudinal responses related to fantasy, fun, and social appeal into social marketing and childhood obesity research has been already emphasised in the literature (Rozenaal et al. 2009). While the effect of these attributes as a composite brand attitude on children's dietary behaviour has not yet been assessed, there is some empirical evidence about the influence of separate attitudinal components. For example, taste has been consistently reported in the literature as an important factor influencing children's dietary behaviour (Baxter et al. 1999; Jones and Kervin 2010; Neumark-Sztainer, Story, Perry, and Casey 1999). One experimental study with 47 children aged between five and 12 years has shown that 60% of children nominated taste as a very important factor while making a snack selection in contrast to only 10.6% of children who rated it as less important. The majority of participants also claimed that it is very important (57.4%) or important (29.8%) for a snack to be healthy or fun (40.4% - "very important" and 23.4% - "important") (Jones and Kervin 2010). In another study, taste was rated as the most important factor while making a vending snack choice amongst adolescents, which together with other beliefs, such as price, health, weight control, hunger level, and friends' snack purchases (aggregated measure) was positively associated with the future snack choice (Baxter et al. 1999).

As for other product attributes mentioned in the literature, there is some evidence suggesting that in comparison to boys, girls are more likely to state that it is important for a snack to be healthy (Jones and Kervin 2010). Although children rated food taste and healthiness as important for their snack food choice, most of them still opted for unhealthy foods when they were given the chance. Additionally, no statistically significant relationship has been

observed in this study between the importance of taste, fun, healthiness and children’s choices of healthy and unhealthy foods (Jones and Kervin 2010). To conclude, the extant literature provides rather limited knowledge about the influence of attitudes on children’s behavioural outcomes. While the influence of children’s advertising literacy continues to be debated amongst the scholars, the study of children’s attitudes as suggested by Rozendaal et al. (2009) could potentially explain why advertising literacy might not always protect children from food advertising.

3.4. Summary

The purpose of this section is to elaborate in more detail on the extant knowledge and explain how insights from the public health and marketing disciplines can provide a more in-depth understanding of children’s food socialisation. Four observations emerged from the literature review, which were considered important for the development of the conceptual framework for this study. First, although public health and marketing disciplines have a number of overlapping themes, they have remained isolated in their research about children’s food preferences/consumption. The review has shown that the external factors considered in the public health discipline are not only similar to the socialisation agents highlighted in the marketing literature, but they also exert similar modelling influences on children. Children’s learning about foods, as explained in the public health literature, and knowledge about consumer skills, as shown in marketing research, start inside the family. Therefore, if evidence about parents’ nutritional knowledge and important socio-demographic determinants from the public health discipline are combined with parent-child communication and social norms from the marketing discipline, parental influence on children can be examined more comprehensively (see Figure 11).

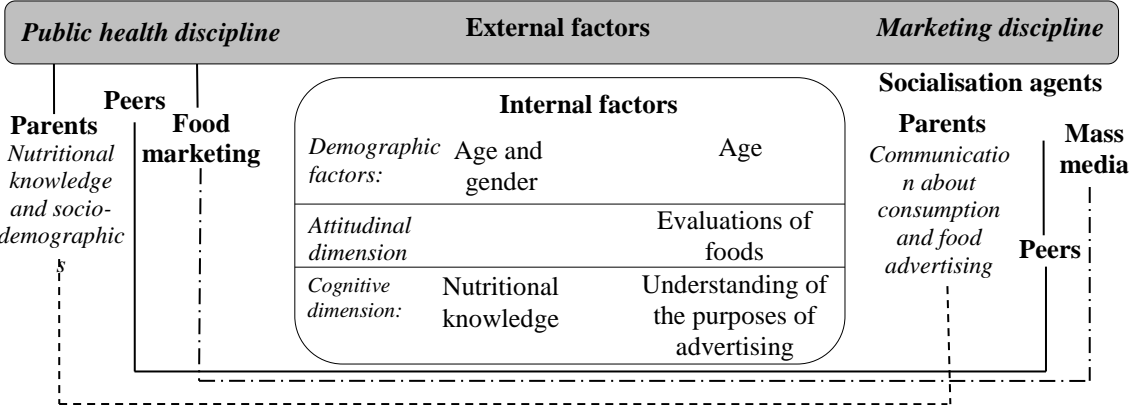


Figure 11: Research about Children: Public Health and Marketing Disciplines Compared

Likewise, food advertising, so frequently discussed in the public health literature (Lewis and Hill 1998; OfCom 2004; Rich and Bar-on 2001; WHO 2006a; WHO/FAO 2003) represents a socialisation agent in the marketing literature (Ward 1974). The SCT applied in both disciplines thus suggest that values and behavioural norms can be internalised through vicarious learning. Next, in the public health discipline, the influence of peers is seen to occur through observational learning (Birch 1980). In contrast, the marketing discipline concentrates on direct communication amongst peers and discussion of products (Moschis and Churchill 1978). Hence, building upon the key findings from the two disciplines and integrating the three external socialisation agents into one comprehensive conceptual framework represents a more strategic approach which can provide original contributions to the childhood obesity and social marketing.

Second, the importance of internal factors related directly to children is highlighted in both the public health and marketing disciplines (Figure 11). These include children's age, gender, and nutritional knowledge in the public health, and age (linked to the development of advertising literacy) together with attitudinal evaluations of products in the marketing literature (food's taste, fun, or social appeal). While it would be expected that children's nutritional knowledge and understanding of the purposes of advertising could represent viable cognitive defence against food advertising, the impact of these factors has not been examined simultaneously. As for nutritional knowledge, different research instruments have yielded mixed results (Rasnake et al. 2005), not allowing to conclude with certainty that such knowledge could improve children's dietary behaviour. Additionally, because nutritional knowledge has been studied separately from children's advertising literacy, the extant evidence is insufficient to determine if these two knowledge forms can lead to more healthy dietary behaviour in children. Experiments have given little account of children's advertising literacy, expecting children to be unconditionally influenced by food advertising. There are some grounds to assume that children's advertising literacy and nutritional knowledge are critical for the social marketing, but the counteractive effect of attitudes (food evaluations) suggested in the literature (Rozendaal et al. 2009) still remains under-researched.

Third, extensive evidence has been accumulated about the factors influencing children's food consumption/preferences in the public health and marketing disciplines as shown in Appendices 4 and 5. Thus, only the factors which have not yet been studied, or those that have yielded mixed empirical findings need to be considered in this study. Finally, the

reliance on bi-directional relationships (Robinson et al. 2001; YMA 2006) which look at a limited number of socialisation agents at a time (Gable and Lutz 2000) has been widespread (Appendix 4). Such research methodology did not allow the identification of the strongest predictors of children's dietary behaviour and currently limits our knowledge about the magnitude of influence of each socialisation agent. Bi-directional relationships are also not suitable for the estimation of the indirect effects of food advertising, parents, advertising literacy, and nutritional knowledge on children's diet and weight. Hence, more complex relationships need to be hypothesised and modelled empirically. The literature review additionally highlights the lack of relevant research in Australia, both experimental and cross-sectional (see Appendices 4 and 5).

This chapter has explained in detail the theories developed in the marketing discipline to study children's consumer development. It has also reviewed the extant empirical evidence about the role of children's advertising literacy and most importantly, it has shown how insights from the marketing and public health disciplines can be combined to provide a more strategic examination of the factors influencing children's dietary behaviour and food consumer socialisation. Having conducted a thorough literature review, the next chapter outlines extant gaps and presents the conceptual framework developed for this study.

Chapter Four: Development of Conceptual Framework and Research Design

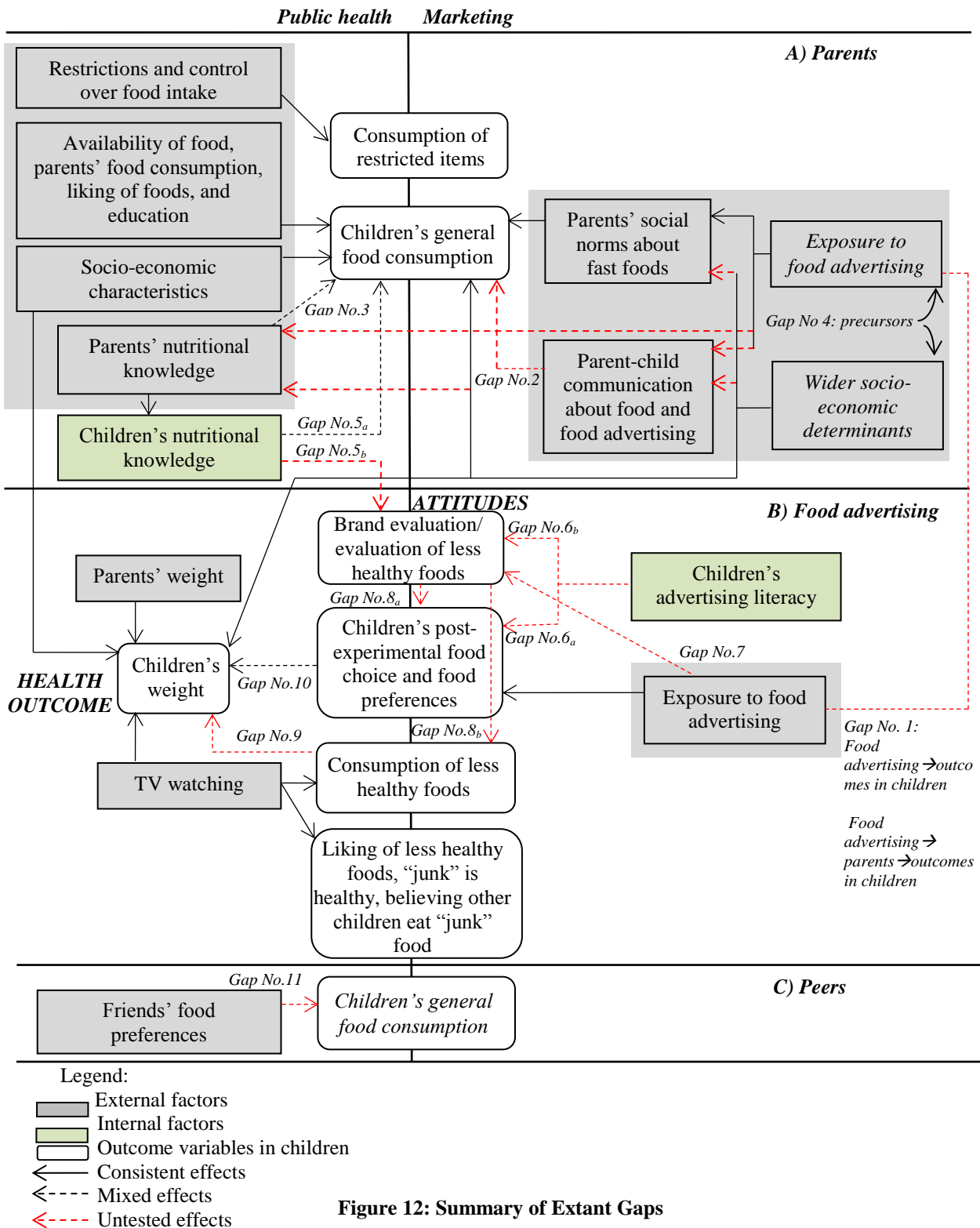
4.1. Introduction

This chapter pulls together the gaps from the public health and marketing disciplines and incorporates them into one comprehensive conceptual framework, contributing to a deeper understanding of the drivers behind children's dietary behaviour leading to obesity. In the current study, gaps were defined as relationships that either have yielded mixed empirical findings or have not yet been examined. Altogether, 11 gaps were identified. Following the order of the literature review, the discussion starts with gaps related to parents, followed by food advertising, peers, and child-related factors. The development of the conceptual framework is accompanied by an explanation of relevant theories and the formulation of hypotheses. The chapter ends with a discussion of research methodology chosen to address extant gaps and to test the developed conceptual framework empirically.

4.2. Gaps in Extant Knowledge

The literature review has shown that household food availability, parents' liking of foods, family socio-demographic variables, and parents' own food consumption (Ambrosini et al. 2009; Cullen et al. 2001; Gable and Lutz 2000; Gibson et al. 1998; Oliveria et al. 1992; Reynolds et al. 1999; Robinson et al. 2001) exert consistent effects on children's food preferences and consumption. Similar consistent effects have been reported in relation to parenting styles, use of restrictions, and parents' control over children's food intake (Johnson 2000; Johnson and Birch 1994; Robinson et al. 2001). There is also evidence suggesting a positive association between parents' nutritional knowledge on children's knowledge of nutrients (Gibson et al. 1998) (Figure 12A). Literature review has additionally shown that parents have a potential to influence their children's fast food consumption through social norms and that the latter can be affected by exposure to food advertising (Grier, Mensinger, Huang, Kumanyika, and Nicolas 2007). Therefore, the above-mentioned factors were excluded from investigation in the current study and only gaps were further explored, which are discussed below.

First, extant literature indicates that most previous studies have concentrated on the effects of food promotion on children (Moore 2007) and to a lesser extent on parents (Grier et al. 2007). No study has estimated the influence of advertising on children while controlling



for parents' exposure (gap No. 1, Figure 12). Hence, a framework that accounts for both parents' and children's exposure to advertising facilitates a more reliable estimation of external influences on children because both children and parents are exposed to food advertising as has been noted by Grier et al. (2007). When it comes to advertising of less healthy foods, parents are generally considered to be competent gatekeepers for children (Seiders and Petty 2007), who can withstand the impact of food marketing. However,

currently there are fewer regulations for food advertising during adult television viewing times as compared to children's viewing times, which represents a common trend worldwide. Although previous work has pointed to a more subtle relationship between parents' exposure to food advertising and what children eat (Grier et al. 2007), the mediating role of parents alongside the influence of other external and internal, child-related factors have not been examined. Therefore, gap No. 1 accounts for the direct influence of food advertising on children (food advertising to children → outcomes in children) and also the indirect, mediating influence of food advertising through parents (food advertising to parents → parental factors → outcomes in children) (Figure 12).

Second, despite the emphasis on the role of communication between parents and children in the consumer socialisation literature (Moschis and Churchill 1978; Moschis and Moore 1979b), the role of the knowledge that children might learn from their parents about foods and food advertising has not been explored in the context of childhood obesity. Few studies have looked into the role of parent-child communication and have observed that parental mediation reduces the strength of the relationship between children's viewing time and food consumption (Buijzen 2009; Buijzen et al. 2008). These studies, however, have concentrated on communication about product purchases, television watching, and general advertising rather than communication about foods' qualities and explanation of the motives behind food advertisements, which represent another gap in the extant knowledge (gap No. 2 in Figure 12A).

Besides the social norms and communication about foods and food advertising, the information that children might learn from parents through their nutritional knowledge also needs a more detailed assessment (gap No. 3 in Figure 12A) because of the extant mixed evidence, which impedes our inferences about the mitigating effects of parents' cognitive knowledge in preventing childhood obesity. For example, while there seems to be a consistent link between parents' and children's nutritional knowledge (Gibson et al. 1998), the studies of the influence of parents' knowledge on their children's dietary behaviour have previously yielded mixed results (Gibson et al. 1998; Variyam et al. 1999). Also, the influence of parents' nutritional knowledge has been estimated in relation to a limited number of foods or nutrients, for example fruit/fibre (Gibson et al. 1998), fat (Gibson et al. 1998), and sodium (Zive et al. 1998).

In addition to direct parental influences outlined above, extant knowledge can benefit substantially if the external influences on children (i.e., social norms, nutritional knowledge, and parent-child communication) are assessed together with their precursors (see gap No. 4, Figure 12A). Currently, the knowledge about the background variables that affect parents' social norms, nutritional knowledge, and communication patterns with their children that act as pathways to children's dietary behaviour leading to weight gain is missing. There is some evidence showing that fast food advertising influences parents' social norms (Grier et al. 2007), but similar influences on parents' nutritional knowledge and parent-child communication practices remain under-researched. Knowledge about the influence of parents' educational attainment and socio-economic status on parent-child communication and social norms also remains scarce.

Next, the literature reports that children belonging to low socio-economic background have higher weight (Booth et al. 2006; Burke et al. 2001; O'Dea 2003, 2008; Wake, Hardy et al. 2007) or consume less healthy foods more often (Ambrosini et al. 2009; Kopelman et al. 2007; Larson et al. 2008; Northstone and Emmett 2005) (Figure 12A). Yet, there is little explanation of why this effect is consistent and whether parents' social norms, knowledge, and attitudes serve as a pathway to children's health outcomes. The research about the influence of socio-economic characteristics on parents in addition to food advertising will substantially contribute to our knowledge about parents' role in childhood obesity. Such knowledge will identify which parents are more vulnerable to food advertising and how their susceptibility affects behavioural and health outcomes in their children. It will show which parents exert unhealthy socialisation influences and how food advertising influences parents' cognitive (nutritional knowledge), attitudinal (social norms), and communication outcomes before they are transferred into behavioural and health outcomes in their children (indirect effects).

When it comes to the influence of food advertising on children, the literature highlights a consistent association between TV watching and children's consumption of less healthy foods (Utter et al. 2006; Wiecha et al. 2006; Woodward et al. 1997), liking of soft drinks, chocolate and fast food, perceptions of foods' social acceptability amongst peers, and beliefs that "junk" food is healthy (Dixon et al. 2007) (Figure 12B). As mentioned above, the time spent watching TV represents a poor proxy for the estimation of the influence of food advertising on children (IOM 2006) and was avoided in the current study.

With the exception of a few studies (Heslop and Ryans 1980; Resnik and Stern 1977), the experimental literature has detected an influence of food advertising on children's post-experimental food preferences (Borzekowski and Robinson 2001; Gorn and Goldberg 1982; Halford, Boyland, Hughes, Oliveira et al. 2007). The above-mentioned studies, however, have not assessed whether children's own nutritional knowledge can mitigate the effects of promotion on dietary behaviour while controlling for the influence of other external agents. Inconclusive evidence also exists in relation to children's advertising literacy – more is known about the age at which understanding of advertising's intent emerges, rather than the application of such knowledge by children. Studies which have investigated the connection between children's understanding of advertising and dietary behaviour offer mixed evidence (Mallinckrodt and Mizerski 2007; Robertson and Rossiter 1974; Ross et al. 1984; Rossiter and Robertson 1974; Rozendaal et al. 2009). As a result, the extant knowledge is insufficient to conclusively confirm that nutritional knowledge and advertising literacy could counteract the influence of food advertising both on attitudinal (brand evaluations and evaluations of less healthy foods) (gaps No. 5_b and No. 6_b, Figure 12B) and behavioural levels (food preferences and food consumption) (gaps No. 5_a and No. 6_a, Figure 12B).

The extant literature addresses only separate effects of food advertising on children (i.e., TV watching → attitudes, TV watching → food preferences/consumption, and TV watching → weight). Yet, the influences of foods marketing are multiple (Hastings et al. 2003) and the use of fun, novelty, healthiness, and social appeal in food advertisements targeting children has been extensively reported in the literature (HJKF 2007). So far, the link between attitudes and behavioural outcomes (attitudes → dietary behaviour) is still missing (Hastings et al. 2003) and this has been nominated as another gap for the current study (gap No. 7, Figure 12B). Yet, the link between brand evaluations and behavioural outcomes alone is insufficient to confirm a pathway from marketing to food preferences or consumption, this gap (indirect pathway) was also examined in the current study (i.e., food advertising → attitudes → dietary behaviour; gaps No. 8_a and 8_b, Figure 12) (Hastings et al. 2003).

The influences of food advertising have previously been studied in relation to two separate variables – food preferences or food consumption (behavioural outcomes) and weight (health diet-related outcome) (see Appendix 4). The influence of parents' weight on children's weight has been frequently reported in the literature (Gibson et al. 2007; Magarey et al. 2003; Wang et al. 2002) similar to the influence of family socio-demographic variables discussed above

(Dennison et al. 2002; Robinson et al. 2001; Wake, Hardy et al. 2007) (Figure 12). The extant literature, however, suggests only an association between children's weight and TV watching (Dennison et al. 2002; Dietz and Gortmaker 1985; Eisenmann et al. 2002; Gable and Lutz 2000; Jackson et al. 2009; Jago et al. 2005; Kaur et al. 2003; O'Brien et al. 2007; Tremblay and Willms 2003; Viner and Cole 2005; Zimmerman and Bell 2010) and the evidence confirming the link between the consumption of less healthy foods and children's weight is still tenuous (Jolly 2011) (gap No. 9, Figure 12B). Experimental studies with children provide mixed evidence about the relationship between children's post-experimental food preferences/consumption and weight (Appendix 5) (gap No. 10, Figure 12B) and the empirical evidence about such link applies only to adult population (Duffey, Gordon-Larsen, Jacobs, Williams, and Popkin 2007; French, Harnack, and Jeffery 2000; Harris, French, Jeffery, McGovern, and Wing 1994; Jeffery, Baxter, McGuire, and Linde 2006; Jeffery and French 1999; Pereira et al. 2005). The absence of such conclusive evidence in the case of children has been frequently used as an argument against a ban of "junk" food advertising to younger consumers (Jolly 2011). Should the influence of food advertising as a precursor to children's diet-related health outcomes be proven, this relationship needs to occur through food consumption (food advertising → attitudes → consumption → weight) (IOM 2006) and should be also assessed controlling for the influence of other important external factors.

Finally, some similarities have already been observed between children and their friends in terms of food consumption (Grimm et al. 2004; Hill et al. 1998). Yet most research about peer norms and resemblance in food consumption has been conducted with adolescents and the influence of peers needs to be examined amongst younger children (gap No. 11, Figure 12C). Most importantly, as was the case with the influence of parents and food advertising, the relative influence of peers needs to be assessed controlling for the effects of other external and internal factors to understand the magnitude of their effect on children and their role in the childhood obesity.

Based on the extant gaps in our knowledge, two research questions were formulated:

RQ₁: How do internal drivers, such as brand evaluation/evaluation of less healthy foods (attitudinal), advertising literacy, and nutritional knowledge (cognitive) interact with external drivers, such as, food advertising, parents, and peers in influencing children's food preferences and food consumption (dietary behaviour)?

RQ₂: How do internal and external factors influence children's body weight (health outcome)?

As shown in the research questions, this study examines a wider and more relevant range of influential factors, which is in agreement with the recommendations outlined in the childhood obesity and social marketing literatures (Livingstone 2004). This study sets out to examine in one comprehensive analysis the strength of each external socialisation agent affecting children's dietary behaviour and to estimate whether food advertising exerts a small influence on children as currently claimed by marketing professionals (WFA 2010). Having explained the extant gaps in previous research, the next section explains how they were incorporated into one comprehensive conceptual framework and which theories were used to provide a more thorough assessment of factors influencing children's food preferences and weight. The conceptual framework is discussed in the next section together with theories used during its development.

4.3. Conceptual Framework Development and Relevant Theories

Currently, there is no comprehensive, parsimonious conceptual framework addressing the factors influencing children's dietary behaviour leading to obesity, which impedes research in social marketing and childhood obesity. The purpose of this section is to introduce a new conceptual framework which builds upon previous theoretical (Livingstone and Helsper 2004) and empirical knowledge accumulated in the public health and marketing disciplines. Several factors guided the development of the framework. First, the relationships mapped out in the framework were supported by appropriate social and psychological theories. Second, the influence of food advertising was embedded in a more comprehensive array of factors (OfCom 2004), highlighting the multi-factoral causes of childhood obesity (Carter 2006; Davison and Birch 2001; Gable and Lutz 2000; Hoek and Gendall 2006; Livingstone 2006; Nestle 2002; OfCom 2004; Pettigrew and Roberts 2007; Story et al. 2002; Young et al. 1996). Finally, the framework concentrated on gaps in the extant knowledge only in order to provide original contributions.

Three theories are relevant to the design of the new conceptual framework. The first one is Social Cognitive Theory (SCT), which has been used both in the public health (Fitzgerald et al. 2010) and marketing disciplines (Moschis and Churchill 1978). In the public health, it has been applied to the study of children's food preferences (Fitzgerald et al. 2010; Story et al.

2002), while in the marketing literature it has emphasized the importance of socialisation agents that transfer social norms and attitudes to children during their consumer socialisation (Moschis and Churchill 1978). The tenet of the SCT remains the same in both disciplines and revolves around the importance of external factors for children's learning of social behaviour. As shown in the literature review, several agents influence children's food preferences/consumption in agreement with the SCT. Second, the EST (Davison and Birch 2001) highlights the interactions between external environmental levels, leading to a more systemic approach to children's food consumer socialisation. Finally, consistent with Hota and McGuiggan (2006), one can also infer that a number of external socialisation agents influence children's learning simultaneously, albeit with varying degrees, which was integrated in the new conceptual framework.

While the SCT addresses the external factors influencing children, the internal factors in a form of children's advertising literacy and their nutritional knowledge also remain crucial for the new framework. The role of a general understanding of advertising amongst consumers is explained by the PKM (Friestad and Wright 1994), which suggests that individuals develop knowledge about advertising from childhood to early adulthood through cognitive maturation, increased information processing, and relevant social experience. As persuasion knowledge develops, it helps consumers to recognise, analyse, interpret, evaluate, and remember persuasion attempts, and also to perform coping tactics when necessary (Friestad and Wright 1994). Using the PKM one can assume that as children grow up they observe more persuasive tactics and accumulate more knowledge about food advertising, which then can be used to detect selling and persuasive intents in advertisements. It is important to reiterate that while the PKM concentrates on the level of knowledge rather than age, offering more insights than the previously used Piaget's age classification.

Although, there is no theoretical framework in the public health discipline that nominates nutritional knowledge as a potential cognitive defence capable of mitigating the influence of food advertising, older children generally tend to be more health conscious than younger children (Warwick et al. 1999). Because both nutritional knowledge and advertising literacy suggest higher cognitive maturation, nutritional knowledge can be also expected to exert a similar mitigating influence. Altogether, the inclusion of these two cognitive aspects lead to a more comprehensive assessment of children's vulnerability to food advertising.

After putting the key propositions from relevant theories together with extant gaps in our knowledge, a new conceptual framework has been developed which is shown in Figure 13. The framework concentrates on factors influencing children's food preferences/ consumption leading to the development of obesity. The framework includes several external socialisation agents in addition to children's own cognitive development, highlighting that children's food consumer socialisation represents a dynamic process. The simultaneous influences of socialisation agents incorporated in the framework correspond to three types of learning – parental modelling, vicarious modelling, and peer modelling, allowing the assessment of the influence of food promotion on children alongside the impact of other agents, all of which are discussed in more detail below.

To map out the causal pathways coming from parents, the current study relies on the empirical work by Grier et al. (2007) which draws attention to parents' exposure to food advertising and the influence of the latter on parents' normative beliefs (social norms about fast foods), highlighting the indirect influence of food advertising on children through parents (Grier et al. 2007). A similar influence was incorporated into the conceptual framework where it was hypothesised that parents who are frequently exposed to fast food advertising would believe that fast foods are frequently used by other people¹ (social norms) (attitudinal dimension as shown in Figure 13). The effects of food advertising parents' nutritional knowledge and communication patterns with children have not been examined empirically. Next, the SCT alerts that television can serve as a source of information and learning amongst individuals (Bandura 2002). When an individual is frequently exposed to advertising for unhealthy products, she or he can internalise misleading information about nutritional value of advertised foods or parents' perceptions of what constitutes a healthy meal, resulting in a distorted nutritional knowledge (cognitive dimension) and less frequent communication about food and advertising with their children (behavioural dimension) (Figure 13).

H₁: More frequent exposure to fast food advertising will lead to (a) more positive social norms about fast foods (attitudinal dimension), (b) lower nutritional knowledge (cognitive dimension), and (c) less frequent communication about food and food advertising between parents and children.

¹ Previously, Grier et al. (2007) have observed that parents' exposure to promotions in local fast food restaurants is related to more positive social norms and attitudes about fast foods. The latter, however, did not transfer into statistically significant influences on children. Hence, attitudes about fast foods were not considered in the current study.

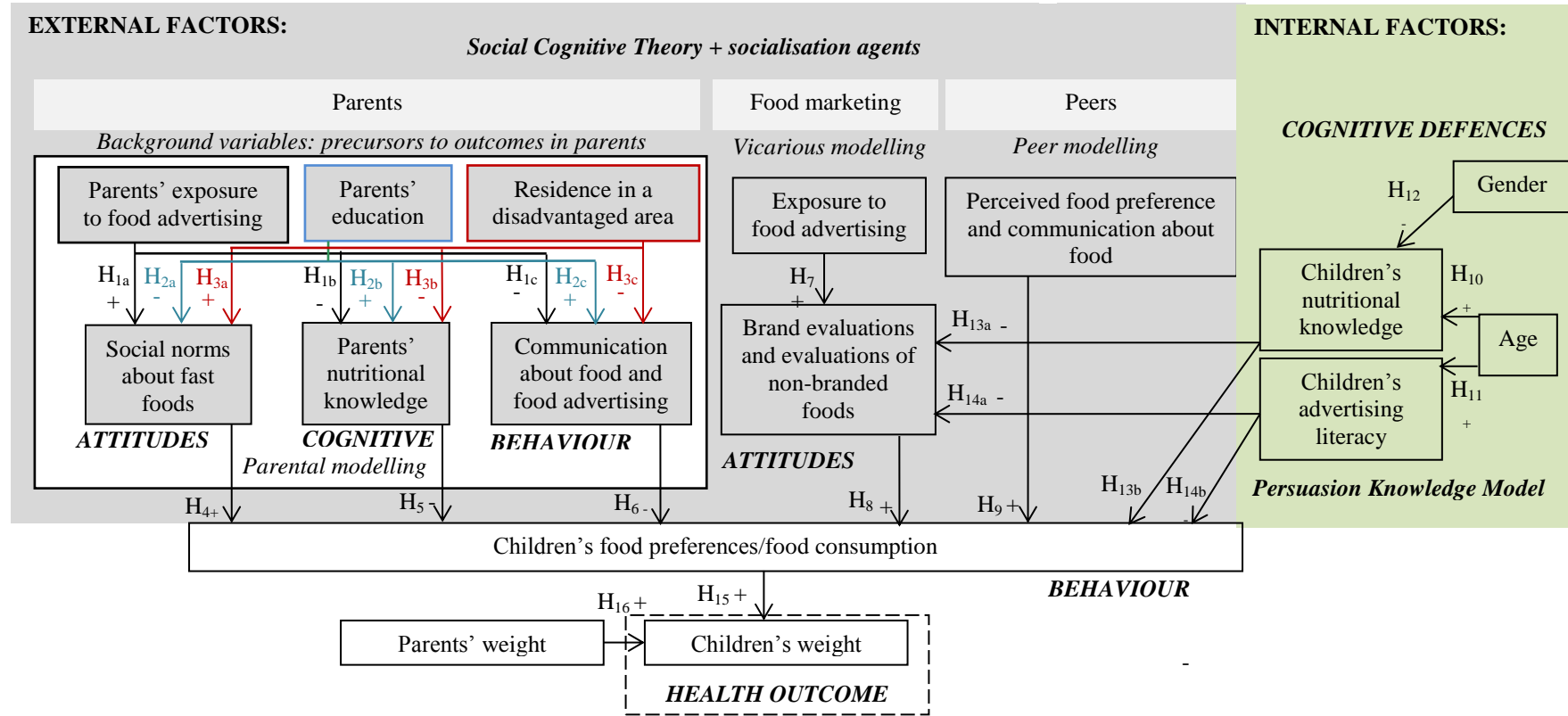


Figure 13: Conceptual Framework of Factors Influencing Children's Food Consumption/Preferences Leading to Development of Obesity

In addition to food advertising, which has been nominated as a precursor to attitudinal, cognitive, and behavioural outcomes in parents, the conceptual framework includes a number of socio-demographic predictors, conforming with Grier's et al. (2007) approach. In contrast to Grier et al. (2007), ethnicity as the main socio-demographic indicator was avoided due to the expected sample homogeneity in the current study. Instead, the emphasis was given to the socio-demographic predictors that can significantly change outcomes in parents. For example, education has previously been shown to be related to parents' higher nutritional knowledge in the USA (Variyam et al. 1999), healthier eating patterns in Australia (Ambrosini et al. 2009), higher compliance with dietary recommendations in Belgium (Vereecken and Maes 2010), and consumption of nutrients amongst children in the USA (Variyam et al. 1999). Therefore, a similar effect was expected in the current study. Although there is no evidence to suggest that individuals with higher education hold less positive normative beliefs about less healthy foods or communicate more often with their children about foods and food advertising, such effects are still expected from more knowledgeable parents.

H₂: Parents with higher educational attainment will demonstrate (a) less favourable social norms about fast foods, (b) higher nutritional knowledge, and (c) will communicate more frequently with their children about food and food advertising.

Next, to account for the influence of external factors on parents, a family's residence in a more advantageous socio-economic area was included as a proxy for wider social influences (Figure 13). Earlier studies have shown that higher socio-economic status is inversely related to children's consumption of fried food, soft drinks (Kopelman et al. 2007; Northstone and Emmett 2005) and adolescents' consumption of fast foods (Ambrosini et al. 2009; Larson et al. 2008). This study sets out to examine whether the area of families' residence influences children's consumption through parents' social norms about fast foods, nutritional knowledge, and communication. Residing in an area where most people hold lower occupational and educational attainment should reinforce beliefs about the social acceptability of fast foods consumption by other people, leading to a formation of more positive normative beliefs about such foods. Residing in a disadvantaged area is also expected to correspond to lower nutritional knowledge and less frequent parental communication with children about food and food advertising (Figure 13).

H₃: Parents residing in an area characterized by higher occupational and educational attainment will demonstrate (a) less positive social norms about fast foods, (b) higher nutritional knowledge, and (c) more frequent communication with their children about food and food advertising.

The factors discussed above refer to the background variables influencing outcomes in parents. As shown in Figure 13, the framework also proposes that once parents' normative beliefs about consumption of fast foods (attitudinal dimension) have been affected by food advertising, they, in turn, lead to more frequent consumption of, or higher preferences for less healthy foods amongst their children (behavioural dimension), as suggested by Grier et al. (2007).

H₄: More positive social norms about fast foods held by parents will be related to children's higher preferences for, and more frequent consumption of, less healthy foods (behavioural outcomes).

The conceptual framework postulates that parents with higher nutritional knowledge will have children who will exhibit healthier dietary behaviour, which is supported by Gibson's et al. (1998) study of children's fruit and fibre intake and Vereecken's and Maes' (2010) study of children's adherence to dietary guidelines.

H₅: Parent's nutritional knowledge will be inversely related to their children's preferences for, or higher consumption of, less healthy foods (behavioural outcomes).

Another factor incorporated in the framework is parent-child communication, which was selected due to its highlighted overall importance for children's learning of consumer skills (Carlson, Laczniak, and Walsh 2001; Moschis and Churchill 1978) and the lack of empirical evidence about the role of food and food advertising communication on children's dietary behaviour (see Buijzen 2009; Buijzen et al. 2008). Marketing literature suggests that the frequency of parent-child communication is positively related to adolescents' knowledge about consumer legislation, marketing, and pricing (Moschis and Churchill 1978). Based on this extant knowledge, a similar positive effect is expected to occur in the case of children's food consumer socialisation. It is hypothesised that parents' influence can be measured

through their direct interaction about nutrition and food advertising with their children, where the latter might form the basis of children's cognitive defences against food advertising.

H₆: More frequent communication about food and food advertising between parents and their children will result in less frequent consumption of less healthy foods and lower preference for advertised foods (behavioural outcomes) amongst children.

Another external influence on children in the proposed framework occurs through the vicarious learning, which manifests itself in a form of exposure to food advertising. In contrast to previous research, where exposure has been directly linked to behavioural outcomes (food preference or consumption), the framework postulates that food advertising first influences children's attitudes (brand evaluations or evaluations of less healthy foods) and then transfers into behavioural outcomes (food preferences and food consumption). The link between exposure and favourable attitude formation allows assessing the effects of attitudes on children's dietary behaviour in more depth, which conforms with the marketing theories discussed in Chapter Three. Such an approach captures the indirect, mediating pathway to food consumption. The inclusion of brand evaluation and evaluation of non-branded foods would also reflect the themes of entertainment and taste appeals frequently used to advertise foods children (Folta et al. 2006; Hastings et al. 2003; Lewis and Hill 1998).

H₇: Exposure to food advertising will positively influence children's brand evaluations and evaluations of less healthy foods (attitudinal dimension).

H₈: More positive brand evaluations and evaluations of less healthy foods (attitudinal dimension) will be related to higher preferences for, and more frequent consumption of, less healthy foods by children (behavioural outcome).

The last external factor influencing children incorporated in the framework is peers. The literature suggests that child-peer communication represents one of the channels through which knowledge and social values are transferred (Moschis and Churchill 1978). Hence, communication with peers (Bachmann et al. 1993) about foods was incorporated in the framework. In addition to communication with peers about food and food advertising, peers were hypothesised to influence children's food preferences through perceptions about friends' food preferences as has previously been done in the public health literature (Williams et al.

1993). Although peers are also exposed to food marketing, their exposure was not assessed empirically in the current study due to higher sampling demands.

H₉: Friends' less healthy food choices and more frequent communication with peers about less healthy foods will be positively related to children's preferences for, and consumption of, less healthy foods (behavioural outcome).

Having described the influences of external socialisation agents, children's advertising literacy and their nutritional knowledge were also integrated together for the first time in the conceptual framework as two important cognitive defences mitigating the influence of food advertising (Figure 13). Previously, children's knowledge about foods (Contento 1981; Oates et al. 2001; Wiman and Newman 1989; Zeinstra et al. 2007) and understanding of advertisements' intent (Carter et al. 2011; Macklin 1987; Martin 1997; Oates et al. 2001; Owen et al. 2009; Robertson and Rossiter 1974; Rozendaal et al. 2011; Ward 1972; Ward et al. 1972) have been linked to age. While advertising literacy and nutritional knowledge were expected to increase as a function of age, the current study emphasised children's actual knowledge as a reflection of consumer maturation as shown in Figure 13. Hence, age was used only as a control variable and Piaget's (1952) developmental stages were avoided as being too narrow (Calder et al. 1975; Chestnut 1979; Macklin 1987) in the current study.

H₁₀: Children's nutritional knowledge will increase with age.

H₁₁: Children's understanding of persuasive and selling intents in food advertisements (advertising literacy) will increase with age.

Based on the extant literature (see Ambrosini et al. 2009; Cooke and Wardle 2005; Kopelman et al. 2007), gender differences are also expected in relation to children's nutritional knowledge and were mapped out in the framework to provide a more comprehensive account of children's food consumer socialisation.

H₁₂: Girls will exhibit higher nutritional knowledge than boys.

As children become older and accumulate more knowledge about persuasive advertising as postulated by the PKM (Friestad and Wright 1994), they can comprehend the intended

purpose of food advertising. This ability is expected to mitigate the influence of food promotion through less positive attitudes about advertised less healthy foods and also result in lower preferences for, and consumption of, such foods (Figure 13).

H₁₃: Greater nutritional knowledge will be inversely related to (a) brand evaluation and evaluation of less healthy foods (attitudinal dimension) and will also (b) result in lower preferences for an advertised food and less frequent general consumption of less healthy foods (behavioural outcome).

H₁₄: Children's understanding of persuasive and selling intents in food advertisements (advertising literacy) will be inversely related to (a) brand evaluation and evaluation of less healthy foods (attitudinal dimension) and will also (b) result in lower preferences for, and less frequent general consumption of, less healthy foods (behavioural outcome).

To examine how food advertising and other socialisation agents affects children's health, children's weight was included in the framework as a diet-related health outcome. Overweight and obesity generally develop when energy from consumed calories exceeds the expended calories (WHO 2006b). Although the link between the consumption of less healthy foods and weight gain has been confirmed in adult population, while formulating this hypothesis, the extant empirical evidence for adults was consulted, which has shown that consumption of beef, hot dogs, sweets (Harris et al. 1994) and eating at fast food restaurants are associated with higher weight (Duffey et al. 2007; French et al. 2000; Jeffery et al. 2006; Pereira et al. 2005) and higher total energy intake (French et al. 2001; Larson, Neumark-Sztainer, Laska, and Story 2011; Paeratakul et al. 2003). Additionally, a positive association has been observed in a longitudinal study of adolescents and young adults in relation to fast food consumption and weight gain (Niemeier et al. 2006).

Given this extant knowledge, children's food preferences and food consumption postulated in the framework refer to foods high in fat, sugar, and salt, such as fast foods, treats/lollies, and soft drinks. Fast foods are high in calories (Dumanovsky, Nonas, Huang, Silver, and Bassett 2009) and are associated with an increase over the required daily caloric intake (Paeratakul et al. 2003). Soft drinks were chosen because they form a part of regular fast food meals and individuals who consume fast foods also tend to have soft drinks more often than those who do not consume fast foods (Paeratakul et al. 2003). There is also some evidence showing that

soft drinks are more frequently consumed by overweight and obese adolescents and young adults (Perkins, Perkins, and Graig 2010). Finally, depending on the brand, treats and lollies are also high in sugar which would increase calorie intake above the required daily limit.

H₁₅: Children's preferences for, and more frequent consumption of, less healthy foods will be related to their greater weight (health outcome).

To control for family (genetic) predisposition to higher weight (Gibson et al. 2007; Magarey et al. 2003; Wang et al. 2002), parents' weight was included as a predictor of children's weight in addition to the separate influence of food preferences/consumption.

H₁₆: Parents' higher weight will be related to their children's higher weight.

Three theories from the public health and marketing disciplines were used to formulate the new conceptual framework. None of the theories compete with each other. Instead, they map out important internal and external drivers of children's dietary behaviour and their connection to obesity. While retaining the key insights from the public health and marketing disciplines, the formulated conceptual framework conforms with the literature about multi-factoral causes of childhood obesity and the interaction between external factors. The consideration of three external agents allowed conceptualising children's learning about foods as an interactive process, which happens through different channels and different forms of interaction. Each agent in the conceptual framework exerts a separate influence, allowing an empirical assessment of the magnitude of influence of the each factor.

This study included only to the direct link between parents' exposure to advertising, their social norms, and the indirect pathway from the social norms to dietary behaviour in their children postulated by Grier et al. (2007). In contrast, the framework developed in the current study is more comprehensive and estimates parental influence together with other external agents, going beyond the scope of previous studies (Grier et al. 2007). The precursors to parents' attitudinal, cognitive, and behavioural outcomes were also incorporated, providing a more comprehensive approach to the study of the parents' role in the development of childhood obesity. Importantly, the conceptual framework accounts for both parents' and children's exposure to food advertising providing a more comprehensive assessment of factors operating in the context of children's food consumption.

Also, the framework incorporates children's cognitive, attitudinal, and behavioural dimensions and by mapping out the influences of advertising literacy and nutritional knowledge alongside the external influences, it provides a more comprehensive explanation of children's food socialisation dynamics. The use of attitudes complements children's cognitive defences as it controls for the influence of both. The framework additionally tests whether children's consumer maturation has any impact on their attitudes and subsequent dietary behaviour, which is crucial for unwinding causal pathways in childhood obesity. The connection of dietary behaviour to weight represents another important contribution of the developed conceptual framework as it demonstrates how several agents indirectly contribute to the development of obesity. Finally, in contrast to previous cumbersome conceptual frameworks, this framework is also more suitable for direct empirical estimation.

4.4. Research Design

4.4.1. Target Audience

The population of interest in the current study was children aged between seven to 13 years. The above-mentioned age range was chosen because an ability to understand advertisements' intent has previously been documented only around eight years (Livingstone and Helsper 2004). Children under seven years were excluded because they lack an ability to distinguish between advertisements and programs (Livingstone and Helsper 2004), which is required for the development of an ability to understand the purpose of advertising (Robertson and Rossiter 1974). Additionally, children's parents were invited to take part in the study, allowing the collection of the required socio-demographic data and estimation of parents' influence on children. There were no age limitations for parents as long as they had children aged between seven to 12 years without any disabilities impairing them from participation in this study.

4.4.2. Mixed Methods Approach

The aim of this study was to provide original contributions to the body of knowledge which is currently dominated by descriptive studies and research that focuses on a limited number of external influences on children (for more detail see Appendix 4). Studying the simultaneous influence of several socialisation agents as proposed in the conceptual framework required unwinding complex social and psychological interactions. To overcome this challenge and provide a more detailed study of factors influencing children's food preferences/consumption,

a mixed method design was chosen which relied on both qualitative and quantitative research techniques (Creswell and Clark 2007) (Figure 14).

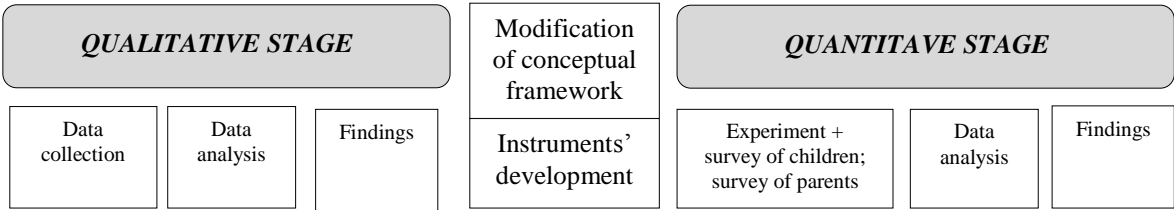


Figure 14: Research Design of this Study

The qualitative stage preceded the quantitative stage and accomplished several goals. First, it enabled the researcher to understand participants’ personal experiences (Veal 2005) and led to a more detailed exploration of children’s understanding of nutrition- and advertising-related concepts. Second, it facilitated the correct identification of socialisation agents for the subsequent quantitative stage. Third, the qualitative data identified whether any modification of the proposed conceptual framework was required. Finally, the insights from the qualitative stage were considered during the development of research instruments for the full-scale fieldwork. To provide a better understanding of children’s food socialisation dynamics, this study adopted a positivist research approach and a deductive mode of enquiry. Positivism assumes that social sciences should mirror natural sciences. The classic examples of positivist research methodology include quantitative approaches, such as experiments and surveys which allow the capturing of social reality (Blaxter, Hughes, and Tight 2010).

Several techniques were used to collect required data and empirically assess the relationships postulated in the developed conceptual framework. First, a controlled experiment and a survey were chosen to collect data from children (Figure 14). The experiment was expected to establish causality and isolate the influences of other factors (Blaxter et al. 2010; Young 1990). This technique has also been extensively used to study the influence of food advertising on children (Galst 1980; Gorn and Goldberg 1982). In experiments, causality is achieved through the manipulation of an independent variable and subsequent measurement of changes in the dependent variable. An important condition that needs to be met is random allocation of participants to groups which rules out the effects of extraneous factors (Khan 2011). During the experiment children were randomly assigned to a treatment group with a

food advertisement or to a group with a toy advertisement serving as a control (randomised 2x2 factorial design²).

After the experiment children completed a survey, which collected data about their nutritional knowledge, advertising literacy, peers' food preferences, and social acceptability of different foods, which were then used as control variables in empirical models. No manipulation was carried out on children's understanding of the purposes of advertising (advertising literacy) and their nutritional knowledge. Hence, this study examined for the first time whether these cognitive defences reduce the influence of food advertising on children's food preferences for an advertised product and a healthier food alternative in an experimental setting. In the experiment, food preferences referred only to the children's intention to consume advertised products and did not involve any food consumption or taste rating. Collected data also tested if these defences exerted any influence on children's general consumption of less healthy foods using the cross-sectional data. While children were taking part in the experiment, their parents completed a survey specifically designed for them. Parental variables served as control variables both in the experimental and non-experimental settings.

The literature suggests that experiments need to be carefully designed to simulate a natural setting, especially when the researcher is present and participants are required to follow particular instructions (Blaxter et al. 2010). As a result, preference was given to a field experiment over a laboratory experiment and data were collected using a mall intercept at an annual agricultural show in Adelaide. This show attracts thousands of visitors and is traditionally visited by families with children representative of the South Australian population, which allowed random sampling of participants. Additionally, the selected venue approximated data collection to an everyday situation as compared to a laboratory experiment which could alert the participants about the purpose of a study or its hypotheses (Shimp, Hyatt, and Snyder 1991). Also, field experiments provide greater external validity in comparison to laboratory experiments (Ticehurst and Veal 2000). Finally, the selected site was perfectly suited for data collection because families come to the show for a relatively long period of time and it was expected that they would be more willing to dedicate the time for research purposes there than in a laboratory situation.

² This section provides a short review of the quantitative data collection procedures. A more detailed description of the research protocol followed during the full-scale fieldwork can be found in Chapter Eight.

4.5. Summary

This chapter has accomplished several important goals. First, it has outlined extant gaps in our knowledge about factors influencing children's food preferences/food consumption and weight gain. Second, it has pulled together these gaps into one comprehensive, yet parsimonious conceptual framework, which emphasises multi-factoral influences on children's dietary behaviour leading to obesity. The selected research design for this study has been also described. The chapter has explained how this study controlled for a wider range of previously overlooked factors pertaining to parents, peers (external factors), and children's advertising literacy and nutritional knowledge (internal factors) through the combination of experimental and cross-sectional data collection. The next chapter is describes how the formulated conceptual framework was refined using focus groups with children.

Chapter Five: Preliminary Test of Conceptual Framework – An Exploratory Study

5.1. Introduction

This chapter discusses the questions which were formulated to guide the exploratory study together with sampling technique chosen to collect data from children. The protocol for the exploratory study is explained in detail and the results from the qualitative data analysis are reported. The chapter concludes with the key findings from the focus groups and explains how the originally developed conceptual framework was refined for the full-scale fieldwork.

5.2. Focus of Exploratory Study

Causal relationships between parents' exposure to advertising and some of the outcomes in children have been earlier successfully tested empirically (Grier et al. 2007). Therefore, the relationships proposed in the conceptual framework were qualitatively pre-tested only with children. Four key questions were formulated for the qualitative study:

RQ₁: How does children's nutritional knowledge influence their dietary behaviour?

RQ₂: Does advertising literacy reduce the influence of food promotion?

RQ₃: How can the impact of peers be measured?

RQ₄: How can the impact of parents be conceptualised?

Emphasis was given to children's own perceptions of the impact of external and internal factors on their consumer behaviour. The application of nutritional knowledge to food choices was selected due to mixed extant empirical evidence. Having a child's feedback about qualities that good food has and how they relate to their food choice allowed to understand food socialisation from a child's perspective. Advertising literacy has been explored in relation to children's everyday food consumption behaviour to yield more insights for the current debate about the role of children's understanding of the purposes of advertising in the prevention of childhood obesity (Livingstone and Helsper 2006). Another objective set for the qualitative study was to identify whether peers' influence should be operationalised through observational learning (Birch 1980) and perceptions about friends' food preferences like was done in the public health (Feunekes et al. 1998; Grimm et al. 2004) or through communication with peers as was the case in the marketing discipline for non-food-related themes (see Moschis and Churchill 1978; Moschis, Moore, and Stanley 1984).

The exploratory study investigated which form of interaction, observational learning or communication about foods, was more influential for the children. Finally, for parental influence, previous studies provide little insight into children's feedback about their parents' communication practices. Thus, for the upcoming quantitative study it was necessary to identify how parent-child communication about food and food advertising influenced children.

5.3. Data Collection Method

Focus group interviews were chosen as a data collection method (Alrecht, Johnson, and Walther 1993; Morgan 1998). With this data collection method, interactions take place not only between the interviewer and the interviewees, but also amongst the participants (Veal 2005). Focus group interviews provide an amicable environment especially suited to children (Horner 2000) and have been previously successfully used to study children's dietary decisions (Neumark-Sztainer et al. 1999; Williams et al. 1993; Zeinstra et al. 2007), perceptions of health (Horner 2000), perceptions of fruit and vegetables (Bulmer 2001), barriers to healthy eating (McKinley et al. 2005), snacking (Bech-Larsen, Jensen, and Pedersen 2010; Marshall, O'Donohoe, and Kline 2007), and understanding of nutritional messages (Lytle et al. 1997).

5.4. Sampling and Administration of Focus Groups

Participants for the focus groups were recruited using a convenience sample through the University of Adelaide Business School network. A letter describing the purpose of focus groups was sent to the mailing list of staff members, inviting their children to participate in the study (Appendix 7). To keep discussions manageable, the number of participants was limited to seven children per group (Berg 2001). Ten children, six aged between ten to 11 years and four children aged between 12 to 13 years agreed to take part in the focus groups. Participants belonged to the middle class and were equally split between females and males as shown in Table 1. Except for two boys in the "older children" group, participants were not familiar to each other. Focus groups were conducted in October 2010 in two sessions at a university venue specifically designated for the administration of focus groups. To avoid any potential influence on the discussion, only water and apple juice were offered as refreshments.

When the parents and children arrived at the research venue, the purpose of focus group was explained to children in front of their parents (Appendix 8). Children were told that the

discussions would be recorded and that they could leave at any stage of the focus group if they wished to do so. They were also told that all information would remain confidential and would be accessed only by the researcher. After the introduction, parents were asked to wait outside until the focus groups were finished. Written parents’ and children’s consent was obtained prior to focus groups using a standard parental/guardian consent form developed by the HREC of the University of Adelaide (Appendices 9 and 10). Children’s consent form was aided with smileys and images to facilitate participants’ comprehension of the form (Appendix 9). The focus groups lasted about one hour and were coordinated by a moderator (the researcher). No remuneration was given to encourage children’s participation in the focus groups.

Table 1: Gender Distribution in Focus Groups

	Younger children (10 to 11 years)	Older children (12 to 13 years)
Females	3	2
Males	3	2

5.5. Focus Groups’ Protocol

Following the recommendations in the literature (Berg 2001), a semi-structured interview guide was developed for the focus groups (Appendices 10 and 11). The purpose of the guide was to encourage discussion, provide flexibility for the follow-up questions, and ensure consistency across the two focus groups (Stewart and Shamdasani 1990). Only open-ended questions were asked. Although the focus groups followed the same sequence, the flow of questions varied between the groups due to additional questions aimed at clarifying certain points (Figure 15). In contrast to previous studies (Croll, Neumark-Sztainer, and Story 2001), leading questions about nutrients, or such terms as “healthy” were purposefully avoided to reduce bias. The protocol for focus groups was approved by the HREC of the University of Adelaide (Appendix 1).

As shown in Figure 15, each focus group started with an introduction and explanation of the rules. Children were told that they would participate in a discussion and that different opinions would be heard and needed to be respected. This was followed by an introductory activity (Berg 2001) where each child was asked to introduced her/himself. The discussions started with warm-up questions about foods which the children had eaten for their breakfast a day ago (younger children) or on the day of the focus group for their lunch (older children) (Figure 15). After establishing rapport, children were asked to either name (older children) or

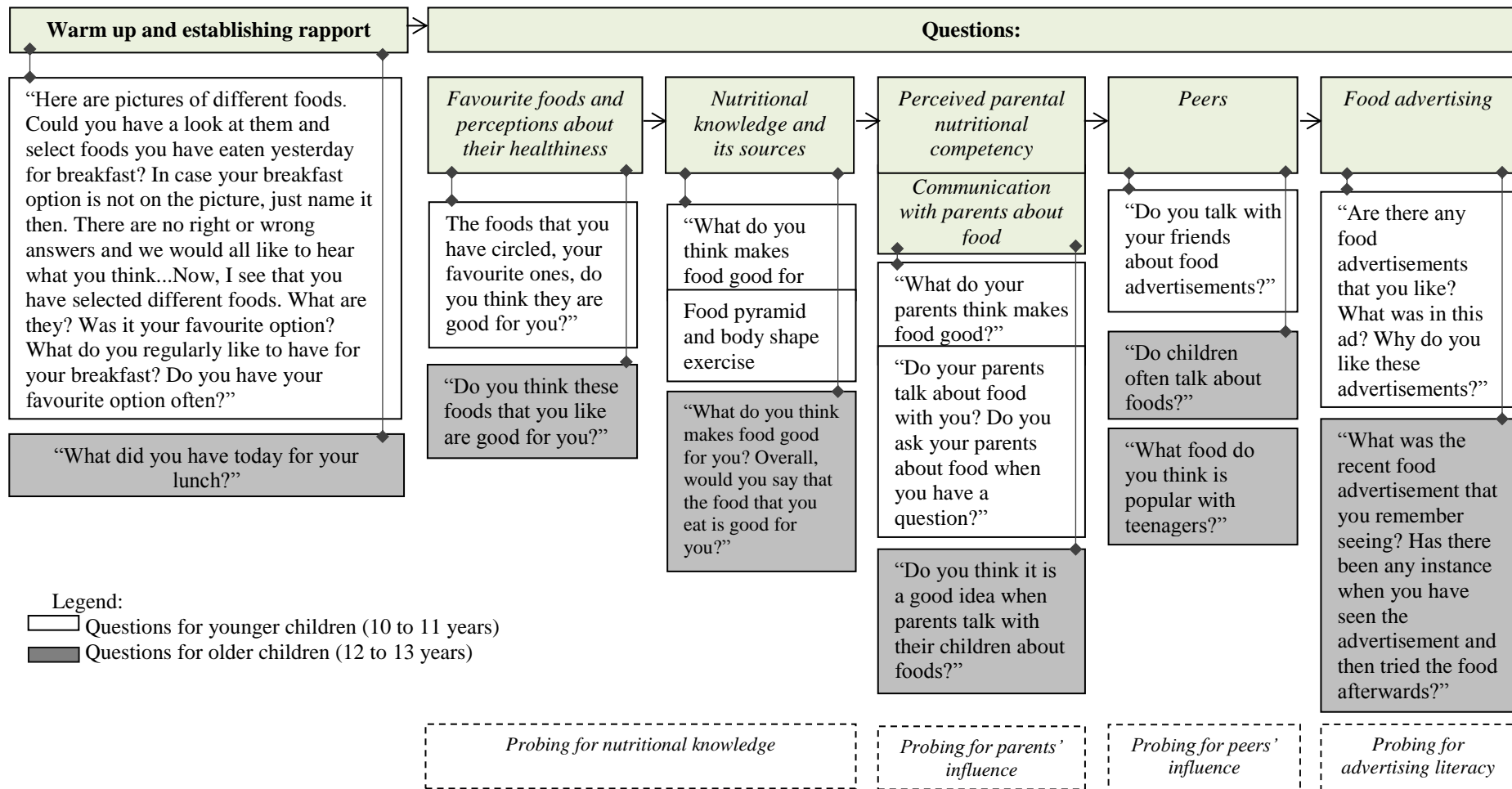


Figure 15: Focus Groups Interview Guide

point (younger children) to their favourite foods on handouts (A4 format, 297x210mm) (Appendix 12A).

The handouts featured different foods and were developed to assist younger children to retrieve verbal information (McNeal and Ji 2003; Wells 1965). Such visual cues represent a common technique in qualitative studies and have been used with children to study foods appropriate for different eating occasions (Zeinstra et al. 2007) or to match brand logos (Fischer, Schwartz, Richards, Goldstein, and Rojas 1991; Mizerski 1995). The handouts featured colour pictures (Borzekowski and Robinson 2001) of both branded (McDonalds, KFC, Hungry Jacks, Subway, Coca Cola, Rice Bubbles, Weet Bix, and Vegemite) and non-branded foods (fruit, vegetables, cookies, sandwiches, pancakes, lollipops, fruit juice, and fried eggs). The proportion of healthy and less healthy foods was even. Younger children were also advised that they could name other foods if they were not shown on the handouts.

After children named their favourite foods, they were asked to explain why they liked them. Next, younger children were asked to reflect upon their choices of favourite foods (*“Do you think your favourite foods are good for you?”*). Because older children experience more freedom in food consumption compared to younger ones (Livingstone and Helsper 2004), they were asked to comment on their overall diet (*“Do you think the foods that you eat are good for you?”*). To probe for children’s nutritional knowledge, participants were asked to describe characteristics of healthy foods (*“What makes food good for you?”*) and mention the sources of their knowledge about foods. At this point, younger children were additionally shown: 1) a picture of a food pyramid (see Appendix 12B); and 2) cards portraying silhouettes of persons with different weights (see Appendix 12C). They were asked to explain what the food pyramid represented and what foods the persons shown on the cards ate. Ultimately, these exercises probed for the children’s ability to relate diet to health (Wellman and Johnson 1982). In comparison to previous research (Wellman and Johnson 1982), children were not pointed to the weight status of the silhouettes, but were asked to discuss foods they possibly consumed. These exercises were not used with the older children because they were expected to be familiar with the food pyramid and the connection between consumption and weight.

Parental influence was examined first through children’s perceptions about their parents’ nutritional knowledge (*“What do your parents think makes food good?”*). Second, children

were asked about the nature of their communication with their parents. Younger children were directly asked about their communication patterns (“*Do your parents talk about food with you?*”), whereas older children were asked to reflect upon the nature of their interaction (“*Do you think it is a good idea when parents talk with their children about foods?*”). Children’s feedback was used to identify the role of parent-child communication in the context of food consumption. Advertising literacy was assessed by asking children to recall their behaviour after being exposed to different food advertisements. Leading questions such as “*Do TV commercials always tell the truth?*” (see Ward and Wackman 1973) were avoided in order to prompt children’s first-hand feedback. To examine the nature of child-peer communication, participants were asked whether they talked about food or food advertisements with their friends. Due to an expected increase in peer and social pressure, only older children were asked to reflect upon popular foods (“*What food do you think is popular with teenagers?*”). Leading terms, such as “peer pressure” were avoided by the moderator.

5.6. Data Analysis

The focus group interviews were transcribed verbatim (Appendix 13) and analysed using an open coding technique, whereby data were broken down into categories based on recurring themes (Strauss and Corbin 1990). The coding scheme was developed inductively following a two-step approach described by Croll et al. 2001, which starts with general coding and then extends into content-specific coding when connections between different themes are identified. Both sentences and words served as units of analysis (Berg 2001). The coding scheme was modified several times before it was finalised (Appendix 14). Notes which were taken by the moderator during the focus groups about emerging themes were also reviewed prior to the data analysis. During the analysis of qualities that make food “good,” previous qualitative research was used (Swaminathan, Thomas, Kurpad, and Vaz 2009) to assign appropriate codes. Data were summarised in tables, verbatim quotes, and figures. Due to the manageable sample size, data were analysed without any computer-aided software programs. The results are discussed below in the same sequence as the research questions formulated for the exploratory study.

5.7. Results

5.7.1. How Does Children’s Nutritional Knowledge Influence Their Food Preferences? Favourite Foods

Children’s favourite foods were classified depending on their type (e.g., “healthy” and “not healthy”) and specificity (“pizza” or “lots of foods”) (Table 2). Younger children predominantly mentioned unhealthy foods as their favourite choices, which varied from sugary snacks to fast foods and did not include any vegetables, suggesting a determining importance of taste. Disliked foods included mainly vegetables and fruit (e.g., brussels sprouts, onion, spinach, fruit, pumpkin, zucchini, tomato, capsicum, eggplant, and broccoli). Again, taste was the main reason for not liking the above-mentioned foods. A different pattern was observed amongst older children who did not mention sugary snacks amongst their favourite foods (Table 2 and Appendix 13) and in contrast to younger children either liked “lots of foods” or “most foods:”

- M2: When you are little, you are always like, “Can I have some lollies, mum?”
- F4: I think you do not want your salad as much. Now, I have to eat salad. I do not mind it now.
- M2: When you are little you eat small amounts of different foods, but as you get older you eat more different foods.

Table 2: Children’s Favourite Foods		
Categories:	Younger children (N=6)	Older children (N=4)
1. Type of food		
1.1. Healthy:		
1.1.1. Fruit	Grapes (n=1, F6 ¹)	Not mentioned
1.1.2. Vegetables	Not mentioned	Veggies as part of the main course (n=1, M1)
1.1.3. Other foods	Subway (n=2, M1/2)	Pasta (n=1, F3), pizza (n=1, F4)
1.2. Less healthy:		
1.2.1. Fast foods	KFC and McDonalds (n=1, M1)	Burgers, chips (n=1, M1)
1.2.2. Sugary snacks	Chocolate chip cookies, chocolate cake, chocolate muffin (n=1, F3) Fruit Loops (n=2, F3/4) Ice cream (n=2, F1/4, M2)	Not mentioned
1.2.3. Soft drinks	Coke (n=3, F1/4, M2)	Not mentioned
2. Specificity		
2.1. Specific food (e.g., KFC)	All	All
2.2. General categories (e.g., lots of foods)	Not mentioned	n=4 (e.g., “most foods”)

Notes:

F – females, M – males.

¹ – See Appendix 13 for participants’ identification numbers.

At an older age their favourite foods, except for chips and burgers, included predominantly cooked foods, such as ravioli, pasta, spaghetti, pizza, Indian food, or Thai food. Older children also explained why they liked specific foods, mentioning taste (“spicy,” “sweet,” or “cooked warm”), texture, and consumption situation (e.g. “with the family”) amongst their reasons. Although vegetables were mentioned by older children as some of their favourite foods, unhealthy foods were also frequently mentioned, pointing to the importance of taste both at younger and older ages.

“Are my Favourite Foods Good for Me?”

Except for fruit and vegetables, younger children admitted that their preferences were not healthy. Children were aware of the side effects of sugar, but still named sugary foods amongst their favourite options, supporting the literature about children’s innate preferences for sweet foods (Tilston, Gregson, Neale, and Douglas 1993). This observation also corroborated the mismatch between children’s knowledge and dietary behaviour previously reported (Hill et al. 1998; Mirmiran et al. 2007; Pich et al. 2010). During the discussion, however, it became clear that younger children did not consume their favourite foods often due to their parents’ unwillingness to “spend much money,” parental control over children’s weight, and changes in children’s behaviour after the consumption of sugary foods:

- F2: My brother and I would get sugar rush and go crazy.

Similar to younger children, older children admitted that not all of their favourite foods were good for their health. While examining the healthiness of their choices older children referred to broader dietary concepts such as quantity, negative calories, nutritional labelling, and avoidance of “junk” foods:

- F4: I do not mind sugar and stuff, but they are not my favourite. It just depends on how much you eat of it. So, I guess, some are better than others, but it depends on how much you like. If you have heaps of one sort of food, it is not necessarily good for you.
- M1: I like all fatty foods because I am really an unhealthy kid. I also like apple juice. Apple juice has a lot of sugar and it is not healthy, [soup is] pretty good, because it has got celery and negative calories. I always check the [nutrition] labelling. It is really interesting. I love reading this stuff. Is it on burgers? Because it makes you feel guilty.

“What Makes Food Good for Me?”

Children’s answers were grouped into several categories, namely: 1) type of food; 2) food’s composition (e.g., absence of specific components or food proportions); 3) food diversity; and 4) balanced diet (Table 3). Younger children referred predominantly to the types of food which were beneficial for the body (e.g., fruit and vegetables), which was also previously observed in another qualitative study in Ireland (Fitzgerald et al. 2010). They mentioned the absence of specific components in one’s diet (e.g., “gelatine” or “sugar”) and proportions (“not much fat,” “low GI,” and “low carbohydrates”) (Table 3).

Table 3: Characteristics that Make Food “Good” for Children		
Categories:	Younger children (N=6)	Older children (N=4)
3.1. Type of food		
3.1.1. Fruit	n=1 (M2 ¹)	Not mentioned
3.1.2. Vegetables	n=1 (F2)	“Celery has negative calories” (n=1, M1) “Vegetables and fibre” (n=1, M1)
3.2. Food’s composition		
3.2.1. Absence of specific components in a diet	No gelatine (n=1, F1) No sugar (n=1, F2)	“Lots of sugar and it is not healthy” (n=1, M1)
3.2.2. Absence of specific foods in a diet	Not mentioned	“Junk” foods (n=2, F3/M1) “Fast food places” (n=1, M2) “Saturated fat” (n=1, F4)
3.2.3. Proportions	“Not much fat” (n=1, F2) “Low GI” (n=1, F3) “Low carbohydrates” (n=1, M1)	“How much you eat of it” (n=1, F4)
3.3. Food diversity	Not mentioned	“[A lot of] one sort of food, is not good for you” (n=1, F4)
3.4. Balanced diet	Not mentioned	Balance between salt, protein, and fat (n=1, F4)

Notes:

F – females, M – males.

¹ – See Appendix 13 for participants’ identification numbers.

In comparison to younger children, older children did not mention any fruit. Instead, they referred to vegetables and fibre amongst the qualities of “good food.” They employed additional concepts, such as physical exercise and balance between fruit, salt, protein, fats, and saturated fats (“the hard core fat containing fat”) while describing “good foods.” Older children also demonstrated an ability to critically analyse their dietary intake as some confessed that they “could eat more fruit” or “should stop eating burgers.” Personal responsibility in food consumption voiced by older children also pointed to a higher level of knowledge:

- F3: Healthy stuff is not really just about the food. It is about what you do around the food. The food helps but you also have got to do exercise [...]. You have got a test going on. It depends on you. No matter how much you are told or you know, it is what you do with it.

Even though younger children possessed some nutritional knowledge, they did not elaborate on how they could improve their diets and could not relate their knowledge to their favourite foods. Older children, on the other hand, put their diets in a broader perspective, emphasising the importance of sport and exercising, as well as an intention to improve their food consumption (Figure 16). Cards which were used with younger children to probe for their application of nutritional knowledge showed that participants were familiar with the concept of the food pyramid. Also, they were able to match diet to weight and health status when the silhouette cards were used (Appendix 12C). Children suggested that the lean person was either “a vegetarian” or “a vegan,” ate “lots of fruit and vegetables,” avoided much sugar, and “regularly weigh[ed] himself.” When an image of a relatively overweight person was shown, children suggested that he consumed lots of candies, sweets/lollies, sugar, fast foods or “junk” foods, beef, “[ate] a lot,” or was buying “everything.” It was also proposed that he ate only a

couple of vegetables. Overall, younger children understood the connection between the quantity of consumed food (“eats a lot”), life styles (“a vegan”), specific foods (“avoid much sugar”) and health status. Nonetheless, they still had to be cued with the food pyramid and cards to apply their knowledge, suggesting that nutritional knowledge might not play a strong role in food decisions at a younger age. It is either not actively used or subsumed by the importance of taste. Amongst the older children nutritional knowledge played a somewhat stronger role.

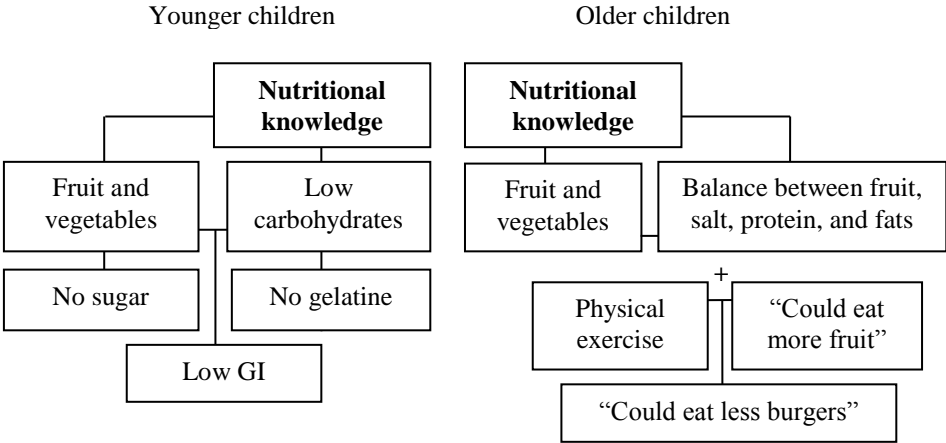


Figure 16: Nutritional Knowledge: Comparison between Younger and Older Children

Children were also asked where their knowledge about foods comes from in order to determine the key socialisation agents. The younger children identified school, parents, and a food’s taste, combined with personal intuition as the sources of their knowledge:

- F1: “Junk” food is yummy.
- F4: I have never been told what “junk” food is. You just eat it; you just develop the knowledge.
- F2: I think I have developed a taste for what is not healthy. My parents try to eat healthy. I mainly eat more fruit and vegetables.

Amongst the older children, school was the most frequently mentioned source of knowledge about foods, followed by parents and television. Individual search for information was also mentioned, where Google was identified as “the best person to ask.” Children’s knowledge about food had multiple sources and several actors played an educational role in children’s lives, which supports the literature (McKinley et al. 2005; Rasnake et al. 2005). Nonetheless, even though older children got information about food from different places and parents “reinforce[d] it,” diet was still regarded as “kids’ choice.”

5.7.2. Does Advertising Literacy Reduce the Influence of Food Promotion?

To introduce the theme of food advertising into the focus groups and probe for its effects, participants were asked to recall food advertisements they liked (younger children) or advertisements they have recently seen (older children). Additionally, children were asked to describe what was happening in those advertisements and to explain why they liked them. The collected data were also used to determine what themes in advertisements induced positive reactions amongst children, which could be later used as an experimental stimuli during the full-scale fieldwork.

Data analysis showed that younger children recalled advertisements with entertainment features, such as humour and animation, and those which promoted foods with appealing taste (Table 4), supporting previous qualitative research about children’s processing of advertising (Ward and Wackman 1973):

- M2: I like “Ice box.”
Moderator: What is happening in it? Why do you like it?
- M2: They just taste nice.
Moderator: Have you tried this food after the advertisement?
- M2: No.
Moderator: Have you tried this food before in general?
- M2: Yes.
- F3: [I like] “chocolate ad.”
Moderator: What is happening in it?
- F2 and F4: The cows dance...it is funny.
- F3: I like the chocolate ad. The chocolate is melting and it is moving around. [all children start discussing how “chocolate moves”].

Table 4: Reasons for Liking Food Advertisements and Recalled Food Advertisements		
Categories:	Younger children (N=6) Reasons for liking food advertisements	Older children (N=4) Recalled food advertisements
4.1. Advertisement-related features		
4.1.1. Humour	“Cows dance...it is funny” (n=2, F2/4 ¹)	Not mentioned
4.1.2. Animation	“The chocolate is melting and moving around” (n=1, F3)	“Motor bike going up” (n=1, F3)
4.1.3. Promotion	Not mentioned	Deals (n=1, F4)
4.2. Not advertisement-related features		
4.2.1. Taste of the food	(n=3, M2/1, F4)	Not mentioned

Notes:

F – females, M – males.

¹ – See Appendix 13 for participants’ identification numbers.

Older children recalled mostly fast food advertisements:

- M1: Bun, lettuce, burger, bun, beef, lettuce... big Macca!
- M2: The latest one is Hungry Jacks with a motor bike going up.
- F4: But it is not only about this bike. They also had deals. Outside Hungry Jacks \$4.95. You can get like four things, drinks, and chips.

Apart from animation (“bike going up” and layers of food), older children also recalled advertisements with promotions (“four things for \$4.95”) (Table 4). In contrast to younger children, older participants commented on the persuasive strategies used by advertisers, demonstrating higher advertising literacy skills:

- F3: They copy each other, like, Hungry Jacks brought this new burger and a month ago McDonalds brought a new way of bun of going on top. The other one started doing that. They will copy each other because they are trying to get more people.
- F4: They also put tiny ads if you are watching a program, they will know kids are going to watch it. → M2: Like near dinner time, near meals → F4: And they will try to make you hungry. → M2: So, then you go, “I want that.” → F4: It is pretty much the timing when you put it.

To examine how these skills moderated the influence of advertising, older children were asked if they ever wanted to buy advertised foods. Several possible scenarios were identified by children, such as:

a) no action due to disbelief:

F4: Not me. I do not like McDonalds because they look fake to me.

b) trial of a product due to curiosity:

F4: But there has been a KFC chicken. I was like, “Maybe, I want to taste it, maybe I do not.”

a) purchase of advertised foods at a younger age:

F3: When I was a bit younger I saw an ad with new chicken and I was like, “Oh, I like chicken. I could try that.” But now I know that there is no point.
→ F4: It is pretty much normal chicken.

b) perceiving advertising as sources of information:

M1: I reckon the reason for ads is like, not like to want you to buy them. It is more like telling you that it is there. Because you know chicken burger is \$1.85 or something and you would not know that. → F3 and M2: It is more like a reminder. → M2: There is this shop called XXX but no one knows about it because it is not on TV. → F3: Or sometimes you might tell your friends or your friends might tell you about these things. They spread it around. → Moderator: And when your friends tell you about these → F3: I go, “Is it good?” and I will say, “Ok.” If it is good then it is good. If I do not want it, I will not have it, if I do not seem interested in it.

c) and, purchase at a younger age due to the influence of food marketing and friends:

F3: It was not recent, it was a few years ago. My cousin told me about this burger at McDonalds and then I saw an ad for it two nights after that on TV.

So, I went out and tried it, because I was told it is good and I saw the ad. That was quite a while ago.

5.7.3. How Can the Impact of Peers be Measured?

Communication and Observational Learning

Previous research about the impact of peers on children's food consumption has been predominantly quantitative. In these studies children have been asked to specify the frequency of food consumption by their friends (Grimm et al. 2004). Only one study has directly involved children's best friends (Feunekes et al. 1998). Apart from the negative effects of peers reported by mothers (Roberts 2005), qualitative studies about children's first-hand perception of peers' influence in relation to children's own food choices are scarce. It is not clear whether the influence occurs through direct communication with friends or through observational learning. To probe for this influence, children were asked whether they discussed foods with their friends (younger children) or talked about foods with their friends (older children). The results suggest that younger children did not discuss foods with their friends. A few exceptions included communication about foods eaten recently or food preparation steps:

- F2: Sometimes I talk with my friends about what my mum and dad gave me for dinner. → F1: Yeah, I usually ask, "What did you have for dinner? What did you have for breakfast?"
-

Even though younger children did not seem to talk much about food advertisements with their friends, they still mentioned information sharing:

- F4 and F1: No, we don't talk about foods.
- F4: I did talk to my friend about this ad called "Easy cheese."
- F1: We don't talk about food advertising. We talk more about neighbours and TV shows.
- F2: No, but sometimes if someone sees something funny, like a food advertisement, they tell it to us.

Eating outside with friends was not mentioned by younger children and observational modelling predominantly occurred at school during lunch breaks when food was shared amongst children. Older children, on the other hand, were immersed in more complex social interactions about foods with their friends (Figure 17):

- F4: Sometimes [we talk about food].
- M2: Depends if you are eating food. If you are hungry then you do.
- F4: Last year in P Health we have been watching "Supersize me." So, that put us on whole talk about food. So, it had a bit of it, but it is not like day to day.

- M1: You know people in my school never say how good the cheeseburger is. They say, “I feel like a double whopper, mate.” That is exactly what they say. I am like, “Ok” and then we just end up going to McDonalds after school.

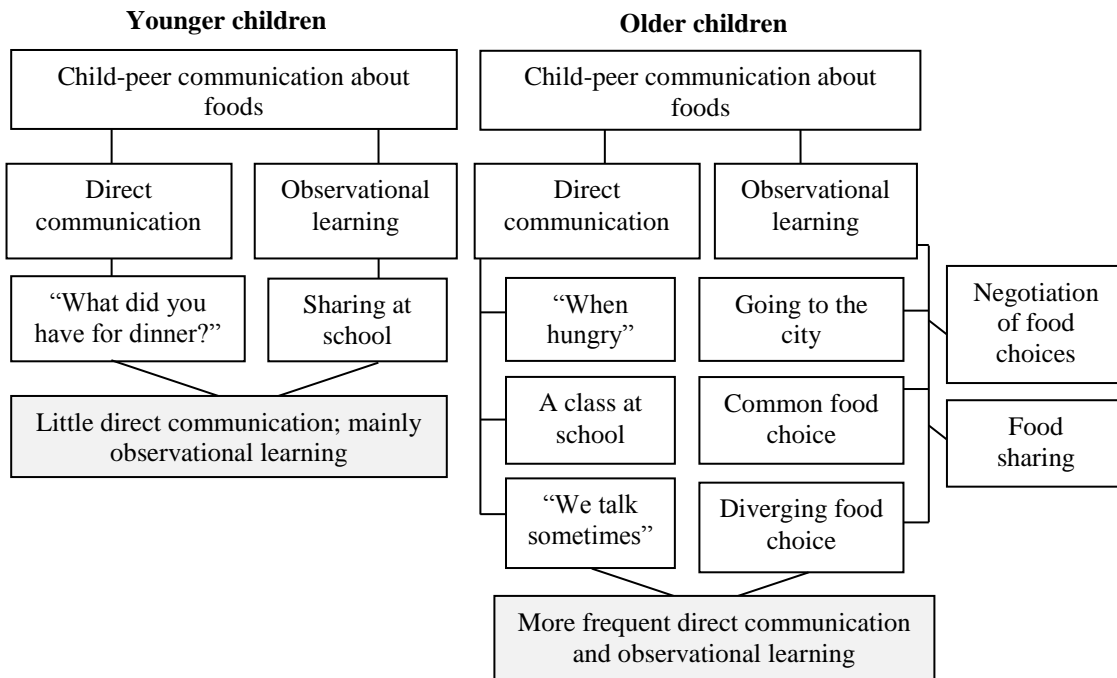


Figure 17: Child-Peer Communication about Food: Comparison between Younger and Older Children

Perceived peers’ similarity was strong amongst older participants who believed that their friends liked the same foods as they did. Older children were asked what foods they ate when they went out with their friends and a range of different themes emerged which included different scenarios, such as:

- a) common food choices when going to the city with friends:

M2: Subway.

- b) diverging food choices:

F4: Me – Subway. They will eat something like KFC. I always eat Subway.

- a) negotiation of food choices:

F3: When I am with my friends, we all say something that we want or something that we all like and if it is close by, then we will get it. But if we want Maccas but it is not in our area, then we will not bring it, because there is no point. → Moderator: Which food do you usually select? → F3: We get a packet of hot chips and share them around. We go to Subway. We go to the deli sometimes.

- b) and food sharing:

M1: Sometimes when we go to the supermarket, because we go to see a movie and everyone brings \$20 and everyone spends mainly \$10.50 on one

certain thing and we share around. So, one guy got four packets of chips, another one got bottles of coke.

Overall, eating outside was perceived as a popular bonding activity, supporting previous qualitative research about the importance of eating as a social activity amongst adolescents (Fitzgerald et al. 2010).

Foods Popular amongst Children

To probe for social norms around foods, older children were asked which foods were popular amongst children. A number of foods were mentioned, including pizza, pasta, ice cream, or fast foods. They also pinpointed differences depending on a school year or a season:

- F3: In my Year, pizza is not really popular. In my Year you would go with ice cream or a piece of cake, but that is just my year at school. I do not know about others.
- F4: It might sound a bit weird, but it is season as well. If it is summer, it is usually hot, everyone wants ice cream or cold drinks, but if it is winter, everyone would want hot food.
- M1: It is probably just my school, in a fourth break, like on Friday or Thursday, everyone gets like a craving for Hungry Jacks or Maccas. And it goes through Year 10 or 8. Year 9 does not count for some reason, just at my school. → F4: I know, our Year 12 has Maccas rounds, so they just go to Maccas in the middle of the day.

Popular foods were brought from home, but mostly purchased outside the school. The following sources were identified:

- a) bringing “popular foods” in the lunch box from home:

F4: I get pizza from home.

- b) buying “popular foods” at school:

F4: Ice cream will be bought. If you bring it from home it melts by lunchtime.

M1: Pastries are hard core popular in my school in the tuck shop. Everyone buys pies.

- c) buying outside the school:

M1: [...] mostly people eat foods outside the school. There are only four people in my year who bring lunches and everyone either goes to the tuck shop or goes out at the end of school, because everyone eats outside school, but it is probably at my school.

5.7.4. How Can the Impact of Parents be Conceptualised?

When asked what makes food good for their parents, the most frequent characteristic reported by younger children was eating fruit (Table 5). Endorsed by a parent, children believed that

having biscuits after school was alright (“healthy”) if they were eaten with a piece of fruit. Only one child said that parents thought that “in order to eat healthy you need to eat in small amounts, eat porridge instead of rice, eat more vegetables, and use less oil.” Younger children generally refrained from communicating with their parents when they had questions about food. Children were also not enthusiastic about asking parents questions about nutrition. In the case of younger children, communication about foods was initiated by a parent and was limited to specific instructions or putting a child on a diet that excluded sweets. Parents also used fewer explanations while “filling up” children with fruit or proscribing treats:

F4: My dad doesn’t let me have treats much. He fills me up with fruit.

M2: My mom usually makes us eat one piece of fruit. Then we have a dessert. My dad is the same, but after we had a dessert, more fruit.

F1: When I ask mum for chips she is like, “No, you can’t have them, you’ve already had dinner.”

F2: My parents say lollies are not healthy. My dad says, “Wait until you are full. Then, you can have something for dessert.” My dad annoys me – he fills me up on fruit so that I don’t have any dessert.

Parental nutritional knowledge as perceived by older children included such food-related characteristics as fruit and vegetables, absence of “junk” foods in one’s diet, little fat or sugar, enough proteins, and having a balance in food and life (Table 5). Parent-child communication was more frequent amongst older children and their parents and was initiated either by a parent (“*Recently mum and I talked about it. I got sick of having the same food for breakfast*” (F4)) or participants (“*I had swimming just last night and I asked my mum what would be good to have after my swimming because I am always tired and hungry*” (F3)). When older children were asked whether it was good that their parents talked to them about foods, mixed answers were received. First, when children were proscribed something, they were more likely to challenge the rule and disobey. Second, a more explanatory approach was welcomed by children:

- M1: They should not be telling you not to eat fatty foods, but they should be giving you information.
- M2: Not telling you what to do or not to do, but telling you, “This is bad for you and this is good for you.” I think it is good that parents talk about food, but I do not think they should say specifically you cannot eat this or you have to eat this. They should tell you what happens if you eat too much of that. But I hate, “Eat your vegetables if you want to be strong.”

Third, children acknowledged that their parents should not mislead children or use reference persons to encourage food consumption:

- F3: They say, “Eat your vegetables and you will become like this person.” Why do you have to be that person?!
- M1: My parents are such liars. They say, “Eat your broccoli and you will get taller.” I eat broccoli a lot. But it does not make me taller.

Table 5: Characteristics Which Make Food “Good:” Parents’ Perceptions		
Categories:	Younger children (N=6)	Older children (N=4)
5.1. Food-related features		
5.1.1. Type of food:		
5.1.1.1. Fruit	n=4 (M1, F1,2,4 ¹)	Not mentioned
5.1.1.2. Vegetables	n=1 (F3)	n=1 (M2)
5.1.2. Food composition:		
5.1.2.1. Absence of treats	n=1 (F4)	Not mentioned
5.1.2.2. Absence of “junk” foods	Not mentioned	n=1 (F3)
5.1.2.3. Absence of sugar	Not mentioned	n=1 (M2)
5.1.2.4. Food substitute	“Porridge instead of rice” (n=1, F3)	Not mentioned
5.1.2.5. Proportions	“Less oil” (n=1, F3)	Not mentioned
5.1.2.6. Specific qualities	Not mentioned	“Got proteins and fibre” (n=1, M2) Not premade (n=1, F4)
5.2. Non-food-related features		
5.2.1. Exercising (“balance in life”)	Not mentioned	n=2 (F3,4)

Notes:

F – females, M – males.

¹ – See Appendix 13 for participants’ identification numbers.

Finally, food consumption was not perceived seriously by some participants, which is why a child avoided communication with parents about foods and nutrition:

- F4: When my parents talk about food, I would go, “Why do you change the subject to that?” It is just an everyday thing we do, we eat food. So, we do not talk about it.

The next section combines the results from the qualitative study, highlighting its key findings. It also explains how the originally proposed conceptual framework was modified to better address the trends observed in the qualitative data.

5.8. Summary of Qualitative Data and Modification of Conceptual Framework

In addressing RQ₁, the role of nutritional knowledge was examined through children’s favourite foods and their reflection on their healthiness. Nutritional knowledge played a lesser role amongst younger children. In contrast, older children displayed greater knowledge and freely articulated with such concepts as “negative calories,” “kilojoules per serving,” and “food labelling.” Consistent with previous studies (Cooke and Wardle 2005), a discrepancy was observed between children’s food preferences and nutritional knowledge – the preferences for sweet and salty foods (Jones and Kervin 2010) was particularly noteworthy amongst younger participants, and is critical in explaining the mismatch between knowledge and dietary behaviour. Since these findings emerge from qualitative data, this relationship needs to be tested further empirically.

Next, it was observed that children's dietary preferences change as they grow older, as does the amount of tried or liked foods, confirming earlier observations (Cooke and Wardle 2005). Additionally, the qualitative study showed that older children were not passive consumers of foods as they understood the change in their diets which has happened over time and were aware of the sources of information about foods. Even younger children realised the importance of vegetables, but still disliked them. Given this finding and other feedback from younger children in relation to their favourite foods, it is suggested that until children acquire an acceptable level of nutritional competency and learn to apply it, the parental role in educating children and influencing their diet remains crucial.

In addressing RQ₂, as expected, higher levels of advertising literacy were observed amongst older children. Participants reported several scenarios after their exposure to food advertisements, varying from "no action" to an amplified influence of food advertising through friends. Younger children predominantly liked advertisements because of the taste of advertised foods and the connection between marketing techniques used in advertisements (humour, animation, etc.) and the taste of advertised foods was harder to identify amongst younger children. Similar to previous studies (see Ward 1972), children liked food advertisements because they considered them entertaining or because they liked advertised products. Animation in advertisements represented a common theme recalled or liked by both younger and older children and the selection of the experimental stimuli for the fieldwork was guided by this finding, as it was shown to be suitable for children of different ages. Although older children revealed several scenarios after being exposed to food advertisements, the data showed that product trial might still happen even at an older age due to curiosity. The impact of peers in addition to the exposure to food advertisements was also observed, corroborating the inclusion of this socialisation agent in the conceptual framework.

When examining RQ₃, direct communication and interactions around food were found to increase with age, supporting general consumer literature in relation to peers (Moschis, Moore, and Smith 1984). Due to little communication about food and food advertising, the influence of peers in the current study was observed predominantly while "going to the city." The effect of peers was more subtle than was originally expected and pertained to observational learning, rather than discussion of foods. Because observational learning was observed amongst children of all ages, it was used during the instrument development for quantitative data collection.

In relation to RQ₄, the data showed that parents serve as a buffer for younger children and reinforce knowledge amongst older ones, highlighting their importance in the food socialisation process (Hughner and Maher 2006). Little parent-child communication with younger children observed during the focus groups is alarming and could partly explain children's overall lack of interest in food and nutrition. The frequency of parent-child communication increased with children's age, but its effects varied depending on the strategy used by parents. In the case of older children who believed that diet was a "kid's choice," parents were considered as important reinforcers of children's diet, conforming with previous literature (Bassett et al. 2008; Benton 2004; Gable and Lutz 2000; Livingstone 2005; Zive et al. 1998).

Several conclusions were made about the conceptual framework after the analysis of qualitative data. First, age differences recurred across all research questions, confirming the connection between age and children's competencies as conceptualised in the framework. Second, parents' influence remained relevant and, thus, was retained in the proposed conceptual framework. Because parents' nutritional knowledge exhibited the least influence on the children in comparison to parent-child communication, the upcoming empirical stage needed to determine its impact relative to other factors. Third, vicarious modelling proved influential both on children's attitudes (taste appeals and animation) and dietary behaviour (trial of advertised foods). Next, advertising literacy and children's nutritional knowledge showed some preliminary influence on behaviour, at least amongst older children. Children's nutritional knowledge and advertising literacy, as expected, increased with age. Hence, the causal path linking age to these cognitive competencies was retained in the conceptual framework.

Also, the qualitative results led to two changes in the originally proposed conceptual framework, which are marked in yellow in Figure 19. First, although child-peer communication has been previously proposed and used in general consumer socialisation literature (Moschis and Churchill 1978; Moschis and Moore 1979a; Moschis, Moore, and Stanley 1984), the qualitative data did not support the nature and extent of such influence in relation to foods. As a result, this factor was dropped from the conceptual framework and only friends' perceived food preferences was retained. The latter was identified as a more relevant factor because children observed their peers' food preferences both at school and outside the school. Hypothesis No. 9 was accordingly modified as shown below:

H₉: Friends' less healthy food choices are positively related to children's preferences for, and consumption of, less healthy foods (behavioural outcome).

Second, because the impact of other people was observed in the data through "passing on" of information about new food products, an additional socialisation agent was included in the conceptual framework, that is other people (Figure 18). The influence of this factor has not yet been examined in the literature (Lally et al. 2012). This construct goes beyond the impact of peers and incorporates wider social influences, such as of other significant people present in children's social environment. It was expected that children's perceptions about what other people think about food consumption would influence directly their dietary behaviour. An additional hypothesis was developed as a result of this change and research question No. 1 was edited:

H₁₇: Social acceptability of unhealthy foods held by other people is positively related to children's preferences for, and consumption of, less healthy foods.

RQ₁: How do internal drivers, such as brand evaluations/evaluations of less healthy foods (attitudinal), advertising literacy, and nutritional knowledge (cognitive interact with external drivers, such as food advertising, parents, peers, and other people in influencing children's food preferences/food consumption (dietary behaviour)?

Having finalised the conceptual framework, the quantitative instruments were developed to empirically test these relationships, which are discussed in the next chapter.

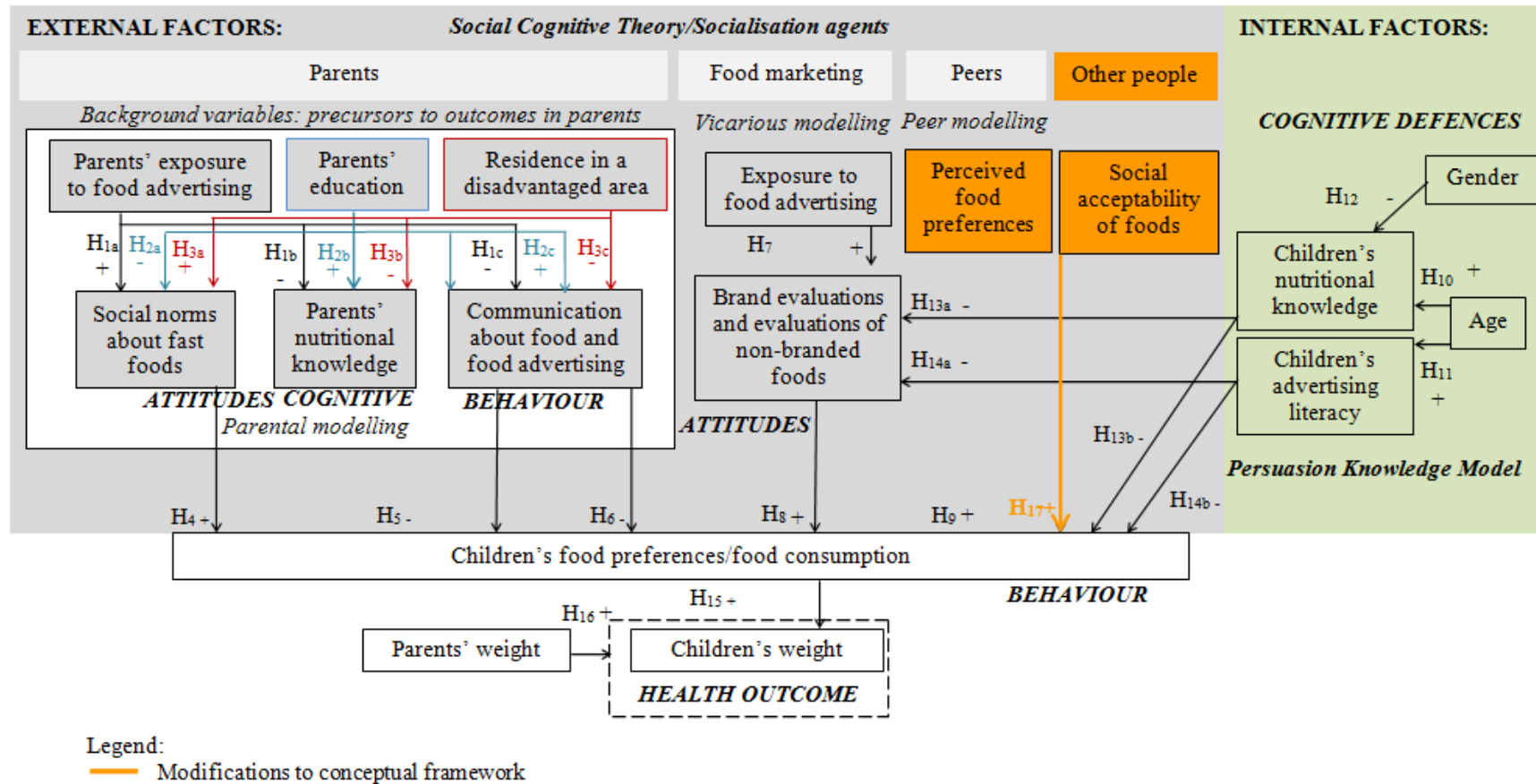


Figure 18: Modified Conceptual Framework

Chapter Six: Development of Instruments and Pilot Tests

6.1. Introduction

This chapter describes the research instruments developed for this study and explains what procedures were undertaken to ensure their validity and reliability. The instruments were reviewed by nutrition experts for face validity prior to pilot tests with parents and children. A series of pilot tests demonstrated that several modifications were required to improve the quality of the surveys and these changes are explained. Finally, the chapter describes how the data collection instruments were prepared for the experiment with children and the survey of parents (full-scale fieldwork).

6.2. Data Collection Instrument Development

The preparation of data collection instruments started with a review of relevant empirical literature from both the public health and marketing disciplines (Figure 19), which showed how variables of interest have been operationalised previously. When no source of empirical measurement was located, or when existing measures were not appropriate for the aims of the current study, new measures were developed. Two data collection instruments were prepared to empirically estimate causal relationships postulated in the conceptual framework (see Figure 18). These were a Children's Questionnaire (CQ) and a Parents' Questionnaire (PQ) designed for parents or main carers.

The CQ consisted of five sections covering: 1) friends' food preferences; 2) Nutritional Knowledge Test (NKT); 3) brand evaluation and evaluation of less healthy foods; 4) perceptions about the frequency of consumption of different foods by other people (social acceptability); 5) advertising literacy; and 6) socio-demographic variables. The PQ collected data about: 1) parents' nutritional knowledge; 2) parent-child communication about food and food advertising; 3) social norms about fast foods; 4) children's biometric data; and 5) family socio-demographic background. Both surveys consisted of single items and multi-item measurement scales, where the latter designated a collection of items intended to represent a theoretical, not observable latent construct (DeVellis 2003). Latent constructs are especially useful when social and behavioural variables, such as beliefs, motives, or emotions need to be measured but cannot be observed directly (DeVellis 2003).

Once the surveys were finalised, they were refined via several stages representing standard research methodology preceding fieldwork (Churchill 1979). First, the instruments were sent to two Australian nutrition experts to establish face validity and determine if they were appropriate for children of different ages and their parents/main carers (Figure 19). Second, having received feedback from the experts, the surveys were pre-tested. Pilot tests provide a unique opportunity to detect wording and sequencing problems and make corresponding improvements. They identify questions that require special attention or training from research assistants during the fieldwork (Cooper and Schindler 2006). Pilot tests are also perfect for the reliability and validity assessment of the measures (Churchill 1979). Pre-testing requires a trial run with a smaller sample of respondents, which can be done either in the form of interviews or surveys (Veal 2005). Interviews are generally used for face validity examination, while quantitative pilot tests are suitable for reliability and validity checks. Reliability aims to purify measures by examining their consistency through the proportion of a true score attributed to a latent variable. Validity, on the other hand, assesses whether instruments capture what they are expected to measure (DeVellis 2003).

The reliability of Likert items was evaluated through scale dimensionality and internal consistency. Exploratory Factor Analysis (EFA) was used to test scale dimensionality (Churchill 1979) as it represents the most appropriate method to preliminary identify item(s) that fail to form an intended theoretical construct (Worthington and Whittaker 2006). The EFA was performed using the Principal Component Analysis extraction to maximise data variance (Worthington and Whittaker 2006) and Varimax orthogonal rotation to increase item loadings for better interpretability (Heck 1998). The factorability of items was judged by the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy which needs to be 0.60 (Tabachnick and Fidell 2007), and Bartlett's test of sphericity (Worthington and Whittaker 2006) with $p < 0.05$ (Tabachnick and Fidell 2007). The number of factors was determined using the Kaiser's criterion – only factors with eigenvalues above 1.00 were retained (Pallant 2007). The percentage of explained variance accounted for by each factor was also examined while identifying meaningful factors (Hinkin 1995; Worthington and Whittaker 2006). Item retention was judged by item loadings, which need to be 0.72 for a sample of 50 (Stevens 1992), and also communalities with 0.30 coefficients for acceptable fit (Pallant 2007). Internal consistency was estimated using a widely used measure of reliability, the Cronbach alpha. This measure reflects a proportion of the scale's total variance corresponding to a true score of a latent construct, captured by its items (DeVellis 2003). Although Cronbach

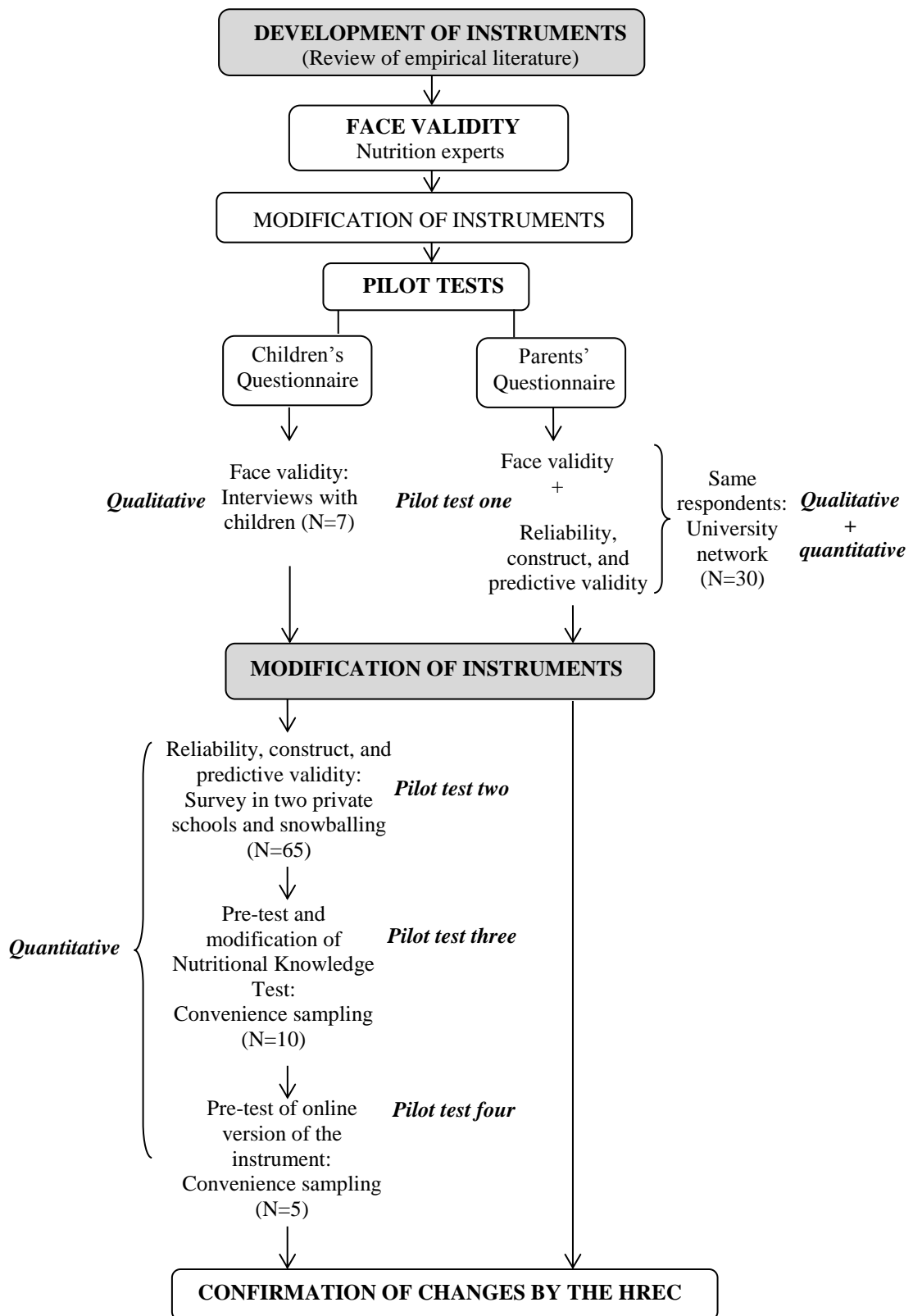


Figure 19: Instrument Development Process

alpha coefficients of 0.70 are more desirable (Pallant 2007), 0.60 was considered acceptable.

The reliability of test items (nutritional knowledge tests completed by parents and children) was examined using the Classical Test Theory (CTT) and Item Response Theory (IRT) statistics, which represent the most suitable method to identify problematic and misfitting tests items (Varma n. d.). The CTT statistics were used to produce several widely used estimation indices, namely: 1) item difficulty; 2) item discrimination; and 3) test's average score. The IRT statistics provide an alternative approach to judge test items' reliability, because they are item-dependent, sample-independent, and estimate items' difficulty based on test-takers' ability (Keeves and Alagumalai 1999). The CTT analysis was carried out using a Microsoft Excel spreadsheet designed by Elvin (2003). The IRT statistics were produced by ConQuest 2.0 (Wu, Adams, Wilson, and Haldane 2007).

The validity was examined by correlating items of interest with other conceptually-related measures (convergent validity) and examining whether they differentiated from other scales (discriminant validity) (Churchill 1979). The validity check allowed the examination of whether items behaved in an expected manner and did not form part of different scales (Churchill 1979). Items were also tested for their preliminary predictive validity (DeVellis 2003) in relation to children's food preferences. The EFA, Cronbach alpha, and predictive validity test were performed using SPSS 19.0.

6.3. Overview of Instrument Validation Process

As shown in Figure 19, several pilot tests were conducted to pre-test the CQ and make it straightforward for children belonging to different age groups. The in-depth interviews were carried out first with children (pilot test 1), followed by a series of surveys whose aim was to establish instrument's validity and reliability (pilot tests two, three, and four). The interviews aimed to establish face validity and confirm that items, layout, and answer scales were clear to, and appropriate for, children aged between seven to 13 years. They assessed children's interpretation of the items to make sure no confusion arose during the full-scale data collection. Because a number of measures were developed specifically for this study and have not been pre-tested before, it was important to confirm that the survey did not contain any leading information.

The first two pilot tests were conducted in private schools selected randomly from an online database (privateschoolsdirectory.com.au, 2011). The schools had to comply with two selection criteria – first, they had to be located in Adelaide and, second, they were required to have Year Three and/or Year Six students, the target age groups for this study. Both independent and Catholic schools were considered suitable. Altogether, the online database returned 32 records conforming with the above-mentioned criteria. Every fifth school was selected, yielding a sample of six schools, which was considered sufficient to recruit participants for the first two pilot tests. A sample of ten children (five children aged between eight to ten years and five children aged between 11 to 13 years) was considered appropriate to receive detailed feedback from the children for pilot test one. Pilot test two, on the other hand, required at least 100 children for reliable statistical analysis (Figure 20).

Expected sample size:
 1) Interviews=10 children
 2) Pilot test 1=200 children
 ↓
Targeted schools in Adelaide:

	<i>School one</i>	<i>School two</i>	School three	School four	School five	School six
33% response rate	✓	✓	X	X	X	X
Pilot test 1:	Interviews	X				
<i>Final sample</i>	N=7					
<i>Response rate</i>	70%					
Pilot test 2:	Number of potential students		Snowballing			
Year Three	25	13	15			
Year Six	25	27	15			
Total	N=50	N=40	N=30			
Number of completed questionnaires:						
Year Three	16	5	15			
Response rate	64%	38%	100%			
Year Six	14	10	5			
Response rate	56%	37%	33%			
Total	N=30	N=15	N=20			
<i>Final sample</i>	N=65					
<i>Response rate</i>	32% of expected sample size					

Figure 20: Expected and Final Sample Sizes for Pilot Tests

Having identified the required sample size, the principals of selected schools were contacted by email. Every principal received a description of the study (Appendix 15), information letters for parents (Appendix 16), consent forms (Appendix 17), and a sample of the CQ for their review (Appendix 18). Two private schools (33% response rate) volunteered to pre-test the survey (Figure 21). For convenience purposes, face-to-face interviews were conducted only in School One (Figure 20). The researcher introduced the study to the children in the presence of a class teacher and the principal. All children were given an opportunity to ask

questions about the study and upcoming interviews. Special information letters were then given to the children who agreed to take part in face-to-face interviews so that they could pass the information (Appendix 16) and consent/complaint forms (Appendices 17 and 19) on to their parents. All documents were in sealed envelopes with the University of Adelaide Business School logo. Seven children aged between seven and 12 years agreed to take part in pilot test one, designating 70% of the expected sample size (Figure 20 and Appendix 20).

Interviews were carried out on the same day during recess or class time. Each child was interviewed separately in the school's library. Interviews were neither audio- nor video-taped – only notes were taken during the discussions. Before the interviews started, every child was told that there were no right or wrong answers and that the interviewer was interested in children's opinion. Every child received instructions about the format of the CQ, showing how she/he could use "smileys" to answer questions. The instructions featured food-unrelated questions to avoid leading information (Appendices 21 and 22). Children were told that they could withdraw from the interviews at any time if they felt uncomfortable. The participants completed the survey and then each question and picture was discussed to ensure children's successful understanding of the CQ. Children's comments were recorded by the researcher directly on the questionnaires. Although children found the survey easy to follow and understand, several images and the structure of the CQ needed minor modification. Also, several new questions were incorporated in the instrument, which are discussed in detail in section 6.5.

After the CQ was revised, it was pre-tested quantitatively to examine reliability, construct and predictive validities of the measures (pilot test two) (Figure 19). As shown in Figure 20, there were 50 potential candidates in School One and 40 candidates in School Two. Again, information letters (Appendix 23) with attached consent forms (Appendix 24) were sent to the parents. In School One, 16 Year Three and 14 Year Six students completed the surveys (64% and 56% response rates, respectively). In School Two, five Year Three and ten Year Six students in School Two (38% and 27% response rates) volunteered to take part in the study (Figure 20). Consent forms signed by the parents were returned to the researcher through class teachers. In School One, the researcher was present in the class during questionnaire completion. In School Two, questionnaires were completed under the supervision of a class teacher.

Due to low response rates during the second pilot test, snowballing was used to recruit more participants (Figure 20). An invitation similar to the one given to school participants (Appendices 23 and 24) was sent to the staff members of the University of Adelaide Business School. Paper-based CQs were delivered to parents once they communicated their children's intention to take part in the study. Parents were asked to let their children complete the questionnaires at home without their intervention and to return the surveys after their completion. Twenty children were recruited using snowballing. Even though the overall response rate was only 32% (Figure 20), the sample of 65 children was sufficient for the EFA according to Nunnally's (1967) ten to one ratio criteria, where each item needs to have at least ten cases for a reliable estimation.

The empirical analysis of data collected during pilot test two indicated that several changes were required and another survey (pilot test three) was conducted to examine the suitability of the changes in the CQ (Figure 19). Pilot test three was carried out with a smaller sample of ten children recruited through the University of Adelaide network. The last pilot test (pilot test four) was conducted to confirm that the layout of the online survey was straightforward and could be administered during the full-scale fieldwork (Figure 19). This pilot test was conducted with a sample of five children (eight to 12 years) and its results are discussed in more detail in section 6.8 of this chapter.

The PQ consisted of previously validated items and also new scales and was pre-tested using the University of Adelaide Business School network (Figure 19). An invitation to take part in the pilot test was sent out electronically. It instructed potential participants that they could complete the survey only if they had a child or children between seven to 13 years (Appendices 26 and 27). The questionnaires were emailed to respondents once they communicated their intention to take part in the study. Face validity of the measures was examined by asking parents to identify questions or words which appeared ambiguous. Parents' qualitative feedback was analysed using open coding and a number of improvements were made based on their suggestions. Empirical analysis of items, on the other hand, was used for the construct/predictive validity and reliability checks. Because cause-and-effect relationships did not represent an objective at this stage, parents and children who participated in the pilot tests were not related to each other. After both the CQ and PQ were improved, additional empirical literature was reviewed to make the final modifications. Prior to the full-

scale fieldwork, all changes in the instruments were approved by the HREC as shown in Appendix 3. The structure of the CQ is discussed in the next section.

6.4. Children's Questionnaire

Several strategies were employed to ensure that the survey was suitable for children of different age groups. For example, every question contained an image to facilitate task comprehension and increase participants' interest in the instrument completion. All images were supplemented with captions for clarity and guidance. Also, developmental psychology literature (Wells 1965) and prior research on children (Macklin and Machleit 1989; Owen, Schickler, and Davies 1997; Roedder et al. 1983) were reviewed to select a straightforward and suitable answer scale. The review showed that a smiley scale represents the most frequently used answer format when collecting data from children (Macklin and Machleit 1989; Read, MacFarlane, and Casey 2002; Roedder et al. 1983). Most importantly, this format has already been successfully used in experiments to record children's food preferences (Neelankavil, O'Brien, and Tashjian 1985; Roedder et al. 1983).

Following the recommendations in the literature, a five-point gender-neutral Likert scale was developed using smileys retrieved from the Internet. Similar to previous studies (Macklin and Machleit 1989; Read et al. 2002), the prepared answer scale contained images ranging from less happy to more happy, with a neutral smiley in the middle. The scale was used consistently throughout the survey (Appendix 18). This answer format aimed to assist the children, especially younger ones, and decrease respondent fatigue. The CQ was administered in a paper-based form during the pilot tests. During the full-scale fieldwork children could also opt for an online survey. The next section describes the items used in the CQ, discussed in the order of their appearance in the survey.

Children's Food Preferences

Children's food preferences or direct food consumption represent the key outcome variable in the marketing (Appendix 5) (Kaufman and Sandman 1984; Roedder et al. 1983) and public health disciplines (Bere and Klepp 2004; Goldberg et al. 1978) to estimate the influence of food advertising on children. They also served as the key variables of interest in this study. Because experimental stimulus food could not be administered during pilot tests, three foods, two healthy (an apple and fruit yogurt) and one less healthy (a burger), were used instead (Appendix 18). Children were asked to imagine that they could choose foods to eat tomorrow

and were asked to indicate how much they wanted to consume each food (*“Let’s imagine you can choose what to eat tomorrow. Would you select the following food?”*). During the fieldwork, children identified their food preferences in relation to three foods displayed in front of them after an experimental exposure (for more detail see Chapter Seven). “Tomorrow” was chosen as a reference point to reduce potential influence of hunger. Respondents rated their food preferences using a five-point scale ranging from “not at all!” to “definitely!” Despite the slight differences in research design during the pilot test and fieldwork, both approaches allowed collecting data about children’s dietary behaviour.

Peers’ Food Preferences

Peers’ food preferences were measured by asking children about their friends’ hypothetical choices (*“What foods would your friends choose tomorrow?”*). To make a measure more comprehensive, choices included five foods – two healthy options: 1) an apple; and 2) bread, fruit, and vegetables, and three less healthy options: 1) sausage and bread; 2) french fries; and 3) a burger, french fries, and soft drink (Appendix 18). Foods were selected based on the feedback received during the focus group with children. Similar to respondents’ food preferences, answer options included: “not at all;” “no;” “not sure;” “yes;” and “definitely.” All items were mixed to reduce order bias. The data about peers’ preferences were collected directly from children because observational learning was found to be influential during the exploratory stage of this study and has also been reported elsewhere (Birch 1980; Hill et al. 1998; Williams et al. 1993). Based on the qualitative data (see Chapter Five), children’s perceptions about their friends’ preferences were expected to reflect not only their previous child-peer communication, but also observational learning at, or outside, school.

Nutritional Knowledge

The review of extant empirical literature has shown that children’s nutritional knowledge has previously been estimated using tests. For example, Gibson et al. (1998) developed a list of 15 foods and asked children to identify which of them contained lots of sugar, fat, or fibre. The correct answers across the 15 items were summed up to create an overall score of children’s nutritional knowledge. Triches and Giugliani (2005) in Brazil, and Rasanen et al. (2004) in Finland, developed an illustrated questions test with three answer options (two foods plus “don’t know”) to estimate children’s knowledge of fibre, vitamins, minerals (Triches and Giugliani 2005) and highest content of salt and fat in foods (Rasanen et al. 2004). Again,

every correctly selected picture was assigned one point, which were added up to create one score (Rasanen et al. 2004; Triches and Giugliani 2005).

The above-mentioned tests, however, were developed outside Australia and a test based on foods commonly consumed in Australia was prepared for this study. Only two items were borrowed from the pre-existing source (Rasanen et al. 2004), namely: 1) an apple vs. yogurt (Table 5, Q1); and 2) cucumber vs. cheese (Table 5, Q2). Only foods expected to be familiar to children were selected (Gibson et al. 1998). Similar to previous studies (Rasanen et al. 2004; Triches and Giugliani 2005), preference was given to illustrated questions with two foods with a “don’t know” option. To keep the number of items manageable and control for the length of the survey, 12 questions were developed. The concepts of fibre, vitamins, minerals used by Triches and Giugliani (2005) were judged as too complex for young children and preference was given to a test measuring children’s knowledge about salt, fat, and sugar in foods as was done by Rasanen et al. (2004).

In the developed Nutritional Knowledge Test (NKT), six items were dedicated to fat content, three referred to salt content, and the last three measured children’s knowledge about sugar (Table 6). Following the suggestions of nutrition experts, the image of fruit yogurt (Appendix 18, Q1) was accompanied by a “traditional yogurt” caption, because a zero fat yogurt was launched in Australia during the instrument review. The above-mentioned caption was expected to designate yogurt which still contained some amount of fat. Each NKT item had only one correct answer. Incorrect and “don’t know” answers were counted as zeros.

Table 6: Nutritional Knowledge Test			
Questions:	Answer options:		CQ item ¹
Which one has higher content of fat?	Traditional yogurt vs. an apple	+ don't know	1
	Cucumber vs. cheese		2
	Medium fat cheese vs. low fat cheese		3
	Burger vs. broccoli		4
	Cookies vs. banana		5
	Potato chips vs. an apple		9
Which one has higher content of salt?	Pizza vs. bread and vegetables		6
	Mashed potatoes vs. french fries		7
	Bread and vegetables vs. bread and sausage		8
Which one has more sugar?	Coca Cola vs. a glass of water		10
	Fruit juice vs. a glass of water		11
	Chocolate muffin vs. an apple		12

Notes:
¹ – Refer to Appendix 18 for more detail.

Attitudes: Brand Evaluation and Evaluation of Non-Branded Foods

Attitudes reflect the degree to which individuals display a favourable or unfavourable evaluation of an object (Fishbein and Ajzen 1975). Despite the importance of attitudes, the

extant literature about consumer behaviour contains very few insights about the influence of children's attitudes on their dietary behaviour. Children's attitudes about foods were measured in this study using four items originally developed by Jones and Fabrianesi (2007) in their research about parents' perceptions of advertising, which were later modified by Pettigrew et al. (2011) in their study of the impact of food advertising on children and parents. Attitudes were assessed across multiple dimensions, including fun, taste, healthiness, and social appeal ("*Do you think this food is funny/tasty/healthy/popular amongst children?*"), which matched themes frequently used to advertise foods to children (Folta et al. 2006; Hastings et al. 2003; Lewis and Hill 1998).

During the pilot test, attitudes were measured in relation to two non-branded foods: 1) an apple and 2) a burger, french fries, and soft drink (Appendix 18, Q13 and Q14). During the full-scale fieldwork, children were asked to report their attitudes about the experimental stimulus (Oreo biscuits), a healthier alternative (an apple), a burger/french fries/soft drink, and less healthy non-branded food (see section 6.8 for more information). Answer options for attitudes were modified from "no"/"a little"/"a lot" (Pettigrew et al. 2011) to a Likert scale ("not at all"/"no"/"not sure"/"yes"/"definitely"). Although previously these items have been used individually (see Jones and Fabrianesi 2007), it was expected that together they formed a latent construct, capturing children's underlying attitudes about branded and non-branded foods. Such latent variable modelling also conforms with modern conceptualisation and use of attitudes in the marketing research (Eagly and Chaiken 1993).

Social Acceptability of Foods Consumption by Other People

As was observed during the focus groups, children are exposed to information about foods communicated by other people outside their families (refer to Chapter Five, section 5.8). To estimate empirically the strength of this external factor and to reflect broader social influences on children, respondents were asked to evaluate how often other people think it was acceptable to eat different foods ("*How often do people think it is OK to eat these foods?*"). Respondents were free to choose their reference point and this measure assessed social norms about foods that the children were exposed to in their immediate social environment. Social acceptability was measured in relation to both healthy and less healthy foods, such as: 1) an apple; 2) bread, vegetables, and fruit; 3) broccoli; 4) cookies; and 5) burger, french fries, and soft drink (Appendix 18, Q15). Answer options included "never," "monthly," "weekly," "twice a week," and "daily."

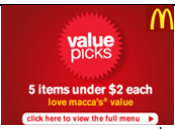


Advertising Literacy

Previously, children's ability to understand advertisements' intent has been measured through open-ended questions about: 1) the purpose of advertising ("What are commercials for?") (Blatt, Spencer, and Ward 1972); 2) reasons why advertisements are shown on television (Meyer, Donohue, and Henke 1978; Robertson and Rossiter 1974; Ward et al. 1972); 3) their intentions ("What do commercials try to do?") (Meyer et al. 1978; Ward, Wackman, and Wartella 1977); and 4) children's reactions to advertisements ("Do you believe what commercials tell you?") (Martin 1997; Rossiter and Robertson 1974). However, the use of verbal responses while measuring children's understanding of advertising has been challenged on the grounds of underestimation of children's overall defence abilities as a result of limited vocabulary or deficiencies during memory retrieval (Macklin 1983). Instead, multiple choice-style and, hence, less cognitively-demanding questions have been more favoured in recent empirical literature (non-verbal responses) (Bijmolt et al. 1998; Boush, Friestad, and Rose 1994; Carter et al. 2011; Rozendaal et al. 2009). Hence, open-ended questions were not considered suitable for the current study and a more comprehensive measure was developed, whereby children's advertising literacy was assessed using multiple items and several advertisements, each describing a different promotion tactic.

Three advertisements were chosen to assess how well children understand advertisements' intentions – two featuring food and another one showing toys (Appendix 18, Q16-18 and Table 7). The first food advertisement described a special deal situation ("5 items under \$2 each") and its selection was guided by the results of the qualitative enquiry (see Chapter Five). The second advertisement featured a new food product next to a character (Table 7). Toys advertisement was used to confirm the convergent validity of food advertisements. All images were retrieved from the Internet. The special deal advertisement was taken from McDonald's website, the toy sale advertisement was retrieved from Google images, and the new product/character advertisement was prepared using Adobe Photoshop program. All brand logos were removed during the pilot tests from advertisements to avoid brand associations as discussed in section 6.5.

As another step towards more reliable assessment of children's advertising literacy, respondents completed multiple items for each advertisement, measuring an understanding of selling and persuasive intentions. Selling intent, which refers to an understanding of commercial promotion of a product to a general audience (Roberts 1983), has been previously

assessed through intended effects on other people (Carter et al. 2011). Using Carter’s et al. (2011) measure as an exemplar, children were asked to evaluate how strongly each advertisement wanted people to buy the advertised products. In the case of the new product/character, children were tested for an understanding of the promotion strategy featured in the CQ (“*It wants people to buy this food because it is new/because teddy likes it*”) (Table 7). In comparison to previous measures (Carter et al. 2011), any reference to “advertisement” was avoided and the word “picture” was used instead.³

Previous items:		Advertisements:					
Carter et al. (2011)	Boush et al. (1994)				Special deal Q16 ¹	New offer/character Q17 ¹	Toys sale Q18 ¹
Original items:		Adapted items:					
<i>Selling intent</i>	So people buy what is on the ad/to sell what is in the ad.	--	1. It wants people to buy this food.	1. It wants people to buy this food because it is new. 2. It wants people to buy this food because of teddy.	1. It wants people to buy toys.		
<i>Persuasive intent</i>	To make you want to buy it. See something so then you’ll beg and beg and beg until you get it.	Make you like the product better, get you to think that having their product will make you feel good, and grab your attention.	2. It tries to make you like the food. 3. It wants you to think that having this food will make you feel good. 4. It wants to grab your attention with a special offer.	3. It tries to make you like the food. 4. It wants you to think that having this food will make you feel good. 5. It wants to grab your attention with a new offer and a teddy.	2. It tries to make you like the toys. 3. It wants you to think that having these toys will make you feel good. 4. It wants to grab your attention with a sale.		

Notes:

¹ – See Appendix 18.

The persuasive intent, which reflects an attempt to increase a product’s appeal to a child (Roberts 1983) and lead to a purchase (Carter et al. 2011), was assessed using items adapted from Boush’s et al. (1994) study of children’s knowledge of advertisers’ tactics and Carter’s et al. (2011) study of children’s understanding of food advertisements. Using these items, children were asked to evaluate how strongly the three advertisements shown in the CQ aimed to exert affective influences in children (e.g., “*It tries to make you like the food/toys,*” “*It wants you to think that having this food/these toys will make you feel good,*” and “*It wants to grab your attention with a special offer/ a new offer and a teddy/a sale*”) (Table 7). Similar to previous research (Rozendaal et al. 2009), predefined answer options were used to assist children’s recognition and survey competition, which were: 1) “not at all;” 2) “a little bit;” 3) “quite a bit;” 4) “a lot;” and 5) “definitely” (Appendix 18). In addition to the above-mentioned three advertisements used during the pilot tests, children also completed

³ After careful consideration of the literature, recognition of advertisements from TV programs was omitted in this study because it has previously been used with young children aged between four to seven years (Livingstone and Helsper 2004; Martin 1997), who did not form the target group in this study.

advertising literacy questions about the advertisement they were exposed to during the experiment (full-scale fieldwork) (see section 6.8 and Chapter Seven for more detail).

There were a number of benefits in using several advertisements and multiple items in one survey. First, advertisements with different promotion tactics provided a more reliable measure of children's advertising literacy in relation to different advertising settings. Second, the combination of selling and persuasive intents facilitated a more reliable estimation of children's understanding of advertisements in comparison to previously used single-item measures. It was expected that this approach would yield a more comprehensive assessment of the relationship between children's dietary behaviour and advertising literacy. Advertising literacy was also assessed in relation to foods – products expected to be familiar and frequently advertised to children.

Demographic Data

The instrument also collected data about children's age and gender (Appendix 18, Q19 and Q20), required to serve as control variables. The next section summarises modifications in the CQ emanating from face-to-face interviews with children (pilot test one) and quantitative pilot tests (pilot tests two and three).

6.5. Pre-Testing the Children's Questionnaire

Pilot Test One: Face Validity

Face-to-face interviews showed that several modifications were required to improve the quality of the survey. These included re-wording of items and modification of images, layout, and answer options, all of which are discussed below.

Re-Wording of Items

Children pointed out their difficulties while answering a NKT question about the content of fat in cheese (Appendix 18, Q3) as they could not distinguish between the abstract concepts of "medium fat cheese" and "low fat cheese." Hence, to improve the quality of this item, "medium fat cheese" was changed to "3.5% fat cheese," while "low fat cheese" was changed to "1% fat cheese" (Appendix 28, Q3). Numerical labelling was expected to provide more clarity. Next, "mashed potatoes vs. french fries" (Appendix 18, Q7) was turned into a question about fat content, because children suggested that home-made mashed potatoes might contain as much salt as french fries, depending on cooking procedures (Appendix 28,

Q6). Consequently, the number of questions about fat content increased up to seven items. All brands, which were originally included in the CQ were removed because they influenced children’s responses during the interviews. Thus, the word “cookies” was used instead of “M&M cookies” (Appendix 18, Q5 and Appendix 28, Q5) and “soft drink” was used instead of “Coca Cola” (Appendix 18, Q10 and Appendix 28, Q10).

Layout

Each NKT question in the modified version of the survey was accompanied by a task question (Appendix 28) in order to give more guidance to younger respondents. The “don’t know” answer option was moved from the right-hand side to the left-hand side of the answer grid across all NKT items as demonstrated in Figure 21. Additionally, children suggested increasing the font for each NKT question to help them distinguish better amongst the items displayed on the same page (Appendix 28). However, such numbering was not used in the online instrument because only one question was displayed per webpage during the full-scale fieldwork. Because younger children felt that the NKT items looked similar to each other, the key words, such as “fat,” “sugar,” “salt,” “highest,” and “lowest” were highlighted with bigger font and red colour in both online and paper-based surveys to emphasise the items’ central point (Appendices 34 and 35).

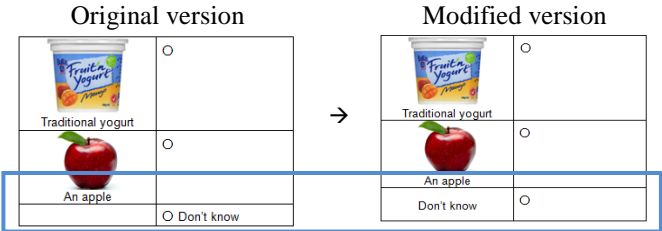


Figure 21: Modified Answer Grid for NKT

Images

Potato chips (Appendix 18, Q9) were replaced with a new image to avoid observed confusion amongst the respondents (Figure 22A). As was mentioned above, all brand names were removed from the survey. Following this modification, an image of a generic soft drink was used instead of “Coca Cola” (Figure 22B). The McDonald’s logo was removed from the special deal advertisement (Figure 22C). Target logo was removed from the toys sale advertisement (Figure 22D). In addition, children advised that images in the advertising literacy section should be shown in an advertising context. Therefore, the modified images depicted different everyday settings: 1) the special deal was inserted in an image of a webpage

(Figure 22E); 2) the new offer/character was displayed on a wall of a bus stop (Figure 22F); and 3) the toy sale advertisement was incorporated in an image of a street (Figure 22G).

Original images ¹		Modified images ²
 Q9	(A) →	 Q9
 Q10	(B) →	 Q10
 Q16	(C) →	 Q9
 Q18	(D) →	 Q11
 Q16	(E) →	  Q9
 Q17	(F) →	 Q10
 Q18	(G) →	 Q11

Notes:
¹ – See Appendix 20.
² – See Appendix 30.

Figure 22: Modified Images (CQ)

Answer Scales

Two answer scales were modified in the CQ. First, the “don’t know” answer option was added to all advertising literacy items (Appendix 28, Q9-Q11) because children suggested that not every respondent would be able to identify advertisements’ intentions and answer these questions. To avoid potential confusion during the full-scale fieldwork, this additional answer category was displayed in a separate column next to the existing answer grid so that it

did not look like an extension of the existing scale. Second, it was observed that children's answers across the social acceptability items were skewed. Generally, scales in the instrument need to ensure sufficient variance for statistical analysis (Hinkin 1995). To minimise the risk of skewed distribution during the data collection, answers were modified from "never, rarely, monthly, weekly, and daily" (Appendix 18, Q15) to "never, monthly, weekly, twice a week, and daily" (Appendix 28, Q7).

Observations from Pilot Test One

Several observations were made during the interviews. First, several children (mostly younger ones) asked the researcher to read out the question and answer options to complete the survey. Hence, a special guide shown in Appendix 40 was developed for the research assistants about providing such assistance during the full-scale fieldwork. Second, the social acceptability items developed specifically for this study yielded satisfactory understanding amongst the children, who mentioned "other people," "friends," or "a lot of people" when they were asked to explain who these persons referred to. Although few participants identified "family," and "members of an extended family," they also mentioned "other people," which was considered acceptable for the purposes of this study and the social acceptability items were retained in the survey for the quantitative pilot tests.

Next, an additional item was included in the survey to be used as a convergent validity check of the newly developed measure of nutritional knowledge during the pilot tests. This item measured the overall number of children's sources of knowledge about foods ("*How did you learn about food?*") (Appendix 28, Q8). Answer options included "parents," "school," "television," "the Internet," and "other people." Children could select as many as they wished. Depending on their reading abilities, children spent 15 to 25 minutes completing the survey, which fell within the expected time range for the upcoming full-scale fieldwork. Children ticked, circled, or coloured their answers, all of which were considered as appropriate identifications of their answers. Overall, the interviews showed that children of all ages understood smileys and enjoyed the layout of the questionnaire. They also found the survey to be easy to follow and complete. Having received positive feedback about the CQ and having made all necessary modifications, the survey was pre-tested with a bigger sample of children to confirm measures' reliability and validity.

Pilot Test Two: Scale Reliability and Validity

This section provides an overview of the quantitative pilot test conducted with 65 children. Because the questionnaires were completed without the researcher's supervision in School Two and during snowballing, not all questions were answered by respondents, resulting in missing data. However, the percentage of missing values was negligible, ranging from 1.5% to 7.7% (Appendix 29A). The average age of participants was nine years, with a median age of ten years. The sample was equally split between females and males, and between Year Three and Year Six students (see Appendix 25). The empirical results are discussed first for the Likert measures, followed by an analysis of the test items.

Reliability of Likert Items

The EFA performed for the food-related items (peers' food preferences, social acceptability, and evaluations of foods) yielded six factors which satisfied the Kaiser's criterion and conformed with the expected scale dimensionality. According to the results, peers' food preferences yielded two factors. The first factor grouped less healthy foods, consisting of burger/french fries/soft drink (0.914), french fries (0.878), and sausage/bread (0.809) (Table 8). The second factor grouped healthy foods – an apple (0.718) and bread/vegetables/fruit (0.559) (Table 8). A similar pattern was observed for the social acceptability items, where broccoli, apple, and bread/vegetables/fruit formed one factor, while cookies and burger/french fries/soft drink loaded on a different factor (Table 8). A less clear picture was observed for food evaluations, which either loaded on different factors or formed parts of other factors. Because such results could occur due to small sample size, their dimensionality was examined again with a bigger sample. All items showed acceptable factorability judged by the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (0.610) and Bartlett's test of sphericity ($p < 0.05$). All communalities were acceptable above 0.30 (Appendix 29B). Except for five variables, most items exhibited loadings above the required 0.72 coefficient (Table 8).

The EFA performed for advertising literacy items yielded four factors with eigenvalues above 1.0. These were: 1) a toy sale factor; 2) two special deal factors; and 3) a new product/character factor (Table 9). Although several special deal and new product/character items loaded on different factors, these results were considered acceptable given the preliminary nature of the pilot test. Apart from the three factor loadings below 0.72 (Table 9), advertising literacy items demonstrated acceptable factorability with the Kaiser-Meyer-Olkin=0.716, Bartlett's test of sphericity=0.000, and communalities above 0.30 (Appendix

29C). Items' reliability examined with the Cronbach alpha showed an acceptable coefficient of 0.60 or above across all items, except for special deal (0.408) and evaluation of burger (0.344) and an apple (0.233) (Table 10).

Table 8: EFA for Food-Related Items (CQ)

Variables:	Extracted factors					
	<i>Friends:</i>	<i>Social acceptability</i>		<i>Friends:</i>	<i>Evaluation</i>	
	<i>less healthy foods</i>	<i>Healthy foods</i>	<i>Less healthy foods</i>	<i>healthy foods</i>	<i>Fun</i>	<i>Burger</i>
Friends' preferences: burger/french fries/soft drink	.914					
Friends' preferences: french fries	.878					
Friends' preferences: sausage and bread	.809					
Social acceptability: broccoli		.752				
Social acceptability: an apple		.744				
Social acceptability: bread/vegetables/fruit		.682				
Do you think this food is healthy? Burger/french fries/soft drink		-.530				
Social acceptability: cookies			.829			
Social acceptability: burger/french fries/soft drink			.711			
Do you think this food is healthy? An apple			-.555			
Friends' preferences: an apple				.718		
Do you think this food is popular with children? An apple				.637		
Friends' preferences: bread, vegetables, and fruit	-.494			.559		
Do you think this food is tasty? An apple				.402		
Do you think this food is funny? Burger/french fries/soft drink					.874	
Do you think this food is funny? An apple					.774	
Do you think this food is popular with children? Burger/french fries/soft drink						.754
Do you think this food is tasty? Burger/french fries/soft drink						.658
Percent of variance per factor	20.65	13.21	10.81	8.78	7.57	6.06
<i>Eigenvalues</i>	3.72	2.38	1.94	1.58	1.36	1.09

Notes:
Cross-loadings and negative factor loadings are marked in red.

Table 9: EFA for Advertising Literacy Items

Variables:	Extracted factors			
	<i>Toys sale</i>	<i>Special deal</i>	<i>New product/character</i>	<i>Special deal</i>
It wants you think that having these toys will make you feel good (toy sale)	.920			
It tries to make you like the toys (toys sale)	.757			
It wants people to buy toys (toys sale)	.744			
It wants to grab your attention with a special offer (special deal)		.862		
It wants people to buy this food because it is new (new product/character)		.786		
It wants people to buy this food (special deal)		.731		
It wants to grab your attention with a sale (toys sale)	.500	.570		-.458
It wants you to think that having this food will make you feel good (new product/character)			.756	
It wants people to buy this food because teddy likes it (new product/character)			.682	
It wants you to think that having this food will make you feel good (special deal)			.645	
It wants to grab your attention with a new offer and a teddy (new product/character)			.610	
It tries to make you like the food (special deal)				.849
Percent of variance per factor	34.08	14.19	11.79	9.92
<i>Eigenvalues</i>	4.09	1.70	1.41	1.19

Notes:
Low Cronbach alpha coefficients are marked in red.

Table 10: Cronbach Alpha for CQ Items

Scale:	N of items	Cronbach alpha
Peers' food preferences: Healthy foods (apple; bread, vegetables, and fruit) (N=65)	2	.671
Less healthy foods (bread and sausage; french fries; burger/french fries/soft drink) (N=65)	3	.875
Social acceptability: Healthy foods (apple; bread, vegetables, and fruit; and broccoli) (N=65)	3	.663
Less healthy foods (N=65)	2	.691
Evaluation of burger/french fries/soft drink (N=62)	4	.344
Evaluation of an apple (N=59)	4	.233
Advertising literacy: Special deal advertisement (N=58)	4	.408
New product/character advertisement (N=61)	4	.609
Toys sale advertisement (N=59)	4	.808

Notes:
Low Cronbach alpha coefficients are marked in red.

Reliability of Test Items

The CCT statistics showed that the NKT questions displayed low item difficulty (Appendix 29D), which designates the percentage of respondents who answer questions correctly. If 95% of participants can identify a correct answer, then the item is easy. If 30% of students give a correct answer, the item has moderate difficulty (Thompson 2009). In the pilot test two, 91% of children answered NKT7 and NKT8 correctly; 92% answered correctly NKT2 and NKT3; and 94% successfully completed NKT6 (Appendix 29D). The lowest item difficulty was observed for NKT1/NKT5/NKT11, NKT4, NKT9/NKT12, and NKT10, which were correctly answered by 95%, 97%, 98%, and 100% of children, respectively (Appendix 29D). The item discrimination index, which demonstrates the difference between the top third and the bottom third of the test takers (Elvin 2003), was also examined. In this case, the higher the index, the more the item differentiates between the test-takers, but the items in the midrange (0.50) are still preferred. If an item's differentiation index is zero, then the item does not discriminate between the test-takers (Jenkins and Michael 1986). Overall, the differentiation of the 12 test items was low and ranged from zero to 29%. The average score across the 12 items was 11.40 with small standard deviation of 0.98 (Appendix 29D).

Next, the two indices produced by the IRT statistics were used together with the map of items' difficulty to judge the fit of test items. These indices were: 1) the weighted Fit Mean-Square (MNSQ), which represents a chi-square variate weighted by an item's difficulty; and 2) the *t* statistic, which is a normal deviate from a mean of zero and a standard deviation of one, indicating misfit at 95% confidence level (Wu and Adams 2007). The map of latent difficulty, on the other hand, plots items according to their difficulty and participants' ability. Items plotted at the bottom of the distribution designate easy items, whereas those plotted at the top of the distribution designate harder items. Although all items exhibited acceptable MNSQ, ranging between 0.70 and 1.30 (Wright and Linacre 1994) and acceptable *t* values within the -2.00 to +2.00 range (Wu and Adams 2007), the latent difficulty map showed that most NKT items were easy (Appendix 29D). Ideally, questions should cluster in the middle of the chart, representing the middle point of a normal distribution. NKT items clustered at the bottom of the normal distribution, designating easy items. Amongst the 12 items, "bread and vegetables vs. bread and sausage" (NKT9) and "chocolate muffin vs. an apple" (NKT12) were the easiest, followed by "burger vs. broccoli" (NKT4). On the other hand, "pizza vs. bread and vegetables" (NKT7) and "mashed potatoes vs. french fries" (NKT8) were somewhat more difficult for children to answer correctly. The reliability of the measure was

above the minimum requirement of 0.30 (i.e., 0.35) (Nunnally 1967) (Appendix 29D). The results suggested that a test with three answer options was not effective in capturing children’s nutritional knowledge, nor in differentiating amongst the test-takers. It did not provide sufficient statistical variance and demonstrated low measurement reliability. Therefore, the test was modified and pre-tested again with a different sample of children (see pilot test three).

Convergent Validity

The convergent validity was established by correlating items of interest with other conceptually linked measures (Churchill 1979) available in the CQ. For example, the NKT was correlated with children’s age (Appendix 28, Q12) and the overall sources of knowledge about foods (Appendix 28, Q8), because it was expected that nutritional knowledge was higher amongst older respondents and respondents who had access to more sources of information about nutrition. The convergent validity of food-related items (friends’ food preferences, social acceptability of foods, and food evaluations) was examined by correlating them with children’s food preferences (Appendix 28, Q1). Advertising literacy items were correlated with age as it was expected that cognitive defences mature with age (Martin 1997). The strength of associations was judged using Cohen’s (1992) guidelines, where 0.10 designated small correlation, 0.30 identified medium correlation, and 0.50 denoted large association.

No statistically significant correlation was observed between children’s age and their nutritional knowledge in the current sample possibly because of little variance in NKT scores (Table 11). Nonetheless, there was a small statistically significant correlation between nutritional knowledge and sources of knowledge about foods (0.244) and a medium correlation between age and sources of knowledge about food (0.366), pointing to some preliminary validity of the designed nutritional knowledge measure.

Variables:	Nutritional knowledge ¹	Age
Age	-.030 (N=62)	1
Sources of knowledge about food	.244* (N=62)	.366** (N=59)

Notes:

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

¹ – Score formed by adding up answers across five items which exhibited better fit (NKT2, NKT3, NKT6, NKT7, and NKT8), divided by five.

Non-significant coefficients are marked in red.

Food-related items exhibited a higher number of statistically significant medium and large associations (Table 12). First, there was a positive association between children's preferences for an apple and friends' preferences for healthy foods (0.470) and evaluation of an apple ("healthy" and "tasty") (0.523). In contrast, a reverse association was observed between respondents' preferences for an apple and friends' preferences for less healthy foods (-0.289). Likewise, children's preferences for a burger seemed to be associated with their friends' preferences for less healthy foods (0.395), higher perception of their social acceptability (0.272), and higher ratings about burgers' taste and popularity amongst peers (0.515). If friends consumed more healthy foods, respondents' food preferences for a burger seemed to be lower (-0.326), as well as their evaluations of burger's taste and its social appeal (-0.286). Higher preferences for healthier foods amongst peers were also positively correlated with an apple's fun and popularity (0.267). Although other significant correlations were not meaningful (marked in red in Table 12), most associations preliminary supported the original hypotheses, pointing to the items' successful convergent validity

Except for four instances (marked in red in Table 13), most advertising literacy items were positively correlated with age, pointing to a gradual increase in children's understanding of selling and persuasive intents across different advertising scenarios. Most importantly, statistically significant associations were observed amongst all food advertising literacy items and the items measuring children's understanding of bias in the toys sale advertisement. This result confirmed successful convergent validity, indicating that understanding of selling and persuasive intent for food advertisements was also related to stronger beliefs about selling and persuasive intentions in advertisements for other child-oriented products, such as toys.

Predictive Validity

Having established the convergent validity of the measures, a causal model was tested to preliminarily examine whether measures exhibited acceptable predictive validity in relation to children's food preferences, one of the key outcome variables of the current study. Figure 23 shows which causal relationships were assessed. Two multiple regressions were performed using children's food preferences for an apple and a burger as dependent variables (marked in red in Figure 23). In both regressions, independent variables included: 1) attitudes (evaluation of foods); 2) friends' preferences for healthy and less healthy foods; 3) social acceptability; 4) children's nutritional knowledge; 5) advertising literacy; and 6) demographic variables (children's age and gender). Additional four regressions served to examine the influence of

Table 12: Correlation: Food-Related Items											
Variables:		Respondents' food preferences		Friends' food preferences ¹		Social acceptability ¹		Burger food evaluation ¹		Apple food evaluation ¹	
		Apple	Burger	Less healthy foods	Healthy foods	Healthy foods	Less healthy foods	Tasty/ popular	Funny/less healthy	Healthy/tasty	Popular/funny
Food preferences	An apple	1									
	A burger	.331** (N=64)	1								
Friends' food preferences	Less healthy foods	-.289* (N=65)	.395** (N=64)	1							
	Healthy foods	.470** (N=65)	-.326** (N=64)	.000 (N=65)	1						
Social acceptability	Healthy foods	.111 (N=65)	-.110 (N=64)	-.094 (N=65)	.087 (N=65)	1					
	Less healthy foods	-.141 (N=65)	.272* (N=64)	.084 (N=65)	.016 (N=65)	.000 (N=65)	1				
Evaluation of a burger	Tasty/popular	-.221 (N=62)	.515** (N=61)	.143 (N=62)	-.286* (N=62)	-.196 (N=62)	.259* (N=62)	1			
	Funny/less healthy	.077 (N=62)	.020 (N=61)	.046 (N=62)	.184 (N=62)	.259* (N=62)	-.072 (N=62)	-.011 (N=62)	1		
Evaluation of an apple	Healthy/tasty	.523** (N=59)	-.195 (N=58)	-.192 (N=59)	.173 (N=59)	-.012 (N=59)	-.127 (N=59)	-.048 (N=58)	.276* (N=58)	1	
	Popular/funny	-.044 (N=59)	.114 (N=58)	.250 (N=59)	.267* (N=59)	-.335** (N=59)	-.013 (N=59)	-.214 (N=58)	.073 (N=58)	-.018 (N=59)	1

Notes:

*. Correlation is significant at the 0.05 level (2-tailed).

**.. Correlation is significant at the 0.01 level (2-tailed).

¹ – Items formed from factor scores.

Non-significant coefficients are marked in red

Table 13: Correlation: Age and Advertising Literacy

Variables:		Age	Special deal				New product/character				Toys sale				
			It wants people to buy this food	It tries to make you like the food	It wants you to think that having this food will make you feel good	It wants to grab your attention with a special offer	It wants people to buy this food because it is new	It wants people to buy this food because teddy likes it	It wants you to think that having this food will make you feel good	It wants to grab your attention with a new offer and teddy	It wants people to buy toys	It tries to make you like the toys	It wants you to think that having these toys will make you feel good	It wants to grab your attention with a sale	
Special deal advertisement	It wants people to buy this food	.362** (N=59)	1												
	It tries to make you like the food	.288* (N=58)	.118 (N=58)	1											
	It wants you to think that having this food will make you feel good	.052 (N=61)	-.006 (N=61)	.248* (N=61)	1										
	It wants to grab your attention with a special offer	.241* (N=61)	.452** (N=61)	.085 (N=61)	.135 (N=64)	1									
New product/character advertisement	It wants people to buy this food because it is new	.348** (N=59)	.473** (N=59)	.358** (N=59)	.268* (N=62)	.656** (N=62)	1								
	It wants people to buy this food because teddy likes it	.062 (N=58)	.020 (N=58)	.043 (N=58)	.267* (N=61)	-.007 (N=61)	.208 (N=61)	1							
	It wants you to think that having this food will make you feel good	.074 (N=60)	.086 (N=59)	.020 (N=58)	.506** (N=62)	.214 (N=62)	.373** (N=62)	.356** (N=61)	1						
	It wants to grab your attention with a new offer and a teddy	-.145 (N=59)	.101 (N=59)	-.012 (N=58)	.154 (N=62)	.066 (N=62)	.131 (N=62)	.191 (N=61)	.398** (N=62)	1					
Toys sale advertisement	It wants people to buy toys	.281* (N=59)	.373** (N=58)	.343** (N=58)	.210 (N=61)	.237 (N=61)	.450** (N=59)	.209 (N=58)	.373** (N=59)	.086 (N=59)	1				
	It tries to make you like the toys	.251* (N=57)	.323** (N=57)	.448** (N=58)	.277* (N=60)	.246 (N=60)	.510** (N=58)	.107 (N=57)	.330** (N=58)	.032 (N=58)	.633** (N=59)	1			
	It wants you to think that having these toys will make you feel good	.260* (N=59)	.207 (N=59)	.119 (N=59)	.340** (N=62)	.148 (N=62)	.219 (N=60)	.104 (N=59)	.477** (N=60)	.137 (N=60)	.647** (N=61)	.635** (N=60)	1		
	It wants to grab your attention with a sale	.375** (N=59)	.417** (N=59)	-.125 (N=59)	.012 (N=62)	.468** (N=62)	.413** (N=60)	-.046 (N=59)	.287* (N=60)	.151 (N=60)	.297* (N=61)	.350** (N=60)	.508** (N=62)	1	

Notes:

* Correlation is significant at the .05 level (2-tailed).

** Correlation is significant at the .01 level (2-tailed).

Non-significant coefficients are marked in red.

advertising literacy and nutritional knowledge on children's attitudes about an apple and a burger (marked in green in Figure 23). The independent variables in these regressions were: 1) children's nutritional knowledge; 2) advertising literacy; and 3) children's age and gender.

Except for the children's nutritional knowledge and demographic variables, other independent variables were used in a form of factor scores extracted during the data reliability assessment discussed above. Advertising literacy consisted of three factor scores extracted during the EFA (Table 8) (the fourth factor was excluded because it accounted for the least percentage of variance in the data). Children's nutritional knowledge was used as respondents' overall score, created by adding up correct answers across better fitting items divided by five. As shown in Figure 23, the influence of food preferences on children's weight was not estimated because biometric information was collected only during the full-scale fieldwork. Likewise, parental influence on children could not be assessed because the pilot test's participants were not related to each other.

As shown in Table 14, the two regression models explained 42% of variance in children's preference for an apple and 32% of variance in respondents' preference for a burger. Two influential factors affecting children's food preferences were identified – peers and children's attitudes (evaluation of foods). Peers' preferences for healthy foods increased children's preferences for a healthy snack (an apple). Likewise, peers' preferences for less healthy foods increased respondents' preferences for a burger. As expected, more positive evaluation of an apple's healthiness and taste (0.451), and of a burger's taste and popularity (0.376) led to a higher desire to consume such foods (Table 14). Of all independent variables, evaluations of foods exhibited the strongest effects as indicated by standardised betas. They alone accounted for 23% out of a total 42% of explained variance for an apple, and 15% out of a total 32% for a burger. Nutritional knowledge and other independent variables did not exhibit any significant effects in the current sample. The overall fit of models was significant, suggesting successful predictive validity of the designed measures (Table 14). No multicollinearity was detected (Appendix 29E)

The four regressions estimated for the influence of children's nutritional knowledge and advertising literacy on attitudes (evaluation of an apple and of a burger) did not yield any statistically significant variables and were not reported in this section. The regressions also did not demonstrate a statistically significant fit: 1) evaluation of apple's health and taste, F).

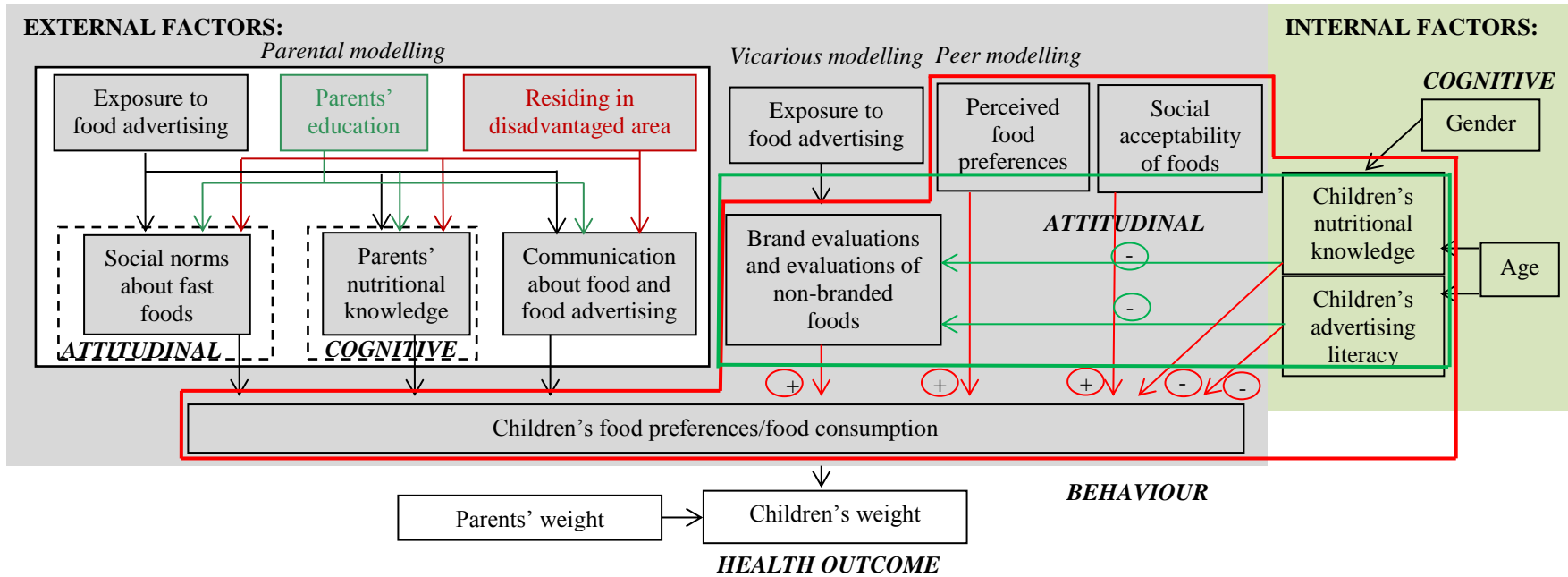


Figure 23: Causal Relationships Estimated Using Pilot Test Two Data

Table 14: Multiple Regressions for Food Preferences				
	Unstandardised coefficients	Standardized coefficients	t value	ρ
A) Preference for an apple¹				
Nutritional knowledge (N=65)	-.188	-.104	-.805	.427
Friends' less healthy food preferences (N=65)	-.103	-.095	-.669	.508
<i>Friends' healthy food preferences (N=65)</i>	<i>.453</i>	<i>.419</i>	<i>3.348</i>	<i>.002</i>
Social acceptability of healthy foods (N=65)	.086	.079	.622	.538
Social acceptability of less healthy foods (N=65)	-.055	-.050	-.418	.679
<i>Evaluation of apple (healthy and tasty) (N=59)</i>	<i>.549</i>	<i>.481</i>	<i>3.849</i>	<i>.000</i>
Evaluation of apple (popular and funny) (N=59)	-.209	-.196	-1.382	.176
Advertising literacy: toys sale (N=51)	-.157	-.142	-1.137	.263
Advertising literacy: special deal (N=51)	-.275	-.228	-1.733	.092
Advertising literacy: new product/character (N=51)	.155	.150	1.190	.242
Age (N=62)	-.047	-.072	-.480	.634
Gender (N=62)	-.089	-.041	-.338	.738
B) Preference for a burger²				
Nutritional knowledge (N=65)	-.392	-.174	-1.276	.210
<i>Friends' less healthy food preferences (N=65)</i>	<i>.423</i>	<i>.313</i>	<i>2.116</i>	<i>.041</i>
Friends' healthy food preferences (N=65)	-.304	-.225	-1.646	.109
Social acceptability of healthy foods (N=65)	.066	.049	.351	.727
Social acceptability of less healthy foods (N=65)	.262	.194	1.495	.144
<i>Evaluation of burger (tasty and popular) (N=62)</i>	<i>.525</i>	<i>.387</i>	<i>2.612</i>	<i>.013</i>
Evaluation of burger (funny and healthy) (N=62)	.107	.079	.592	.557
Advertising literacy: toys sale (N=51)	.121	.087	.654	.517
Advertising literacy: special deal (N=51)	-.081	-.054	-.370	.713
Advertising literacy: new product/character (N=51)	-.093	-.072	-.541	.592
Age (N=62)	-.067	-.083	-.550	.585
Gender (N=62)	.193	.072	.545	.589

Notes:

¹ – Percent of explained variance=42%, F (12, 34)=3.732, $\rho=0.001$.

² – Percent of explained variance=32%, F (12, 36)=2.859, $\rho=0.007$.

Statistically significant effects are marked in green.

(6, 40)=0.852, $\rho=0.538$; 2) evaluation of apple's fun popularity and fun, F (6, 40)=1.886, $\rho=0.111$; 3) evaluation of burger's taste and popularity, F (6, 44)=.889, $\rho=0.511$; 4) evaluation of burger's fun and healthiness F (6, 44)=0.730, $\rho=0.628$.

Observations from Pilot Test Two

Several observations emerged after the empirical analysis. First, except for the Nutritional Knowledge Test, the measures created for, or incorporated into the CQ, demonstrated acceptable reliability, convergent and discriminant validities. Second, the pilot test pointed to a required need for a modification of the NKT so that it captured better respondents' nutritional knowledge. Therefore, the test items were modified and pre-tested again (see next section). Third, the pilot test showed that the instrument exhibited successful predictive validity and, thus, could be used during the upcoming full-scale fieldwork. Finally, because peers' food preferences and social acceptability items did not form one factor, but instead represented two conceptually different constructs, these results indicated that the above-mentioned items can be used as predictors of children's dietary behaviour for healthy and less healthy foods, as hypothesised in the developed conceptual framework. The next section describes the modifications made to improve the quality of the NKT.

Pilot Test Three: Modification of NKT

Based on the results of pilot test two the difficulty of the NKT items was increased – items were re-designed and the modified questions contained at least four answer options in addition to “don’t know.” The modification resulted in a reduction in the number of items from 12 to eight (Appendix 30A). In the new test, four questions measured the knowledge about the highest content of fat, salt, and sugar, and the other four questions were dedicated to the lowest amount of fat, salt, and sugar in common foods. Additionally, an image of the experimental stimulus (Oreo biscuits) was incorporated twice in the test (Appendix 30C, Q1 and Q6). Since the number of answer options increased in the NKT, correct answers were determined using the nutritional information retrieved from the Australian Lifestyle Fitness and Calorie Count online database (Appendix 30B). Nutritional information for the burger was retrieved from the Hungry Jack’s Nutritional Guide for the “ultimate Double Whopper” because its image was used in the NKT (Hungry Jack's 2011). Every question in the test had only one correct answer (Appendix 30B). Again, two nutrition experts reviewed the modified version of the NKT prior to the pilot test.

The modified test was pre-tested with a smaller sample of children recruited through the University of Adelaide network (N=10) (Appendix 30C). Respondents’ age ranged from eight to 13 years with an average of ten years and a standard deviation of 1.63 years. Children were equally split between females and males (Appendix 30D). The CTT statistics showed that the modified NKT questions exhibited better item discrimination (33%), except for three instances (Appendix 30E, Q2, Q5, and Q7). The map of items’ difficulty (IRT statistics) showed that NKT4 and NKT6 were relatively easy (Appendix 30F) and were answered correctly by 70% and 90% of test takers, respectively (Appendix 30E). In contrast, NKT1 and NKT3 represented the hardest items (Appendix 30F) as they were answered correctly only by 20% of children (Appendix 30F). The reliability of items was low due to small sample size (0.03) (Appendix 30F) and was ignored.

The modified version of the NKT proved to be more appropriate for measuring children’s nutritional knowledge and was considered suitable for future data collection. Two final modifications were made to the test to increase its quality, based on the results of the third pilot test. An additional food option (“soft drink”) was added to NKT3 because the question was found to be a little difficult for the children and “cheese” was added to NKT5 to make the number of answer options comparable across all NKT items (Appendix 30G). Correct

answers remained unchanged for the modified items (Appendix 30G). The next section describes the content of the survey prepared for parents.

6.6. Parents' Questionnaire

Nutritional Knowledge

The first section of the PQ measured parents' nutritional knowledge (Appendix 31, Q1-Q18), which was based on a pre-existing, already validated measure designed for adults – the General Nutrition Knowledge Questionnaire (GNKQ) (see Parmenter and Wardle 1999). This measure assesses adults' knowledge about dietary recommendations and healthy foods (Hendrie, Cox, and Coveney 2008). It has already been modified to suit Australian dietary guidelines and successfully validated in South Australia (Hendrie, Coveney, and Cox 2008; Hendrie, Cox et al. 2008). Two GNKQ modules were integrated in the PQ after Gillian Hendrie's permission was acquired. These were the "Dietary Recommendations," consisting of 13 questions, and the "Sources of Foods/Nutrients," containing 69 questions (Hendrie, Cox et al. 2008). The items included both multiple choice tasks and open-ended questions (Hendrie, Coveney et al. 2008) (Appendix 32). Other GNKQ modules were not included in the questionnaire as they did not form part of this study's focus. The correct answers and scoring scheme for the chosen items were provided by Gillian Hendrie (Appendix 32).

Parent-Child Communication about Food and Food Advertising

To examine whether communication exerts any mitigating effect on children's food preferences and consumption, five items were developed for this study. These items aimed to reflect communication as an active process through which knowledge is transferred to children. All items reflected parents' active involvement in communicating beliefs and norms to their children and assessed the frequency of different communication practices. In particular, they measured communication about foods ("*I try to explain to my child the difference between good foods and bad foods*") and communication about food advertising ("*When my child sees a food advertisement I try to explain the motives behind the advertisement*"; "*I explain the motives behind food advertisements to my child even when s/he does not see many advertisements*"; "*I try to help my child understand what s/he sees on TV*"; and "*I try to help my child understand the difference between advertisements and programs*"). Answer options ranged from "never or only rarely true of me" to "always or almost always true of me" (Appendix 31, Q19).

Social Norms about Fast Foods

Social norms reflect an individual's perceptions of what constitutes appropriate behaviour and aim to capture social influences in relation to consumption behaviour (Fishbein and Ajzen 1975). Social norms were estimated using Grier's et al. (2007) measure developed to study parents' influences on children's food consumption. Grier et al. (2007) used eight items to measure social norms about fast foods. These included descriptive norms, which reflected perceptions of behaviour of people important to respondents (Ajzen and Fishbein 1980), and subjective norms, which reflected approval of fast food consumption by important others (Fishbein and Ajzen 1975). In this study only descriptive norms were used to avoid potential social desirability bias in subjective norms. Hence, respondents only completed questions about the behaviour of people important to them and were asked to report whether their family members/members of extended family, friends, and people who lived in their neighbourhood often ate fast foods (Appendix 31, Q20-Q22). Social norms were measured on a five-point scale, ranging from "1" ("disagree") to "5" ("agree") (Grier et al. 2007).

Socio-Demographic Characteristics and Control Variables

The last section of the PQ collected data about children's media consumption (television and the Internet) (Appendix 31, Q32-Q35) (Pettigrew et al. 2011), children's consumption of fast foods (Q36), and families' socio-demographic characteristics (parents' gender, age, and residential postcode) (Q37-Q41). To avoid potential emotional harm to children, their biometric characteristics, such as weight and height were collected from their parents (Appendix 31, Q30 and Q31). Parents' education was assessed using a six-point ordinal variable with the following answer options: 1) "some primary school;" 2) "some secondary school;" 3) "finished secondary school;" 4) "some tertiary education/college;" 5) "finished tertiary education;" and 6) "higher degree or higher diploma" (Q40). Parents' consumption of fast foods (Appendix 31, Q25) was used only during the convergent validity examination. While there were other variables in the PQ, such as attitudes about fast foods (Appendix 31, Q26-Q29) and accessibility to fast food restaurants (Grier et al. 2007) (Appendix 31, Q23 and Q24), they did not form a part of the current study's enquiry and were not used in the empirical analysis reported in this thesis.

6.7. Pre-Testing the Parents' Questionnaire

Prior to the pilot test, nutrition experts suggested one change to the PQ, where the answer option for Q5 ("neither, dairy foods should be cut out") was reworded from "cut out" to "be

avoided” (Appendix 36). Because the GNKQ has been previously validated in Australia by Hendrie, Cox et al. (2008), a shorter version was included in the PQ for the pilot test. In particular, the administered questionnaire did not include Q1 (item 9), Q3 (item 6), Q5 (item 3), Q6, Q7, Q10, Q11, Q13, Q14, Q15, and Q19 (see Appendix 32 for more detail). The excluded questions were administered during the full-scale fieldwork and their validity and reliability were examined in depth with once data were collected. The pilot test with parents was used to establish the instrument’s reliability and validity and the assessment of the predictive validity was not carried out because parents and children who took part in the pilot tests were not related to each other. In total, 31 parents aged between 28 to 58 years completed the PQ. The sample was split equally between females and males. Most respondents held a higher degree or higher diploma, followed by those who had finished tertiary education, and those with some tertiary education (for more detail see Appendix 33A). The empirical results are reported below first for the face validity assessment. Then, the reliability of the measures is discussed.

Face Validity

The face validity of the PQ was assessed through the analysis of parents’ qualitative feedback about the survey, which is summarised in Appendix 33B. Twenty-nine out of 30 respondents commented on the instrument. Several changes were made to improve the survey. First, ambiguous words like “us” or “people” (Appendices 33B, Q1 and 36) were changed to “adults” to emphasize that the questions were aimed at an older population rather than children. Second, the word “nutritionists” was used instead of “experts” in Q2-5 (Appendix 33B) to provide more clarity. Third, an additional answer option (“none”) was added to Q1 because bananas do not contain any additional sugar (Appendix 33B) and the corresponding correction was made in the answer key for this question (Appendix 32).

Next, unfamiliar food terminology was replaced with words commonly used in Australia (Appendix 33B, Q1). The word “often” in social norms item was replaced with “at least once per week” (Appendix 33B, Q20-Q22), because respondents’ understanding of this concept varied substantially (Appendix 33B). As there seemed to be confusion about “our area” in Q22 (Appendix 33B), it was substituted with “my neighbourhood.” The wording of Q25 was also improved to refer to a “whole family,” rather than to a “respondent.” Final clarification was made to questions about children’s use of TV and the Internet, where a reference was made to an “average” weekday or weekend (Appendix 33B, Q44-Q47). Overall, the

instrument took around 20 minutes to complete and it was expected that the full version of the PQ would take around 40 minutes to finish, which was considered sufficient for children’s experimental exposure and the completion of the CQ. Having analysed parents’ qualitative feedback, the quantitative data were analysed which is discussed in the next section.

Reliability of Likert Items

The EFA for Likert items yielded three factors with eigenvalues above 1.00 with two factors conforming with the expected latent dimensions. The first factor grouped parent-child communication items with one cross-loading from social norms (“*The people who live in our area often eat fast food*”) (0.561) (Table 15). The second factor consisted of social norms items. The third factor consisted of only one item related to parent-child communication (“*I explain the motives behind food advertisements to my child even when s/he does not see many advertisements*”) (0.929) and contained less meaningful information. The Bartlett’s test of sphericity (0.000), the Kaiser-Meyer-Olkin coefficient (0.657), and the items’ communalities were acceptable (above 0.30) (Appendix 33C). Even though one item exhibited loading below 0.72 (Table 15), the extraction of theoretically different factors pointed to preliminary discriminant validity of items. The examination of the scales’ internal consistency yielded acceptable Cronbach alpha, ranging from 0.60 to 0.80 as shown in Table 16. Although the reliability coefficient was below 0.70 (Pallant 2007) and could have been improved if some items were removed from the scale (see Appendix 33D), these results were considered acceptable given the preliminary nature of the pilot test and small sample.

	Extracted factors		
	<i>Communication 1</i>	<i>Social norms</i>	<i>Communication 2</i>
I try to help my child understand what s/he sees on TV	.847		
I try to explain to my child the difference between good foods and bad foods	.829		
When my child sees a food advertisement I try to explain the motives behind the advertisement	.761		
I try to help my child understand the difference between advertisements and programs	.755		
My friends often eat fast food		.942	
Members of my family/extended family often eat fast food		.921	
The people who live in our area often eat fast food	.561	.701	
I explain the motives behind food advertisements to my child even when s/he does not see many advertisements			.929
Percent of variance per factor	45.17	21.33	13.58
<i>Eigenvalues</i>	<i>3.61</i>	<i>1.71</i>	<i>1.09</i>

Notes:

Cross-loadings and negative factor loadings are marked in red.

Scales:	N of items	Cronbach alpha
Social norms about fast foods	3	.875
Parent-child communication about food advertising and food	5	.631

Notes:

N=30.

Reliability of Test Items

The CTT analysis of 54 GNKQ items showed that the test consisted of items with different difficulty levels judged by the proportion of respondents who answered the questions correctly and the item discrimination index (Appendix 33E1). The IRT statistics (see the map of latent distributions in Appendix 33E2) showed that 31 questions displayed unacceptable fit – amongst the misfitting items, two tended to be too hard (EXPFAT2 and BUTTEROR) and 29 were too easy (EXPREC1/2, EXPREC5-CUT, EXPSUGAR1-3, EXPFAT3/5/7, CARB1-3, CARB5-EXPSALT1, EXPSALT4, EXPPRO1-4, EXPSATF2/3/6, BREAD, and EXPREC4⁴) (Appendix 33E2). Despite the misfitting items, overall reliability of the measure was high according to Nunnally (1967) (0.63) (Appendix 33E). Having observed that the GNKQ contained some misfitting items, its reliability was examined again with a bigger sample acquired during the full-scale fieldwork. This allowed determining which items should be retained for SEM to yield a more reliable estimate of parents’ nutritional knowledge.

Convergent Validity

Items’ convergent validity was examined by correlating them with conceptually linked measures available in the PQ (Churchill 1979). The measure of parents’ nutritional knowledge was correlated with social norms and parents’ frequency of fast food consumption. Only 23 items which exhibited better fit were used to create an average nutritional knowledge score for respondents using the pilot test data. The analysis showed that parents’ nutritional knowledge was inversely correlated with the frequency of fast food consumption by family members/members of the extended family (-0.394) and friends (-0.447) (Table 17). Although there were no statistically significant correlations with the consumption amongst the people living in respondents’ area or respondents’ own fast food consumption, these results conformed with expected associations and were considered acceptable given the small sample size of the pilot test data.

	Social norms:			Frequency of fast food consumption
	Members of my family/extended family often eat fast food	My friends often eat fast food	People who live in our area often eat fast food	
Nutritional knowledge ¹	<i>-.394*</i> (N=30)	<i>-.447*</i> (N=30)	<i>.171</i> (N=23)	<i>-.161</i> (N=29)

Notes:

*. Correlation is significant at the .05 level (2-tailed).

¹ – Score based on 23 items summed up and divided by number of items.

Non-significant coefficients are marked in red.

⁴ EXPREC4 was answered correctly by all parents and was not included in the IRT analysis by the ConQuest.

Having confirmed the reliability and validity of the research instruments, they were prepared for the full-scale fieldwork, which is discussed in the next section.

6.8. Preparation of Instruments for the Full-Scale Fieldwork

Two versions of the CQ were prepared for the main data collection: 1) a paper-based survey (Appendix 34); and 2) an online survey (Appendix 35). The paper-based questionnaire was designed for children who did not want to complete online instruments. It was also used when netbooks were not available for online survey completion due to a high participant turnover. The online questionnaire was prepared using Qualtrics, online survey software, which allowed incorporating smileys and images into the questionnaire, making the layout of the two instruments identical. The two versions of the CQ differed only in relation to the NKT items, which were displayed horizontally in the online version due to netbooks' smaller size (Appendix 35) in comparison to the vertical format of the paper-based CQ (Appendix 34, Q8-Q15). Only one question was shown per page in the online questionnaire for better visibility.

Based on the children's feedback received during pilot test two, key words in all questions were highlighted with bigger font and red colour to emphasise the tasks (Appendices 34 and 35). To adapt the CQ for the upcoming experiment, an experimental stimulus was incorporated into "peers' food preferences" section (Appendix 34, Q2 and Appendix 35) "evaluations of foods" (Appendix 34, Q19 and Appendix 35) and the "social acceptability" items (Appendix 34, Q20 and Appendix 35) (Figure 24). To examine children's overall evaluation of the experimental food stimulus, a question was added to the survey asking children to rate it ("Do you think this food is good for you?") (Appendix 34, Q15 and Appendix 35).

Additional questions were included in the "advertising literacy" section about the intentions of the experimental stimulus, similar to those already used for other advertisements (i.e., "*It wants people to buy this food;*" "*It tries to make you like this food;*" "*It wants you to think that having this food will make you feel good;*" "*It wants to grab your attention;*" and "*It tries to make you want this product*") (Figure 24, Appendix 34, Q24, and Appendix 35). To examine children's reactions to advertisements' affective influence, they were asked how much each advertisement wanted children to like the product (Appendices 34 and 35). Children's understanding of food advertisements' intended influence on their behaviour was also

examined, whereby children were asked to report how much each advertisement tried to make them want the products (Appendix 34, Q21-Q23 and Appendix 35).

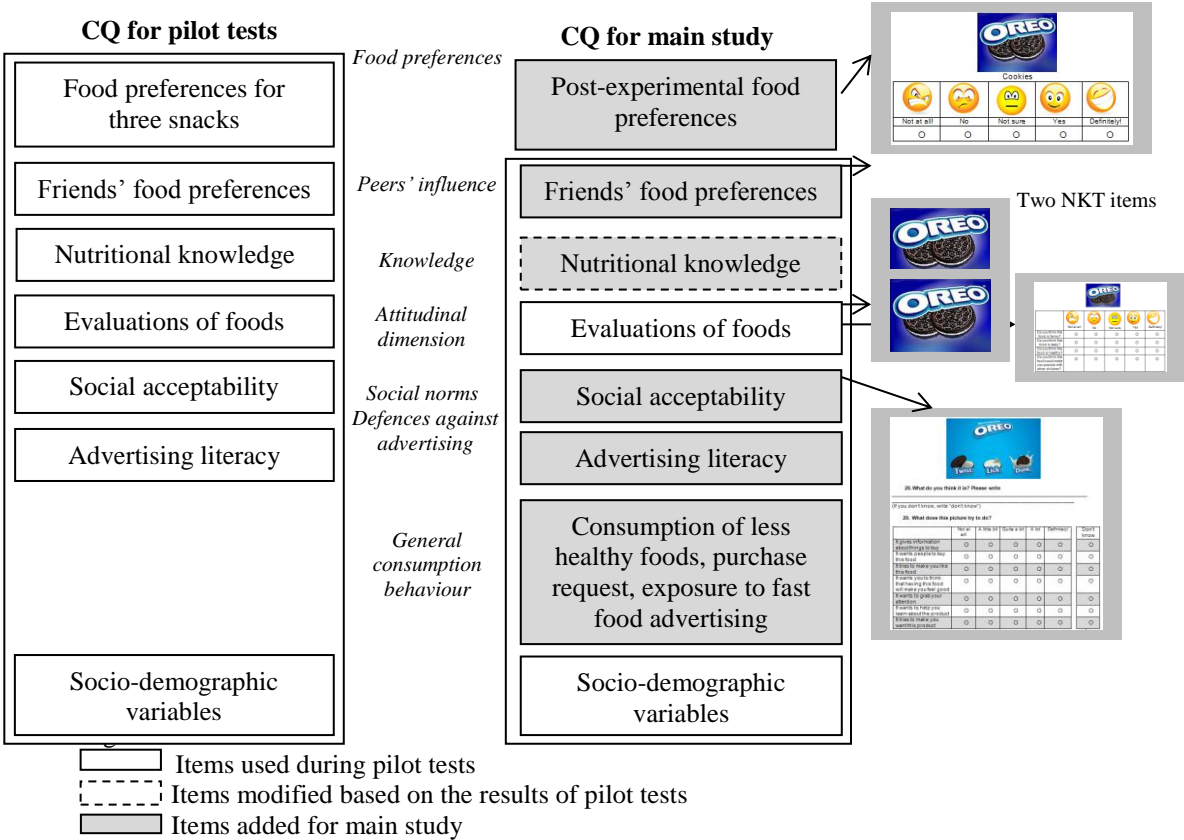


Figure 24: Finalised Version of CQ for Full-Scale Fieldwork

Evaluation of the food’s popularity (“Do you think this food is popular amongst children?”) was dropped and the previously used item (Pettigrew et al. 2011) (“Do you think this food could make you popular with other children”) was incorporated into the CQ to capture foods’ social appeal rather than its popularity (Appendix 34, Q17-Q19 and Appendix 35). Three additional questions were included in the survey to capture children’s general consumption of less healthy non-branded foods (“How often do you eat fast food from restaurants such as McDonald’s, KFC or Pizza Hut?”, “How often do you eat treats and lollies?”, and “How often do you have soft drink?”) (Appendix 34, Q26 and Appendix 35). Children’s exposure to fast food advertising was also assessed (“I see advertising for treats, lollies, soft drink or fast food”) together with their exposure to broader fast food advertising through promotion in their local fast food restaurants (“Our local fast food restaurants have special deals, like family packs and meal deals”) (Harris and Graff 2011).⁵

⁵ Other new items included children’s purchase requests for advertised foods and foods with free toys or a competition (Pettigrew et al. 2011) (Appendix 34, Q25 and Appendix 35, pp. 34-35). However, they were not used in the empirical analysis performed in this study.

Prior to the full-scale administration of the CQ, it was pre-tested a final time using a convenience sampling of five children aged between eight to 12 years. The last pilot test aimed to ensure that the online CQ was as easy to follow as the paper-based CQ and that it could be administered during the full-scale fieldwork. The children who filled in the online survey found it straightforward and did not report any fatigue effects during its completion. Three minor changes were made in the PQ prior to the fieldwork. Two questions were added to the instrument to collect data about parents' exposure to fast food advertising (Appendix 37, Q39). Next, as it was expected that parents could be accompanied by several children during the data collection, respondents were allowed to complete the instrument in relation to up to four children, provided all four were taking part in the experiment (Appendix 37, Q27-Q30). Finally, following parents' suggestions the key points in the questions were highlighted with red colour (Appendix 37).

6.9. Summary

The pilot tests which have been described in depth in this chapter ensured that the prepared instruments were reliable, valid, and could be used to collect data both from children and parents. Pilot tests, including the experts' reviews showed that the instruments consisted of measures capable of capturing the desired theoretical constructs. Most importantly, the pilot tests were used to modify the questionnaires and increase their quality. The next chapter provides a detailed overview of the full-scale fieldwork and reports the descriptive statistics for the variables.

Chapter Seven: Research Protocol for the Full-Scale Fieldwork and Preliminary Data Analysis

7.1. Introduction

This chapter describes the data collection protocol employed during the full-scale fieldwork. It explains how the sample size was determined and what statistical methods were chosen to analyse the collected data. The chapter also discusses preliminary data analysis, including examination of respondents' socio-demographic characteristics, missing value analysis, confirmation of instruments' reliability and validity, and descriptive statistics for the key variables. Finally, this chapter explains how data were prepared for Structural Equation Modelling (SEM) – which measures were undertaken to mitigate data non-normality, how aggregate scores were created, and which variables were recoded for SEM.

7.2. Experimental Protocol and Data Collection

The full-scale fieldwork was conducted in September 2011 at an annual event (the Royal Adelaide Show) traditionally visited by families representative of the South Australian population. The data were collected over a span of nine days during the event's trading hours (9 a.m. to 9 p.m.). To collect the necessary data, a research booth was rented in a pavilion adjacent to children's carnival area. The stand was strategically placed next to one of the main entrances into the pavilion (Appendix 38). The site was partitioned into three sections as shown in Figure 25: 1) front desk; 2) children's area; and 3) parents' area (Appendix 39). The main researcher was responsible for the parents' area and supervised the work of two research assistants who helped with data collection. All assistants were provided with instructions and appropriate training prior to the fieldwork (Appendix 40).

Both parents/main carers and their children passing by the stand were invited to take part in the study (Figure 26). Additional flyers (Appendix 41) were distributed outside the pavilion on September 7 and 8, 2011 when fewer visitors attended the event. While there were no limitations on parents' age or gender, sampling was carried out based on children's age, which needed to be between seven to 13 years to fulfil the required age quotas (see next section). On recruitment, participants were not told that the children would be exposed to advertisements or asked about their food preferences as this could substantially influence their responses undermining the potential benefits of this study. Instead, they were told that the

purpose of the study was to examine how easy Internet surfing was for the children and what they and their parents thought about foods (Appendix 42). Because the goals of this study could not be achieved if the research methods were fully disclosed to participants, limited disclosure was required for successful completion of the data collection in full compliance with the National Statement on the Ethical Conduct in Human Research (2007). The limited disclosure was unlikely to affect respondents adversely who were fully debriefed after the completion of the survey.

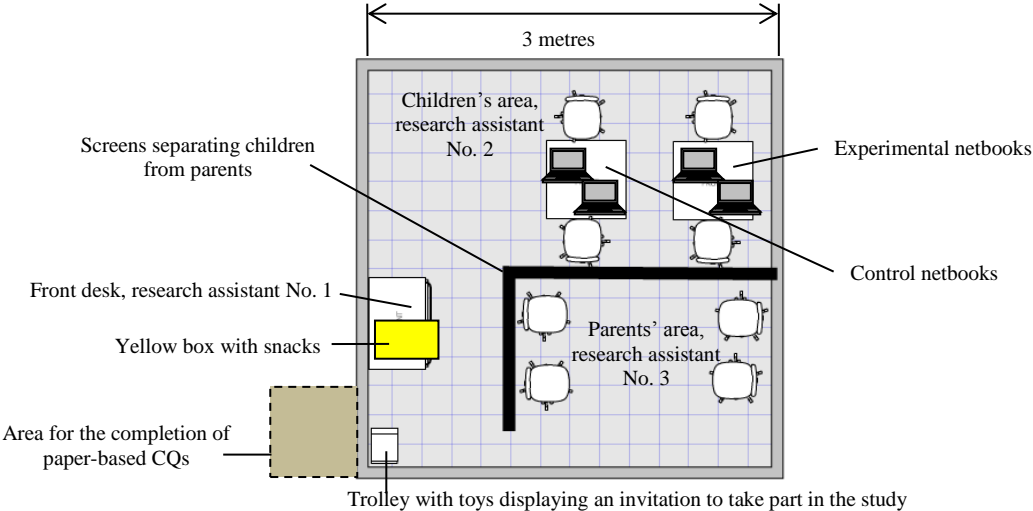


Figure 25: Research Site for Full-Scale Fieldwork

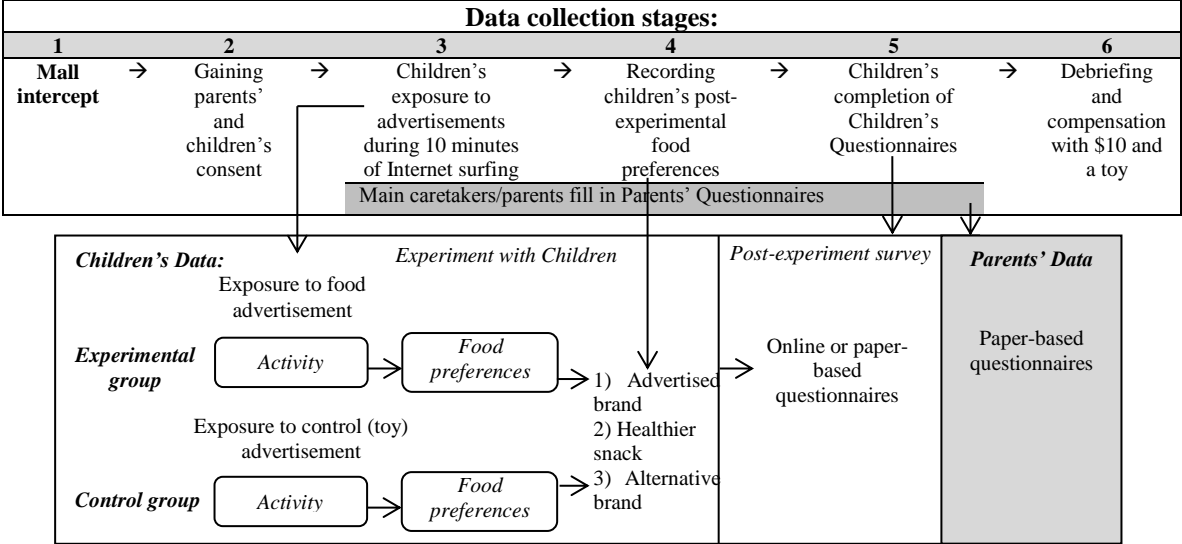


Figure 26: Experimental Design

Participants were instructed that children would spend ten minutes using the Internet on sites of their own choosing and then complete an online or paper-based questionnaire about foods and the Internet (Figure 26). Parents/main carers were advised that the content would be monitored with special software (K9 software) to ensure that the content of visited websites

was child-appropriate. Parents/main carers were told that while their children were surfing the Internet, they would be completing a survey (Figure 26). Parents signed two consent forms – one for their child’s/children’s participation, and another for their own participation in this study (Appendix 43). The forms were signed on two copies – one remained with the researcher, while the second was given to parents. No personally identifiable information was collected, except for residential postcodes.

After consent was acquired, research assistant No. 1 noted down child’s age and gender,⁶ issued a family identification number, and assigned the child to a netbook. Four netbooks were used – two experimental netbooks with a food advertisement, and two control netbooks with a toy advertisement (randomised 2x2 factorial design) (Figure 26). To ensure allocation was not biased, research assistant No. 1 was not told which netbooks were experimental and which were control. Only age was considered during the allocation of participants. Random allocation prevented systematic bias as it ensured that neither group got an advantage over a number of replications (Myers 1972). If a parent was accompanied by more than one child, all children were allowed to take part in the study and children from the same family were assigned to different groups.

Exposure to advertisements was embedded into a ten-minute Internet surfing activity to make the manipulation less obvious to children. In the experimental group, children were exposed to an advertisement for Oreo biscuits, whereas children in the control group saw an advertisement for the Fushigi magic ball (Figure 27). These advertisements were purchased from Ebiquity Australia, a media monitoring company based in Sydney. The advertisements were sent as Shockwave/Flash files, which were converted into animated Graphic Interchange Format (GIF) files and integrated as pop-ups into the Internet Explorer. Oreo biscuits were chosen because they belong to one of the “Big Four” food categories frequently advertised to children (Hastings et al. 2003), whereas the ball represented a gender-neutral toy, which could be shown to both females and males. The above-mentioned advertisements were also selected because they did not feature any invitation to click on them which could re-direct participants to another page.

⁶ These records were used to control for required age quotas displayed in Table 18. These records were also used to check for any errors or inconsistencies in completed questionnaires during the data entry.

In the Oreo advertisement, biscuits fell down from left to right and the words “twist,” “lick,” and “dunk” appeared one by one as the biscuits became visible on the advertisement. The toy advertisement consisted of two interchanging slides featuring a teenager (Figure 28). Because the literature suggests that at least three exposures are required to exert an effect on consumers (Pechmann and Stewart 1988), both advertisements appeared three times on the screen during the Internet surfing – the exposure occurred during the second, fifth, and eighth minute, respectively. Each netbook had AdBlocker installed to obstruct any incoming advertisement during the Internet surfing. No stimulus was performed on children’s nutritional knowledge or advertising literacy as it was important to examine in an unprompted way whether their knowledge acted as a defence against food advertising.



Figure 27: Pop-up Advertisements Used in Experimental and Control Groups

To minimise distraction from other participants every child was given a set of noise reduction headphones. To make sure no disturbance occurred during their exposure and survey completion, children were seated in a different area from their parents as shown in Figure 25. Research assistant No. 2 monitored children’s Internet surfing and addressed any technical problems. Every child was allowed to surf the Internet for ten minutes after which Internet Explorer shut down and the child was then asked to come to the front desk to have her/his food preferences recorded (Figure 26). At the front desk, research assistant No. 1 explained that they would play a game using a “yellow box,” where different foods would be shown to the child who needed to point to a smiley to explain how much she/he wanted to eat each snack tomorrow for her/his lunch (see instructions in Appendix 40).

The “yellow box” (32x42 cm) contained three snacks: 1) a snack shown in the experimental advertisement (a packet of two Oreo biscuits); 2) a healthy snack alternative (an apple); and 3) a snack similar to the experimental stimulus (a pack of mini Arnott’s choc chip cookies (eight per packet)) (Appendix 39). Children identified their food preferences using a Likert smiley scale displayed inside the box (Appendix 39). Answer options ranged from “1” (“not at all!”)

to “5” (“definitely!”) and were explained to children before the “game” started (Appendix 40). The content of the box was not visible to the children because the box was used only when a child was ready to “play a game.” Only one child was allowed to be present at the “front desk” for the food preference task.

After their food preferences were noted down, children were asked to tell the researchers more about their opinion about foods and were sent back to the children’s area, where research assistant No. 2 had already prepared a netbook with the Qualtrics survey. If a child preferred a paper-based questionnaire, she/he completed it outside the research booth as shown in Figure 26, under the supervision of research assistant No. 1 or 3 depending on their availability. If required, the assistant read out the questions and/or answer options in the CQ to the child, or circled the answers nominated by the respondent. The research assistants were instructed to refrain from explaining words to children or leading them to answers. The main researcher was present on site at all times and oversaw the overall data collection process.

While children were surfing the Internet and/or identifying food preferences towards the three snacks, their parents were answering the PQ in the parents’ area (Figure 26). Parents’ area was separated from the front desk by a screen wall and parents could neither see the “yellow box,” nor their children completing the food preference task. Research assistant No. 3 worked in this part of the research booth and attended to parents’ queries. If a child was accompanied by two parents, only one parent was asked to complete the PQ. A parent taking part in the study with several children completed the parent-child communication items separately for every child as shown in Appendix 37. When several children were accompanied by two parents/main carers, they were asked to complete surveys for different children to maximise variance in the data. If parents completed the questionnaires earlier than their children, they were asked to remain seated and wait until their children were ready.

Upon the completion of the surveys, parents and children were fully debriefed about the purpose of the study – they were shown experimental pop-ups and were informed about the complaint procedures. Participants were asked for the permission to use the data for research purposes in full compliance with the National Statement on the Ethical Conduct in Human Research (2007). At the end, each child was reimbursed for her/his time with \$AU10 and a soft toy with Cancer Council branding. Parents chose whether the child received the money directly or whether the parent received it on her/his behalf. Participants were also asked to

refrain from passing this information on to other potential participants at the event. On average, it took around 30 minutes to collect data from one family.

As shown in Figure 26, the data collected from children fulfilled two important functions. First, children's food preferences assessed right after the exposure were used to test the conceptual framework in relation to advertised branded food (Oreo biscuits) and non-branded not advertised healthier alternative (an apple), allowing to examine which factors influence children's food preferences in the experimental setting. Second, the data collected through the CQ about children's overall consumption of less healthy foods (fast foods, lollies, and soft drinks) were used to test the relations postulated in the conceptual framework in the non-experimental setting using a more naturalistic setting.

7.3. Determination of Sample Size

The sample size for the fieldwork was determined based on three criteria: 1) desired statistical power; 2) expected effect size; and 3) statistical technique for data analysis. Statistical power represents the probability that statistical test correctly rejects the null hypothesis, while the effect size refers to the strength of the relationship between tested variables (Sawyer and Ball 1981). To calculate the optimal sample size the Event Rates Estimation Tool (ERST) available online (Chinese University of Hon Kong n. d.) was employed. The ERST assumes that the prevalence of an event in two groups is known or can be estimated by the researcher. This information is used to suggest several sample sizes, corresponding to different combinations of Type I error and statistical power (Chinese University of Hon Kong n. d.).

For the purpose of this study, it was hypothesised that the event occurred in 30% of cases in the experimental group and in 10% of cases in the control group, corresponding to a 20% difference between the two groups. To have a balance in the sample in terms of respondents' age, children in the experimental and control groups were also split into two age categories, between seven to ten, and between 11 to 13 years. Controlling for Type I error and expecting the power of 80% at $p < 0.05$, these proportions/event rates (i.e., "0.30" and "0.10") yielded a sample of a minimum of 62 individuals per group as demonstrated in Table 18. As shown in Appendix 44, the power of 90% required 82 respondents per group, and the power of 99% required 142 respondents.

<i>Experimental group</i>		<i>Control group</i>		Total
Group (I)	7 to 10 years = 62	Group (III)	7 to 10 years = 62	124
Group (II)	11 to 13 years = 62	Group (IV)	11 to 13 years = 62	124
Recommended sample size for the experiment=248				

These recommended sample sizes were then evaluated against the requirements of SEM, the designated method for data analysis. While the sample size for SEM depends on a number of factors, such as data normality, estimation technique, model complexity, percentage of missing data, and error variance amongst indicators, the general recommendation ranges between 100 to 400 individuals (Hair, Black, Babin, and Anderson 2010). A more lenient recommendation suggests a sample size of at least 50 cases (Iacobucci 2010). As the Royal Adelaide Show lasted only nine days, obtaining a sample of 400 children, equivalent to 100 children per age category, was not feasible given the time constraints. Therefore, a sample of 62 children per cell (i.e., 124 individuals per group), corresponding to power of 80% was considered more realistic and the fieldwork data collection was guided by these quotas (Table 18).

7.4. Preliminary Data Analysis

Once the fieldwork was finished, the data collected through online surveys (CQ) were exported into SPSS 19.0 and the data from paper-based surveys CQs and PQs were entered into SPSS by the main researcher, together with a research assistant who read out codes to minimise data entry errors. Every child was matched with a parent/main carer through family identification numbers. After children's food preferences were entered into the file, missing data analysis was carried out. The validity and reliability of Likert items were then examined using scale dimensionality (EFA) and internal consistency (Cronbach alpha). Again, the reliability and validity of test items (NKT and GNKQ) were assessed using the CTT and IRT statistics. Also, all required recoding and calculation of scores were carried out to prepare the data for SEM, followed by the assessment of data non-normality. Finally, descriptive statistics were produced for the key variables prior to statistical modelling. This was done separately for the experimental and control groups, and also for the combined sample due to the upcoming modelling requirements discussed in Chapter Eight.

7.4.1. Sample Characteristics

Three hundred and fifty-four children and their parents/main carers completed the surveys surpassing the required minimum sample size (Table 19), boosting the estimation to a power

of 90% (Appendix 44). The percentage of younger and older children was balanced across the two groups (Table 19). On day one, 50 children took part in the experiment; 55 children on day two; 62 children on day three; 28 children on day four; 37 children on day five; 34 children on day six; 22 children on day seven; 33 children on day eight; and 33 children on day nine. In the total sample, 217 children (61.3%) had a sibling participating in the study. One hundred and thirty-seven children (38.6%) participated in the study without any siblings.

Table 19: Final Sample Size for the Field Study

<i>Experimental group</i>			<i>Control group</i>			Total
Group (I)	7 to 10 years	Minimum sample size 62	Group (III)	7 to 10 years	Minimum sample size 62	124
		<i>Final sample size=91</i>			<i>Final sample size=96</i>	187
Group (II)	11 to 13 years	Minimum sample size 62	Group (IV)	11 to 13 years	Minimum sample size 62	124
		<i>Final sample size=84</i>			<i>Final sample size=83</i>	167
Recommended sample size for the experiment=248						
<i>Final sample size for the experiment=354</i>						

One hundred and seventy-five children (49.4%) were randomly assigned to experimental netbooks and 179 children (50.6%) to the control netbooks (Table 20). Gender distribution was balanced in both samples (Table 20). In the experimental group, the average age of children was 10.3 years with a standard deviation of 1.7 years. In the control group, the average age of children was 10.1 years with a standard deviation of 1.9 years. Most children (74.3%) completed online questionnaires. Amongst those who preferred paper-based surveys, 54 children (59.3%) were aged between eight to ten years and 37 children (40.7%) were between 11 to 14 years. All participants consented to the data being used for the research after full debriefing.

Main carers were mostly children’s parents (Table 20). Females were over-represented in both parent samples. In the experimental group, parents’ age ranged from 23 to 59 years with an average of 41.3 years and a standard deviation of 5.7 years. In the control group, parents were between 26 to 75 years with an average age of 41.5 years and a standard deviation of 6.8 years. In both groups, most parents finished tertiary education (32.6% in experimental group and 31.8% in control group), followed by respondents with a higher degree or higher diploma (25.1% and 24%), TAFE or college degree (21.7% and 18.4%), and those who finished secondary school (12.6% and 14.5%). Cares were mostly married (Table 20).

7.4.2. Missing Value Analysis

The online survey (CQ) had a “force response” option, which did not allow the participants proceed to the next page if some questions were overlooked. Although the research team tried

Table 20: Sample Characteristics						
Variables:	<i>Experimental group (N=175)</i>		<i>Control group (N=179)</i>		<i>Experimental and control groups (N=354)</i>	
	N	Valid percent	N	Valid percent	N	Valid percent
Children:						
Gender:						
Females	90	51.4%	100	55.9%	190	53.7%
Males	85	48.6%	79	44.1%	164	46.3%
Total	175	100%	179	100%	354	100%
Age:						
7 years	9	5.1%	19	10.6%	28	7.9%
8 years	21	12%	22	12.3%	43	12.1%
9 years	28	16%	28	15.6%	56	15.8%
10 years	34	19.4%	25	14%	59	16.7%
11 years	37	21.1%	38	21.2%	75	21.2%
12 years	25	14.3%	22	12.3%	47	13.3%
13 years	21	12%	25	14%	46	13%
Total	175	100%	179	100%	354	100%
Family:						
Children participating with siblings	105	60%	112	62.6%	217	61.3%
Children participating without any siblings	70	40%	67	37.4%	137	38.7%
Total	175	100%	179	100%	354	100%
Parents/Main carers:						
Gender:						
Females	143	81.7%	141	78.8%	284	80.2%
Males	32	18.3%	38	21.2%	70	19.8%
Total	175	100%	179	100%	354	100%
Main carers' relationship to a child:						
Mother	142	81.1%	137	76.5%	279	78.8%
Father	32	18.3%	36	20.1%	68	19.2%
Sister	1	0.6%	3	1.7%	1	0.3%
Aunt	-	-	-	-	3	0.8%
Grandmother	-	-	1	0.6%	1	0.3%
Grandfather	-	-	2	1.1%	2	0.6%
Total	175	100%	179	100%	354	100%
Main carers' age:						
23 to 35 years	25	14.3%	26	14.6%	51	14.4%
36 to 45 years	110	62.9%	110	61.8%	220	62.3%
46 to 75 years	40	22.9%	42	23.6%	82	23.2%
Total	175	100%	178	100%	353	100%
Main carers' education:						
Some primary school	1	0.6%	-	-	1	0.3%
Some secondary school	13	7.4%	20	11.2%	33	9.3%
Finished secondary school	22	12.6%	26	14.5%	48	13.6%
Some tertiary education (university, TAFE, or college)	38	21.7%	33	18.4%	71	20.1%
Finished tertiary education	57	32.6%	57	31.8%	114	32.2%
Higher degree or higher diploma	44	25.1%	43	24%	87	24.6%
Total	175	100%	179	100%	354	100%
Main carers' marital status:						
Single	14	8%	17	9.5%	31	8.8%
Married	140	80%	142	79.3%	282	79.7%
De facto	7	4%	7	3.9%	14	4%
Separated	10	5.7%	6	3.4%	16	4.5%
Divorced	4	2.3%	7	3.9%	11	3.1%
Total	175	100%	179	100%	354	100%

to ensure children answered all questions, missing data were found in the paper-based questionnaires. In the experimental group, missing data were observed for five variables, but the overall percentage was negligible, less than 1% (0.60%) (Appendix 45A, Table 1). While in the control group missing data occurred across 28 variables, the percentage of missing cases again was not substantial, ranging from 0.60% to 1.70% (Appendix 45A, Table 2). The analysis of parents' data showed a negligible percentage of missing values across the GNKQ items, which ranged from 0.60% to 1.70% in the experimental group, and from 0.60% to

2.20% in the control group (Appendix 45B, Tables 1 and 2) and the parent-child communication variables (Appendix 45B). A higher proportion of missing values was observed for children's weight (2.90% in the experimental and 5% in the control groups), children's height (7.40% in the experimental and 7.30% in the control groups), parents' height (3.4% in the experimental and 5% in the control groups), and parents' weight (1.70% in the experimental and 3.90% in the control groups). Except for children's height in the experimental sample (7.30%), missing values for other variables were either below or equal to 5%. Because the overall percentage of missing data was small no imputation was carried out. Data imputation for the biometric variables was undesirable as it could result in errors for the key outcome variable.

7.4.3. Validity and Reliability

Reliability of Likert Items

As mentioned in Chapter Four and section 7.2, the employed experimental/survey data collection design allowed testing the influence of external and internal factors influencing children's post-experimental food preferences for an advertised product (branded food), a healthier alternative (non-branded food), and their general consumption of less healthy non-branded foods (non-experimental setting). Therefore, each food was used as an outcome variable in a separate SEM model and the reliability and validity were examined for items related to the advertised product (Oreo cookies) and a healthier alternative (an apple) split by group (experimental and control groups), and for the combined sample in the case of less healthy non-branded foods, which were not affected by experimental manipulation. Variables designated for latent constructs were pulled together into one EFA to examine their factorability and discriminant validity (Churchill 1979), which was done for each food (Oreo biscuits, an apple, and less healthy foods). Prior to the EFA, all advertising literacy items were recoded, whereby "don't know" was assigned a score of zero. For more details about recoding, refer to section 7.4.4.

Similar to the children's data, all tests for parents' data were performed separately for the experimental and control groups, and for the two combined samples in case of the less healthy foods. The preferred EFA structure needed to be similar across the groups to facilitate comparability of the future SEM models and adjustments were made when minor discrepancies were observed, as in the case of the GNKQ. The reliability of Likert items was examined by means of EFA and Cronbach alpha, while their validity was assessed by

correlating items/scales with conceptually-related measures available in the surveys. Criteria similar to those applied during the analysis of pilot test data were used to judge the results of EFA. These were: 1) the Kaiser-Meyer-Olkin (KMO) 0.60 or above (Tabachnick and Fidell 2007); 2) Bartlett's test of sphericity with $\rho < 0.05$ (Tabachnick and Fidell 2007); 3) eigenvalues above 1.00 (Pallant 2007); 4) communalities 0.30 or above (Pallant 2007); and 5) item loadings above 0.51 for a sample of 100 cases (Stevens 1992). Although a Cronbach alpha around 0.70 is more desirable (Pallant 2007), a coefficient around 0.60 was considered acceptable.

As shown in Tables 21 and 22, advertising literacy items, evaluations of foods (attitudes), friends' food preferences, and social acceptability of foods loaded on separate factors, exhibiting successful discriminant validity. Despite several cross-loadings, the exploratory factor structure of the CQ items was comparable across the experimental and control groups. The cross-loadings observed amongst the advertising literacy items were considered acceptable since these items were designated to represent one latent construct of children's advertising literacy ability during the SEM. Items designated for the SEM with less healthy foods (non-branded foods) also demonstrated expected item dimensionality (Table 23). The EFA with the children's data yielded satisfactory Kaiser-Meyer-Olkin scores above 0.60, statistically significant Bartlett's scores with $\rho < 0.05$, and communalities above 0.30 (see Appendix 46A). Except for food evaluations, all scales exhibited satisfactory Cronbach alpha coefficients of 0.60 or above (Table 24). There were only a few removal suggestions. For example, the removal of "sausage and bread" could improve the social acceptability of less healthy foods scale from 0.639 to 0.778, whereas the removal of "broccoli" could improve the reliability of social acceptability of healthy foods from 0.639 to 0.661. Based on these results the fit of scales was examined again during SEM by means of the CFA for a final judgement.

The analysis of the parents' data also demonstrated acceptable discriminant validity and dimensionality (Table 25). The Kaiser-Meyer-Olkin scores were above 0.60 and Bartlett's scores were statistically significant across all samples ($\rho < 0.05$) (Appendix 46B). Assessment of the scales' reliability with Cronbach alpha yielded acceptable coefficients above 0.60 as shown in Table 26. A number of items were suggested for removal. For example, the parent-child communication scale could increase from 0.836 to 0.862 in the combined sample, and in the experimental and control groups up to 0.859 and 0.865 respectively if "*I try to explain to my child the difference between good and bad foods*" was dropped. The above-mentioned

Table 21: EFA for Items Designated for Oreo SEM (Branded Food) (CQ)

	Extracted factors										
	Experimental group (N=175)						Control group (N=179)				
	Oreo + toys sale + special deal	Oreo + toys sale + new product/character	Advertising literacy special deal	New product + character	Funny + popular	Tasty + healthy	Toys sale + special deal + new product/character	Advertising literacy Oreo + special deal + new product/character	Oreo + toys sale	Oreo evaluation Funny + healthy	Oreo evaluation Popular + tasty
It wants people to buy this food (Oreo)	.776							.722			
It wants to grab your attention (Oreo)	.763						.479	.572			
It tries to make you want this product (Oreo)	.694							.815			
It tries to make you want this product (toys sale)	.674							.617			
It wants to grab your attention with a sale (toys sale)	.651						.461	.501			
It tries to make you want this product (new product/character)	.596			.575				.618			
It tries to make you like this food (Oreo)	.550	.513					.600	.582			
It tries to make you like toys (toys sale)		.793					.780				
It wants people to like toys (toys sale)		.763					.769				
It wants you to think that having these toys will make you feel good (toys sale)		.733					.662				
It wants you to think that having this food will make you feel good (Oreo)	.495	.602					.713				
It wants people to buy this food (special deal)			.800					.695			
It tries to make you want this product (special deal)			.753					.724			
It tries to make you like this food (special deal)			.723				.518	.559			
It wants you to think that having this food will make you feel good (special deal)			.719				.622	.407			
It wants to grab your attention with a special offer (special deal)	.403		.670					.757			
It wants to grab your attention with a new offer and a teddy (new product/character)				.712				.680			
It wants people to buy this food because of teddy (new product/character)				.676			.523				
It wants people to buy this food because it is new (new product/character)	.454			.616				.535			
It wants you to think that having this food will make you feel good (new product/character)		.409		.556			.619				
It tries to make you like the food (new product/character)		.457		.527			.606				
Do you think this food is funny?						.788			.713		
Do you think this food could make you popular with other children?						.739				.716	
Do you think this food is tasty?							.751			.756	
Do you think this food is healthy?							.615			.660	
Percent of variance per factor	36.71	8.28	6.65	5.68	5.26	5.31	36.92	7.98	6.57	5.96	4.20
Eigenvalues	9.18	2.07	1.66	1.42	1.31	1.17	9.23	1.99	1.64	1.49	1.05

Notes: Cross-loadings are marked in red.

	Extracted factors											
	Experimental group (N=175)						Control group (N=179)					
	Advertising literacy			Apple evaluation			Advertising literacy			Apple evaluation		
Oreo + toys sale	Oreo + toys sale	Special deal	New product + character	Tasty + healthy	Popular + funny	Oreo	Oreo + toys sale + special deal	Special deal + new product	Tasty + popular	Healthy	Not funny	
It wants to grab your attention (Oreo)						.790						.771
It wants people to buy this food (Oreo)						.752						.706
It tries to make you want this product (Oreo)						.720						.749
It tries to make you want this product (toys sale)						.623						.551
It wants to grab your attention with a sale (toys sale)						.614						.712
It tries to make you like this food (Oreo)						.542	.529					.750
It tries to make you like toys (toys sale)						.812					.799	
It wants people to like toys (toys sale)						.777					.779	
It wants you to think that having these toys will make you feel good (toy sale)						.749					.652	
It wants you to think that having this food will make you feel good (Oreo)	.539		.557							.721		
It tries to make you like the food (new product/character)						.500		.484		.476		
It wants people to buy this food (special deal)						.802		.615				
It tries to make you want this food (special deal)						.747		.418		.466		
It wants you to think that having this food will make you feel good (special deal)						.738		.659				
It tries to make you like this food (special deal)						.722		.644				
It wants to grab your attention with a special offer (special deal)						.670		.591		.507		
It wants to grab your attention with a new offer and a teddy (new product/character)						.750		.577				
It wants people to buy this food because of teddy (new product/character)						.686		.564				
It wants people to buy this food because it is new (new product/ character)						.603		.607				
It wants you to think that having this food will make you feel good (new product/character)						.573		.701				
It tries to make you want this product (new product/character)	.566		.569							.596		
Do you think this food is tasty?						.774					.735	
Do you think this food is healthy?						.719					.797	
Do you think this food could make you popular with other children?						.774					.767	
Do you think this food is funny?											.719	-.796
Percent of variance per factor	36.82	8.39	5.87	5.57	5.22	4.71	36.56	7.83	6.73	5.60	4.42	4.20
Eigenvalues	9.20	2.10	1.47	1.39	1.30	1.18	9.14	1.96	1.68	1.40	1.11	1.05

Notes: Cross-loadings are marked in red.

Table 23: EFA for Items Designated for Less Healthy Non-Branded Foods SEM (CQ)

	Extracted factors: <i>Experimental and control groups (N=354)</i>								
	Advertising literacy Oreo + toys sale + new product	Toys sale + Oreo	Special deal	Friends' preferences: less healthy foods	Advertising literacy: new product/ character	Consumption of less healthy foods	Social acceptability: Healthy foods	Social acceptability: Less healthy foods	Evaluation of burger
It wants people to buy this food (Oreo)	.770								
It tries to make you want this product (Oreo)	.742								
It wants to grab your attention (Oreo)	.718								
It wants to grab your attention with a sale (toys sale)	.671								
It tries to make you want this product (new product/character)	.627				.487				
It tries to make you want this product (toys sale)	.601								
It wants people to buy this food because it is new (new product/character)	.530				.467				
It tries to make you like toys (toys sale)		.799							
It wants people to like toys (toys sale)		.782							
It wants you to think that having these toys will make you feel good (toys sale)		.713							
It wants you to think that having this food will make you feel good (Oreo)		.680							
It tries to make you like this food (Oreo)	.517	.632							
It tries to make you like the food (new product/character)		.514			.400				
It wants people to buy this food (special deal)			.720						
It tries to make you want this product (special deal)			.695						
It tries to make you like this food (special deal)			.695						
It wants you to think that having this food will make you feel good (special deal)			.651						
It wants to grab your attention with a special offer (special deal)	.400		.651						
Friends' preferences: French fries				.798					
Friends' preferences: burger, French fries and soft drink				.790					
Friends' preferences: an apple				-.648					
Friends' preferences: bread, vegetables and fruit				-.638					
Friends' preferences: sausage and bread				.590					
Do you think this food is tasty? (burger, French fries, and soft drink)				.445		.403			
It wants to grab your attention with a new offer and a teddy (new product/character)					.675				
It wants people to buy this food because of teddy (new product/character)					.670				
It wants you to think that having this food will make you feel good (new product/ character)		.451			.552				
How often do you have soft drink?					.765				
How often do you eat fast food from restaurants such as McDonald's/KFC/Pizza Hut?					.735				
How often do you eat treats and lollies?					.694				
Social acceptability: bread and vegetables						.796			
Social acceptability: an apple						.781			
Social acceptability: broccoli						.668			
Social acceptability: pizza							.812		
Social acceptability: burger, French fries, and soft drink							.782		
Do you think this food is funny? (burger, French fries, and soft drink)								.760	
Do you think this food is healthy? (burger, French fries, and soft drink)								.635	
Do you think this food could make you popular with other children? (burger, French fries, and soft drink)								.617	
Percent of variance per factor	24.43	9.30	5.62	5.16	4.30	3.96	3.67	3.08	2.95
<i>Eigenvalues</i>	9.28	3.53	2.13	1.96	1.63	1.50	1.40	1.17	1.12

Notes: Cross-loadings are marked in red.

Scales:		N of items	Cronbach alpha	
Items Designated for Oreo and Apple SEMs			Experimental group (N=175)	Control group (N=175)
Advertising literacy:	Oreo advertisement	5	.878 (N=175)	.843 (N=178)
	Special deal	5	.847 (N=174)	.820 (N=178)
	New product/character	6	.831 (N=175)	.790 (N=175)
	Toys sale	5	.867 (N=175)	.818 (N=178)
Evaluations:	Oreo (brand evaluation)	4	.486 (N=174)	.409 (N=179)
	An apple (non-branded food evaluation)	4	.286 (N=175)	.235 (N=178)
Items Designated for Less Healthy Non-Branded Foods SEM		Experimental and control groups (N=354)		
Advertising literacy:	Oreo advertisement	5	.861 (N=353)	
	Special deal advertisement	5	.834 (N=352)	
	New product/character advertisement	6	.811 (N=350)	
	Toys sale advertisement	5	.843 (N=353)	
Evaluations:	Burger, French fries, and soft drink(non-branded food)	4	.512 (N=354)	
Consumption of less healthy foods		3	.675 (N=353)	
Peers' food preferences:	Healthy foods (apple; bread, vegetables, and fruit)	2	.629 (N=354)	
	Less healthy foods (bread and sausage; French fries; burger, French fries, and soft drink)	3	.738 (N=354)	
Social acceptability:	Healthy foods (apple; bread, vegetables, and fruit; and broccoli)	3	.639 (N=352)	
	Less healthy foods (pizza; burger French fries, and soft drink)	2	.698 (N=354)	

Notes: Low Cronbach alpha coefficients are marked in red.

Items:	Extracted factors					
	Experimental group (N=175)		Control group (N=179)		Experimental and control groups (N=354)	
	Communication	Social norms	Communication	Social norms	Communication	Social norms
I try to help my child understand what s/he sees on TV	.870		.880		.879	
When my child sees a food advertisement I try to explain the motives behind the advertisement	.868		.854		.860	
I try to help my child understand the difference between advertisements and programs	.828		.836		.831	
I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	.762		.796		.779	
I try to explain to my child the difference between good foods and bad foods	.526		.512		.516	
My friends eat fast food at least once per week		.824		.867		.845
People who live in my neighbourhood eat fast food at least once per week		.773		.817		.799
Members of my family/extended family eat fast food at least once per week		.765		.730		.745
Percent of variance per factor	38.77	23.27	40.35	23.53	39.33	23.43
<i>Eigenvalues</i>	3.10	1.86	3.23	1.88	3.15	1.87

Scales:	N of items	Cronbach alpha		
		Experimental group	Control group	Experimental and control groups
Parent-child communication about food advertising and foods	5	.834 (N=174)	.838 (N=178)	.836 (N=352)
Social norms about fast foods	3	.682 (N=174)	.717 (N=174)	.700 (N=352)

item also demonstrated communalities below 0.30 during the EFA (Appendix 46B). In the control sample, Cronbach alpha coefficients could increase up to 0.725 for social norms if “Members of my family/extended family eat fast food at least once a week” was removed.

Therefore, the fit of latent constructs was examined again during SEM for a final decision due to the exploratory nature of the analysis discussed in this section.

Reliability of Test Items

The CTT item analysis of the children's data showed that two items (NKT1 and NKT5) tended to be difficult both in the experimental (23% and 22%, respectively) and control groups (27% and 17%, respectively) as they were answered correctly by less than 30% of respondents (Appendix 47, A1.1 and A1.2). Other items exhibited acceptable item discrimination, which clustered around the midrange of 0.50 (Appendix 47, A1.1 and A1.2). A similar trend was confirmed by the IRT statistics. However, this time in addition to NKT 1 and NKT5, NKT2 was also suggested as misfitting as an easy item (Appendix 47, A2.1 and A2.3). Once the problematic items were removed, the reliability of the overall measure increased in the experimental group from 0.22 to 0.31 (Appendix 47, A2.1 and A2.2) and slightly decreased from 0.42 to 0.37 in the control group (Appendix 47, A2.3 and A2.4). These results, however, were considered acceptable as they were above 0.30 according to Nunnally (1967). Because IRT analysis performed without misfitting items showed a better fit (Appendix 50, A2.2 and Appendix 47, A2.4), only five items (NKT3, NKT4, NKT6, NKT7, and NKT8) were used for the calculation of children's overall nutritional knowledge score (see next section).

The CTT item analysis carried out for 80⁷ GNKQ items demonstrated diverging discrimination ability, a pattern similar across the two groups (Appendix 47, B1.1 and B1.2). Similar results were also confirmed by the IRT statistics, which identified 35 misfitting items in the experimental group (33 easy and two hard items) (Appendix 47, B2.1) and 37 misfitting items in the control group sample (35 easy and two hard items) (Appendix 47, B2.2). Except for two instances (EXPPRO5 and EXPSATF2), items with poor fit were similar across the two groups. Despite high reliability coefficients (0.95 in the experimental and 0.81 in the control groups) (Appendix 47, B2.1 and B2.2), misfitting items were dropped and the reliability analysis was performed again for 43 items. The two items which did not demonstrate acceptable fit in the control group (EXPPRO5 and EXPSATF2) were dropped to facilitate consistent estimation of parents' nutritional knowledge across the two groups. The IRT statistics performed for the 43 items demonstrated high reliability coefficients in both the

⁷ Questions 2 ("How many servings of fruit a day do you think experts are advising people to eat?") and 3 ("How many servings of vegetables a day do you think experts are advising people to eat?") (Appendix 39) were not included in the analysis because of categorical answers.

experimental (0.83) and control groups (0.75) (Appendix 47, B2.3 and B2.4), which were retained for the upcoming SEM.

Convergent and Discriminant Validity

Convergent validity was assessed using similar procedures employed during the analysis of pilot test data. As shown in Table 27, children’s nutritional knowledge was positively correlated with respondents’ age across all samples, demonstrating acceptable convergent validity of the developed measure. Children’s nutritional knowledge was also positively associated with the sources of knowledge about foods in the control sample (Table 27). Advertising literacy items demonstrated acceptable convergent validity through a number of statistically significant associations with age as shown in Table 28. The convergent validity of the food advertising literacy items was examined by correlating them with the toys sale advertisement items incorporated in the CQ. Similar to the pilot test results, statistically significant associations were observed across all items and groups, confirming items’ successful convergent validity (Table 29).

Variables:	Age			Sources of knowledge about food		
	Experimental group (N=175)	Control group (N=179)	Experimental and control groups (N=354)	Experimental group (N=175)	Control group (N=179)	Experimental and control groups (N=354)
Nutritional knowledge ¹	.307**	.464**	.392**	-.018	.163*	.075

Notes:

*. Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

¹ – Score formed by adding up correct answers across five NKT items (NKT3, NKT4, NKT6, NKT7, and NKT8), divided by five.

Non-significant coefficients are marked in red.

Variables:		Age		
		Experimental group	Control group	Experimental and control groups
Oreo advertisement	It wants people to buy this food	.068 (N=175)	.201* (N=178)	.134* (N=353)
	It tries to make you like this food	-.024 (N=175)	.109 (N=178)	.047 (N=353)
	It wants you to think that having this food will make you feel good	.066 (N=175)	.068 (N=178)	.069 (N=353)
	It wants to grab your attention	.139* (N=175)	.334** (N=178)	.245** (N=353)
Special deal advertisement	It tries to make you want this product	.108 (N=175)	.210** (N=178)	.160** (N=353)
	It wants people to buy this food	.194* (N=175)	.324** (N=178)	.261** (N=353)
	It tries to make you like this food	.105 (N=175)	.193** (N=179)	.147** (N=353)
	It wants you to think that having this food will make you feel good	.174* (N=175)	.083 (N=179)	.125* (N=354)
	It wants to grab your attention with a special offer	.329** (N=175)	.360** (N=179)	.345** (N=354)
New product/character advertisement	It tries to make you want this product	.199** (N=175)	.329** (N=179)	.264** (N=354)
	It wants people to buy this food because it is new	.103 (N=175)	.289** (N=178)	.201** (N=353)
	It tries to make you like the food	-.041 (N=175)	.130 (N=176)	.043 (N=351)
	It wants people to buy this food because of teddy	.112 (N=175)	.095 (N=177)	.100* (N=352)
	It wants you to think that having this food will make you feel good	.086 (N=175)	.054 (N=178)	.071 (N=353)
	It wants to grab your attention with a new offer and a teddy	.109 (N=175)	.277** (N=178)	.194** (N=353)
	It tries to make you want this product	.045 (N=175)	.151* (N=178)	.104 (N=353)

Notes:

*. Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Non-significant coefficients are marked in red.

Table 29: Correlation: Advertising Literacy Items (CQ)						
A: Experimental Group¹						
Oreo advertisement:		Toys sale advertisement:				
	It wants people to like toys	It tries to make you like toys	It wants you to think that having these toys will make you feel good	It wants to grab your attention with a sale	It tries to make you want this product	
It wants people to buy this food	.511**	.503**	.409**	.621**	.603**	
It tries to make you like this food	.516**	.584**	.521**	.463**	.436**	
It wants you to think that having this food will make you feel good	.513**	.593**	.555**	.522**	.413**	
It wants to grab your attention	.381**	.414**	.413**	.608**	.518**	
It tries to make you want this product	.363**	.372**	.382**	.561**	.483**	
B: Control Group²						
It wants people to buy this food	.330**	.418**	.439**	.635**	.523**	
It tries to make you like this food	.535**	.669**	.476**	.431**	.503**	
It wants you to think that having this food will make you feel good	.561**	.589**	.553**	.407**	.433**	
It wants to grab your attention	.343**	.385**	.409**	.604**	.471**	
It tries to make you want this product	.277**	.330**	.356**	.496**	.585**	
C: Experimental and Control Groups						
Special deal advertisement	It wants people to buy this food ³	.299**	.371**	.309**	.450**	.368**
	It tries to make you like this food ³	.404**	.389**	.373**	.417**	.328**
	It wants you to think that having this food will make you feel good ⁴	.347**	.336**	.379**	.295**	.286**
	It wants to grab your attention with a special offer ⁴	.269**	.268**	.248**	.475**	.364**
	It tries to make you want this product ⁴	.226**	.298**	.304**	.467**	.356**
New product/character advertisement	It wants people to buy this food because it is new ⁴	.360**	.393**	.357**	.507**	.433**
	It tries to make you like the food ⁵	.482**	.523**	.483**	.371**	.432**
	It wants people to buy this food because of teddy ³	.307**	.356**	.318**	.168**	.235**
	It wants you to think that having this food will make you feel good ²	.445**	.415**	.532**	.358**	.412**
	It wants to grab your attention with a new offer and a teddy ⁴	.299**	.348**	.376**	.408**	.348**
	It tries to make you want this product ⁴	.360**	.353**	.338**	.476**	.512**

Notes:

** Correlation is significant at the 0.01 level (2-tailed).

¹ – N=175

² – N=178

³ – N=352

⁴ – N=353

⁵ – N=351

As for parents' data, statistically significant reverse associations were observed between nutritional knowledge, social norms, and parents' frequency of fast food consumption across all samples (Table 30). This pointed to an acceptable convergent validity of the nutritional knowledge measure as it showed that higher knowledge amongst parents is associated with less frequent consumption of fast foods and also less positive social norms about fast foods. Having confirmed that measures were valid and reliable, all required recoding was carried out, which is discussed in detail in the next section.

Table 30: Correlation: Parents' Nutritional Knowledge, Social Norms, and Frequency of Fast Food Consumption (PQ)				
Nutritional knowledge ¹	Social norms:			Parents' frequency of fast food consumption
	Members of my family/extended family eat fast food at least once per week	My friends eat fast food at least once per week	People who live in our area eat fast food at least once per week	
<i>Experimental group</i>	-.161** (N=165)	-.221*** (N=164)	-.045 (N=165)	-.143* (N=165)
<i>Control group</i>	-.167** (N=171)	-.190** (N=170)	-.045 (N=171)	-.251** (N=171)
<i>Experimental and control groups</i>	-.161*** (N=336)	-.206*** (N=334)	-.043 (N=336)	-.192** (N=336)

Notes:

* Correlation is significant at the 0.06 level (2-tailed).

** Correlation is significant at the 0.05 level (2-tailed)

*** Correlation is significant at the 0.01 level (2-tailed).

¹ – Score based on 43 better fitting items added up and divided by number of items.

Non-significant coefficients are marked in red.

7.4.4. Construction of Scores and Recoding

Children's overall nutritional knowledge score was created by adding up correct answers across the five items which exhibited better reliability, namely NKT3, NKT4, NKT6, NKT7, and NKT8, and then dividing them by the number of items. Incorrect answers including "don't know" options were counted as zeros. The derived scores ranged from zero to 4.20 in both groups. Parents' nutritional knowledge score was created using a similar method – correct answers across 43 GNKQ were assigned a code of one, added up, and then divided by the total number of items to yield an average score for every respondent. The final scores ranged from three to 23.35 in the experimental group, and from three to 22.33 in the control group. Recoding was carried out for all advertising literacy items, whereby the "don't know" answer category was assigned a score of zero. This resulted in a creation of scales ranging from zero to five. The latter designated the highest belief that advertising tried to influence other people or a respondent, while the lowest scores indicated low advertising literacy.

Biometric data collected from parents were used to calculate the Body Mass Index (BMI), a commonly used measure of adiposity amongst children and adults (Robinson et al. 2001; Wang and Lobstein 2006; WHO 2006b). The index is calculated as weight in kilograms divided by height in metres squared. The BMI scores calculated for children were classified into four categories: 1) underweight; 2) normal weight; 3) overweight; and 4) obese, using the cut-off points developed by the ABS (2007) (Appendix 48A) that are based on the internationally accepted guidelines (Cole, Bellizzi, Flegal, and Dietz 2000; Cole, Flegal, Nicholls, and Jackson 2007). Because the above-mentioned cut-off points already controlled for children's age and gender, a dummy variable was created to differentiate between underweight/normal weight and overweight/obese respondents (Appendix 48, B1), where the former were used as a reference category in the subsequent analysis.

Parents' BMI was calculated using the same formula as for the children. The derived indices were classified into four categories (underweight, normal weight, overweight, and obese) using the ABS guidelines for adults (ABS 2007) provided in Appendix 48A. Similar to children, the BMI scores were dichotomized into underweight/normal weight and overweight/obese (Appendix 48, B2). The percentages of underweight/normal weight and overweight/obese individuals who took part in the full-scale fieldwork shown in Table 31 were similar to, and representative of the general Australian population (see Appendix 48C), both amongst children and adults (ABS 2009c).

Age	Gender	Underweight/normal weight ¹			Australian population ²	Overweight/obese ¹			Australian population ²
		Experimental group	Control group	Experimental and control groups		Experimental group	Control group	Experimental and control groups	
7 to 13 years	Female	77.4%	77.2%	77.3%	77.1% ³	22.6%	22.8%	22.7%	23% ³
	Male	67.9%	52.7%	60.5%	78.2% ³	32.1%	47.3%	39.5%	21.8% ³
23 to 75 years	Female	41.5%	46.9%	44.2%	45.3% ⁴	58.5%	53.1%	55.8%	54.6% ⁴
	Male	37.5%	25%	30.9%	32.3% ⁴	62.5%	75%	69.1%	67.7% ⁴

Notes:

¹ – For more detailed information see Appendix 48, B1.

² – The data for the Australian population were retrieved from the latest release of the National Health Survey for 2007-2008 (Appendix 48, B3).

³ – Data for individuals between five to 12 years.

⁴ – Data for individuals 18 years and above.

Due to some missing cases, only valid percentages are reported in the table (see Appendix 45 for missing data).

Respondents' residence in a disadvantaged area was assessed using the Index of Education and Occupation (IEO) (Pink 2006) developed by the ABS (2008) based on the census data. The ABS offers a range of socio-economic indicators, including the Index of Relative Socio-economic Disadvantage, the Index of Relative Socio-Economic Advantage and Disadvantage, and the Index of Economic Resources, in addition to the IEO. However, preference was given to the latter because it reflected the level of education and occupation-related skills of individuals residing in respondents' communities. The IEO index ranges from one to 10, corresponding to deciles. Lower IEO scores designate low education and occupation status, suggesting that most residents in an area have low qualifications, are unemployed, or hold low skilled occupations. Higher scores, on the other hand, indicate higher education or highly skilled occupations (Pink 2006). Using the residential post codes reported by parents/main carers, every participant was assigned an IEO decile score, which was used as a continuous variable during the upcoming statistical analyses. Finally, the last answer option ("not applicable") used in the parent-child communication scale (Appendix 37, Q27) was coded as missing and excluded from the analysis, because it designated no communication between parents and their children. The analysis showed that recoding was required for only four items (Appendix 49).

7.4.5. Assessment of Data Normality

The assessment of data normality was performed using the Kolmogorov-Smirnov statistic (Coakes and Steed 2007), which yielded $p < 0.00$ indicating a non-normal distribution across the variables. A closer examination of the Normal Q-Q plots, however, showed that most variables exhibited relatively normal distributions (see Appendices 50A and 50B). Several approaches were explored to alleviate data non-normality. First, listwise deletion could have

been applied, but was considered undesirable as it could result in non-representativeness of the final samples. Second, log transformation was carried out. However, it did not yield normal distributions across the variables and was dropped. Third, the Bollen-Stine Bootstrap, which controls for data non-normality during SEM was considered, but could not be performed in Amos due to missing data. Given the above-mentioned considered, the preference was given to data aggregation and recoding, which are discussed below.

Data aggregation was carried out only for the advertising literacy items, which exhibited negatively skewed distribution as shown in Appendix 50. To remedy this pattern, items related to the same advertisement were added up using the original answer scores and divided by the number of corresponding items to transform the data. This resulted in a calculation of three scores for each respondent (i.e., special deal, new offer/character, and Oreo). The Oreo aggregate score was used in the SEM for Oreo biscuit and an apple (experimental setting), whereas the other two scores were modelled as a latent construct in the SEM designated for the consumption of less healthy non-branded foods (non-experimental setting). As shown in Appendix 50, data aggregation yielded more variance and was expected to provide a more comprehensive and adequate assessment of children's advertising literacy ability mitigating the data non-normality.

As for the recoding, currently there are no guidelines to judge deviations of skewness and kurtosis while dealing with non-normally distributed data. However, both indices should be around zero. Therefore, a rule of thumb was chosen in this study whereby only the items with either one, or both kurtosis and skewness above 1.50 were recoded, as they were considered to exhibit highest non-normality. Based on this rule, 12 variables were identified – ten variables in the children's data (Appendix 51A) and two variables in the parents' data (Appendix 51B). Depending on the observed distributions, the Likert variables were either dichotomised, or recoded from five-level to three- or four-level ordinal variables (Appendix 51). A similar strategy was applied to two non-Likert variables. For example, the first three categories in parents' education were grouped together to designate primary/secondary school educational attainment, reducing answer categories from six to four (Appendix 51C). Parents' exposure to fast food advertising was recoded into a three-level ordinal variable, reflecting "low" (the first three answer options: "never;" "rarely" and "sometimes"), "medium" (i.e., "often") and "high" (i.e., "very often") levels of exposure (Appendix 51C).

Despite deviations from data normality in the collected data, recoding and data aggregation were used to insure that data could be successfully used during SEM. Additionally, the size of the collected sample (i.e., 175 respondents in the experimental group, and 179 participants in the control group) conformed with the generally accepted ratio of 15 respondents per indicator to minimise the deviations from normality in SEM (Wang, Fan, and Willson 1996). The next section provides descriptive statistics for the key variables designated for the upcoming SEM.

7.4.6. Descriptive Statistics for Key Variables

The analysis of descriptive statistics performed prior to SEM showed that children in the experimental and control groups exhibited greater preference for the advertised food (Oreo biscuits) rather than a healthier alternative (an apple) (Table 32). In both groups, friends' preferences for Oreo and an apple were equally high. In the experimental group, the evaluation of Oreo's healthiness was less positive in comparison to other Oreo-related attitudes. Neither foods were perceived as funny. Children believed that other people thought it was alright to eat Oreo biscuits weekly (experimental group M=3.11 and control group M=3.06). Nutritional knowledge ranged from zero to 4.20 across the two groups, with an average score of 2.46 in the experimental group and 2.41 in the control group (Table 32).

Variables:	<i>Experimental group (N=175²)</i>			<i>Control group (N=179²)</i>		
	Mean	Standard deviation	Min, max	Mean	Standard deviation	Min, max
Preference for Oreo	3.43	1.16	1, 5	3.51	1.19	1, 5
Preference for apple	2.04 ¹	0.74 ¹	1, 3 ¹	2.09 ¹	0.74 ¹	1, 3 ¹
Friends' preference:						
Oreo	3.67	1.01	1, 5	3.87	1.09	1, 5
Apple	3.71	1.07	1, 5	3.61	1.11	1, 5
Evaluations:						
Do you think Oreo is funny?	1.98	1.08	1, 5	1.95	1.02	1, 5
Do you think Oreo is tasty?	3.66	1.13	1, 5	3.77	1.10	1, 5
Do you think Oreo is healthy?	1.75 ¹	0.72 ¹	1, 4 ¹	1.65 ¹	0.71 ¹	1, 4 ¹
Do you think Oreo could make you popular with other children?	2.61	1.25	1, 5	2.74	1.27	1, 5
Do you think apple is funny?	1.91 ¹	0.90 ¹	1, 4 ¹	1.89	1.03	1, 5
Do you think apple is tasty? ¹	2.30 ¹	0.70 ¹	1, 3 ¹	2.25 ¹	0.68 ¹	1, 3 ¹
Do you think apple is healthy? ¹	2.72 ¹	0.52 ¹	1, 3 ¹	2.71 ¹	0.54 ¹	1, 3 ¹
Do you think apple could make you popular with other children?	2.66	1.22	1, 5	2.68	1.13	1, 5
Social acceptability: ³						
Oreo	3.11	1.12	1, 5	3.06	1.05	1, 5
Advertising literacy:						
Oreo	16.53	4.93	0, 21	16.36	4.76	0, 21
Nutritional knowledge	2.46	1.16	0, 4.20	2.41	1.21	0, 4.20

Notes:

¹ – Descriptive statistics are reported for transformed variables. For more information see Appendix 51.

² – For missing values see Appendix 45.

³ – The descriptive statistics for dichotomised variables are available in Appendix 51C.

The descriptive statistics for less healthy non-branded foods shown in Table 33, indicate that respondents consumed fast foods and treats/lollies once a month (M=2.31). Consumption of soft drink was more frequent, approximately once a week (M=3.03). Children reported their friends' greater preferences for french fries (M=3.69) and burger/french fries/soft drink (M=3.31) in comparison to bread and sausage (M=2.37). Overall, children did not rate burger/french fries/soft drink as funny (M=1.91) or healthy (M=1.45) in comparison to taste (M=3.75) and social appeal (M=2.36). Social consumption acceptability for pizza and burger (M=2.53), french fries, and soft drink (M=2.41) was estimated between monthly and weekly. Children's exposure to advertisements of treats, lollies, soft drink, and fast food was high (M=4.44), corresponding to at least two advertisements per week. Their exposure to advertisements in local fast food restaurants was equivalent to once a week (M=2.89). More detailed descriptive statistics are available in Appendix 52.

Table 33: Descriptive Statistics for Variables for Less Healthy Non-Branded Foods SEM (CQ)			
<i>Experimental and control groups (N=354²)</i>			
Variables:	Mean	Standard deviation	Min, max
Consumption of less healthy non-branded foods			
How often do you eat fast food from restaurants such as McDonald's/KFC/Pizza Hut?	2.31 ¹	0.81 ¹	1, 4 ¹
How often do you eat treats and lollies?	2.37	1.26	1, 6
How often do you have soft drink?	3.03	1.34	1, 6
Friends' preference:			
Sausage and bread	2.68	1.10	1, 5
French fries	3.69	1.23	1, 5
Burger, French fries, and soft drink	3.31	1.38	1, 5
Evaluations:			
Do you think burger, French fries, and soft drink is funny?	1.91 ¹	0.86 ¹	1, 4 ¹
Do you think burger, French fries, and soft drink is tasty?	3.75	1.14	1, 5
Do you think burger, French fries, and soft drink is healthy?	1.45 ¹	0.80 ¹	1, 4 ¹
Do you think burger, French fries, and soft drink could make you popular with other children?	2.36	1.32	1, 5
Social acceptability:³			
Pizza	2.53	0.85	1, 5
Burger, French fries, and soft drink	2.41	0.97	1, 5
Advertising literacy:			
Special deal	15.85	5.05	0, 21
New product/character	18.16	5.83	0, 25.83
Nutritional knowledge	2.43	1.18	0, 4.20
Exposure to fast food advertising			
I see advertising for treats, lollies, soft drink or fast food	4.44	1.55	1, 6
Our local fast food restaurants have special deals, like family packs and meal deals	2.89	1.51	1, 6

Notes:

¹ – Descriptive statistics are reported for transformed variables. For more information see Appendix 51.

² – For missing values see Appendix 45.

³ – The descriptive statistics for dichotomised variables are available in Appendix 51C.

Similar to children, parents' exposure to fast food advertising was quite extensive (Table 34). Parents' nutritional knowledge ranged from three to 23.35 in the experimental group and from three to 22.33 in the control group. Parents across all groups somewhat agreed that their family member, members of extended family, friends, and people in the neighbourhood consumed fast foods at least once per week. Parents reported more frequent communication about foods (M=4.17, M=4.10, and M=4.13 across the three groups) than communication

about food advertising with their children. The average IEO index clustered around the midpoint.

Table 34: Descriptive Statistics for Parents' Data

Variables:	<i>Experimental group (N=175)²</i>			<i>Control group (N=179)²</i>			<i>Experimental and control groups (N=354)²</i>		
	Mean	Standard deviation	Min, max	Mean	Standard deviation	Min, max	Mean	Standard deviation	Min, max
Nutritional knowledge	16.04	3.90	3, 23.35	15.53	3.99	3, 23.33	15.78	3.95	3, 23.35
Exposure to fast food advertising ¹	2.37	0.65	1, 3	2.39	0.64	1, 3	2.38	0.64	1, 3
Social norms:									
Members of my family/extended family eat fast food	2.97	1.78	1, 5	2.89	1.77	1, 5	2.93	1.77	1, 5
My friends eat fast food	3.06	1.43	1, 5	3.14	1.47	1, 5	3.10	1.45	1, 5
People who live in my neighbourhood eat fast food	3.10	1.26	1, 5	3.07	1.26	1, 5	3.09	1.26	1, 5
Parent-Child Communication about Food Advertising and Foods									
I try to explain to my child the difference between good foods and bad foods	4.17	0.84	1, 5	4.10	1	1, 5	4.13	0.92	1, 5
When my child sees a food advertisement I try to explain the motives behind the advertisement	3.29	1.28	1, 5	3.24	1.27	1, 5	3.26	1.28	1, 5
I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	2.98	1.37	1, 5	2.98	1.43	1, 5	2.92	1.40	1, 5
I try to help my child understand what s/he sees on TV	3.89	1.08	1, 5	3.92	1.01	1, 5	3.90	1.05	1, 5
I try to help my child understand the difference between advertisements and programs	3.62	1.34	1, 5	3.54	1.33	1, 5	3.58	1.33	1, 5
IEO	5.30	2.82	1, 10	4.91	2.77	1, 10	5.10	2.79	1, 10

Notes:

¹ – Descriptive statistics are reported for transformed variables. For more information see Appendix 51.

² – For missing values see Appendix 45.

7.5. Summary

This chapter has provided a detailed description of the research protocol followed during the full-scale fieldwork while collecting data from children and their parents. It has explained how the sample size was determined. The chapter also has highlighted the main characteristics of participants and confirmed their representativeness of the Australian population for the weight variable. This chapter has also outlined how tests were performed to confirm the reliability and validity of research instruments, which served as an important check prior to the estimation of the relationships postulated in the conceptual framework. The EFA structure of items was similar across the experimental and control groups for Oreo biscuits and an apple in both children's and parents' data, permitting statistical modelling with SEM. Finally, all steps undertaken to remedy data non-normality, all recoding, and construction of scores were explained in detail prior to the SEM analysis. The next chapter reports the empirical results of Structural Equation Modelling.

Chapter Eight: Quantitative Results

8.1. Introduction

This chapter discusses the results of the main data analysis. Two statistical techniques were chosen to estimate the relationships postulated in the conceptual framework – the analysis of variance (ANOVA) and Structural Equation Modelling (SEM), resulting in an in-depth analysis of factors influencing children’s dietary behaviour. The discussion starts with the results of ANOVA, which demonstrated that a more detailed analysis of covariance was required. Due to the richness of the data, four SEM models were estimated to assess the relationships postulated in the developed conceptual framework. Detailed information is provided in this chapter about the steps undertaken to set up, estimate, and assess the fit of each SEM model. Assessment of the validity and reliability of the measurement models was carried out prior to the estimation of the structural models.

8.2. Statistical Techniques Chosen for Data Analysis

As was mentioned in Chapter Four, an experiment and a survey were used to collect data for this study. Although experiments generally assume that variables are measured without any error terms and that a causal relationship exists between the treatment and criterion variables, the literature warns that changes in the dependent variable may not be entirely caused by the manipulation (Bagozzi 1977). This observation led to the use of manipulation checks, which involves additional data collected from the participants through surveys. Although manipulation checks facilitate better control over measurement errors and offer stronger evidence for causality, such modelling has rarely been used explicitly in the experiments (Bagozzi 1977). In the marketing discipline, SEM has been suggested as one way to improve the analysis of experimental data (Mackenzie 2001). Given these considerations, two statistical techniques were used in the current study.

First, the analysis of variance (ANOVA) traditionally used in psychology and marketing experiments was employed. This method tested for any potential differences between the children in the experimental and control groups (between subjects effects), while controlling for participants’ age and gender (within subjects effects). This technique, however, accounted only for the influence of exposure and did not allow testing of all relationships postulated in the conceptual framework. Hence, the second method, SEM, was employed to analyse data in

more depth and control for the influence of external and internal factors on the outcome variables. SEM represents a more advanced multivariate technique which combines confirmatory factor analysis (CFA) and multiple regression in one model simultaneously examining the series of interdependence (CFA) and dependence relationships (regression) amongst the variables (Hair et al. 2010). Of particular relevance for the current study were four aspects of this analytical technique.

First, SEM allowed the assessment of the whole conceptual framework and all hypothesised relationships, including direct and indirect mediating effects (i.e., nutritional knowledge → attitudes → food preferences/consumption; advertising literacy → attitudes → food preferences/consumption; and exposure to advertising → attitudes → food preferences/consumption). This empirical approach facilitated a better representation of complex social reality and has been advocated in marketing (Iacobucci 2010; Mackenzie 2001). Also, because the chosen technique could handle all postulated relationships in one model, the magnitude of influence of each independent variable could be assessed for the first time. Second, this technique estimated the fit of the data to the overall conceptual framework (Hair et al. 2010), resulting in a more rigorous assessment of the formulated hypotheses.

Third, the factors which were measured through multiple items were modelled as latent constructs, which better reflected the underlying theoretical constructs (Hair et al. 2010; Hoyle 1995; Mackenzie 2001). Latent constructs are more advantageous than variable aggregation since they do not ignore measurement errors (Mackenzie 2001). Finally, SEM was used to test the consistency of the developed conceptual framework both in the experimental and control groups (invariance analysis) (Mackenzie 2001). Because four SEM models were assessed, the factors which exerted consistent influences on children's preferences for both unhealthy and healthier foods could be detected. Despite these obvious advantages, SEM has rarely been applied to assess factors influencing children's food preferences/consumption (Worsley 2002) and the current study is the first to report such results.

8.3. Models' Specification and Fit Assessment

As indicated in the literature, a statistical model should represent a theory (Hair et al. 2010). Therefore, all empirical models were set up to preserve the relationships mapped out in the conceptual framework (Figure 18). The analyses were carried out following widely accepted

specification procedures (Hair et al. 2010). First, the measurement models were specified using the CFA. This was done by assigning the underlying indicator variables (manifest variables) to the corresponding latent constructs. After the measurement models were estimated, they were assessed for construct validity. The latter consists of two components – convergent validity and discriminant validity (Hair et al. 2010). Successful convergent validity signals that all indicators of a construct share high proportion of common variance. Convergent validity was assessed through the examination of: 1) standardised factor loadings; 2) the average variance extracted (AVE); and 3) construct reliability (CR). Standardised factor loadings and AVE need to be 0.50 or higher to indicate adequate convergence (Hair et al. 2010). AVE was calculated as a sum of squared standardised factor loadings divided by the number of manifest variables (Hair et al. 2010):

$$AVE = \frac{\sum_{i=1}^n L_i^2}{n}$$

The rule of thumb for CR is 0.70. Still, reliability coefficients between 0.60 and 0.70 are considered acceptable. The CR was calculated as a squared sum of factor loadings across indicator variables, divided by the sum of squared loadings and the sum of squared error variance as shown below (Hair et al. 2010):

$$CR = \frac{(\sum_{i=1}^n L_i)^2}{(\sum_{i=1}^n L_i)^2 + (\sum_{i=1}^n e)}$$

Discriminant validity designates the extent to which a construct is distinct from other latent variables used in a model. While there are several methods for the assessment of discriminant validity, a more rigorous test was applied in this study, whereby AVE coefficients were compared to shared variance (squared correlation) between the constructs of interest (Hair et al. 2010). To designate successful discriminant validity AVE needs to be bigger than the shared variance (Fornell and Larcker 1981). After the measurement models were assessed, manifest variables which did not exhibit statistically significant loadings were removed. These finalised measurement models were then used to create structural models, which specified causal relationships amongst the exogenous constructs (latent independent variables) and dependent variables (Hair et al. 2010). All indicator variables were retained in the structural models and parcelling was avoided because of its propensity to obscure some qualities of individual indicators (Hair et al. 2010).

Data analysis was carried out using Amos 19.0, SPSS add-on module for Structural Equation Modelling. The maximum likelihood estimation was chosen because of the missing data and its robustness to violations of multivariate data normality (Anderson and Gerbing 1988). Model fit was assessed using the traditional chi-square test (χ^2) (Hooper, Coughlan, and Mullen 2008) and five widely accepted goodness of fit (GOF) indices because data non-normality could result in the rejection of models under the assumptions of the chi-square test (Hooper et al. 2008). The GOF indices were: 1) the less sensitive to sample size relative chi-square (χ^2/DF) (Ullman 2001); 2) the Comparative Fit Index (CFI), which controls for Type I and Type II errors, adjusts for model complexity and parsimony (Iacobucci 2010), and is independent of sample size (Hooper et al. 2008); 3) the Normed Fit Index (NFI), which represents a ratio of difference between the chi-square of the fitted and the null model divided by the chi-square of the null model (Hair et al. 2010); 4) the Tucker Lewis Index (TLI) (or Non-normed Fit Index (NNFI)) (Hu and Peter M. Bentler 1999); and 5) the Root Mean Square Error of Approximation (RMSEA), which is independent of the sample size and favours parsimonious models (Schermelleh-Engel et al. 2003).

The fit of models was assessed based on all GOF indices (Hooper et al. 2008). The chi-square's (χ^2) *p* coefficient needs to be above 0.05 to indicate good fit of data to the model (Hooper et al. 2008). The relative chi-square (χ^2/DF) should be below 2.00 (Ullman 2001). The recommended cut-off point for CFI and TLI is 0.95 (Hu and Peter M. Bentler 1999), while NFI closer to 1.00 represents a perfect fit (Hair et al. 2010). RMSEA values ≤ 0.05 represent a good fit, values between 0.05 and 0.08 represent an adequate fit, values between 0.08 and 0.10 designate a mediocre fit, and values above 0.10 are not considered as acceptable (Browne and Cudeck 1993). Of all GOF indices, however, RMSEA is considered to be the most informative since it reflects how well the data fit overall model covariance (Diamantopoulos 2000). In addition to the GOF indices, the percentage of variance explained in the dependent variable (R^2) was used to judge the quality of the empirical models.

The statistical significance of the relationships between manifest variables and their corresponding latent constructs in the CFA was assessed using the *p* values <0.05 and critical ratios equivalent to *t* values above 2.00 (Hair et al. 2010). A similar approach was used while assessing the significance of the relationships between independent and dependent variables in the regressions. The magnitude of influence of each independent variable was calculated as the square of their standardised regression weights, which were compared against the total

variance explained in dependent variables. The significance of mediation effects in SEM is generally assessed through the bootstrap confidence intervals, which are currently preferred over the Sobel test (see Hayes 2009; Preacher and Hayes 2004, 2008). However, due to the missing data, bootstrapping could not be performed in Amos. Instead, the strength of mediating coefficients was judged by the percentage of variance explained in the dependent variable by the interacting variables (i.e., $\beta_{(\text{variable1}) \times \beta_{(\text{variable2})}}$), similar to the process undertaken for standard regression analysis (Pallant 2007). Because independent variables were measured in different units in the current study, the indirect mediating effects were calculated by multiplying their standardised regression weights to avoid misleading coefficients (Warner 2013). This was done by squaring the extracted mediating coefficients.

As mentioned in Chapter Seven, children's preferences for Oreo, an apple, and their general consumption of three less healthy foods (fast foods, soft drinks, and lollies/treats) were used as outcome variables in separate SEM models. As a result, the conceptual framework was tested through four models. As shown in Figure 28, model one predicted children's food preference for Oreo biscuits (advertised branded product) using the experimental sample (N=175). It examined which factors influenced children's food preference for a lunch snack specifically under the condition of experimental manipulation while also controlling for the influence of external and internal factors. Model two predicted children's food preference for an apple, which represented a healthier, non-advertised, and non-branded food product. This model was again assessed using the experimental sample because it showed which factors would predict children's food preferences under the conditions of experimental exposure to a less healthy food.

Model three represented a multigroup invariance comparison between the experimental and control groups. It examined if there were any differences attributed to the experimental manipulation between the two groups in relation to the experimental food (Oreo biscuits). During the multigroup analysis, the unconstrained models were estimated first and then between-group constraints were added to measurement weights, measurement intercepts, structural weights, structural intercepts, structural means, structural covariances, structural residuals, and measurement residuals. The GOF indices produced by model three were examined using the same criteria discussed above. The differences in factor loadings and structural weights between the experimental and control groups were additionally tested by the critical ratios of difference, which needed to be above 1.96 to indicate statistical

significance. Model invariance was assessed using the chi-square difference tests ($\Delta\chi^2$), where statistically non-significant results indicate the absence of substantial differences between the unconstrained and constrained models. The following formulas were used:

$$\Delta\chi^2 = \chi^2_{(\text{unconstrained model})} - \chi^2_{(\text{more constrained model})}$$

$$\Delta df = df_{(\text{unconstrained model})} - df_{(\text{more constrained model})}$$

The last model (model four) assessed the influence of external and internal factors on children’s consumption of less healthy non-branded foods, which relied on the survey data collected after the experiment (Figure 28). Because children’s general consumption of less healthy foods was not expected to be affected by experimental manipulation, model four was estimated using the combined sample of 354 children.

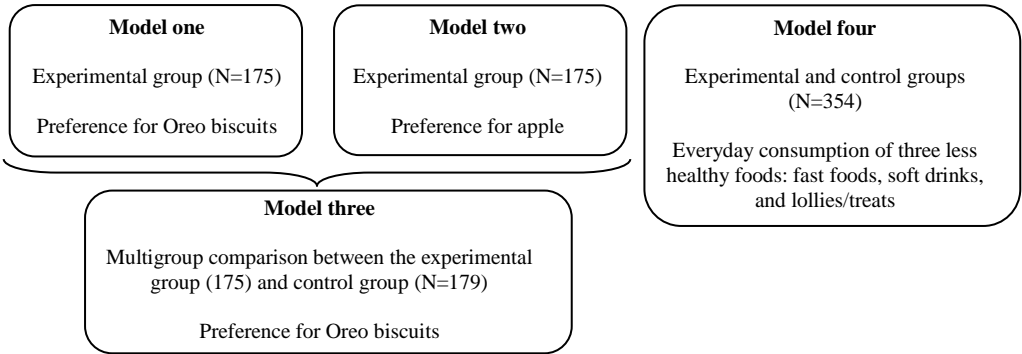
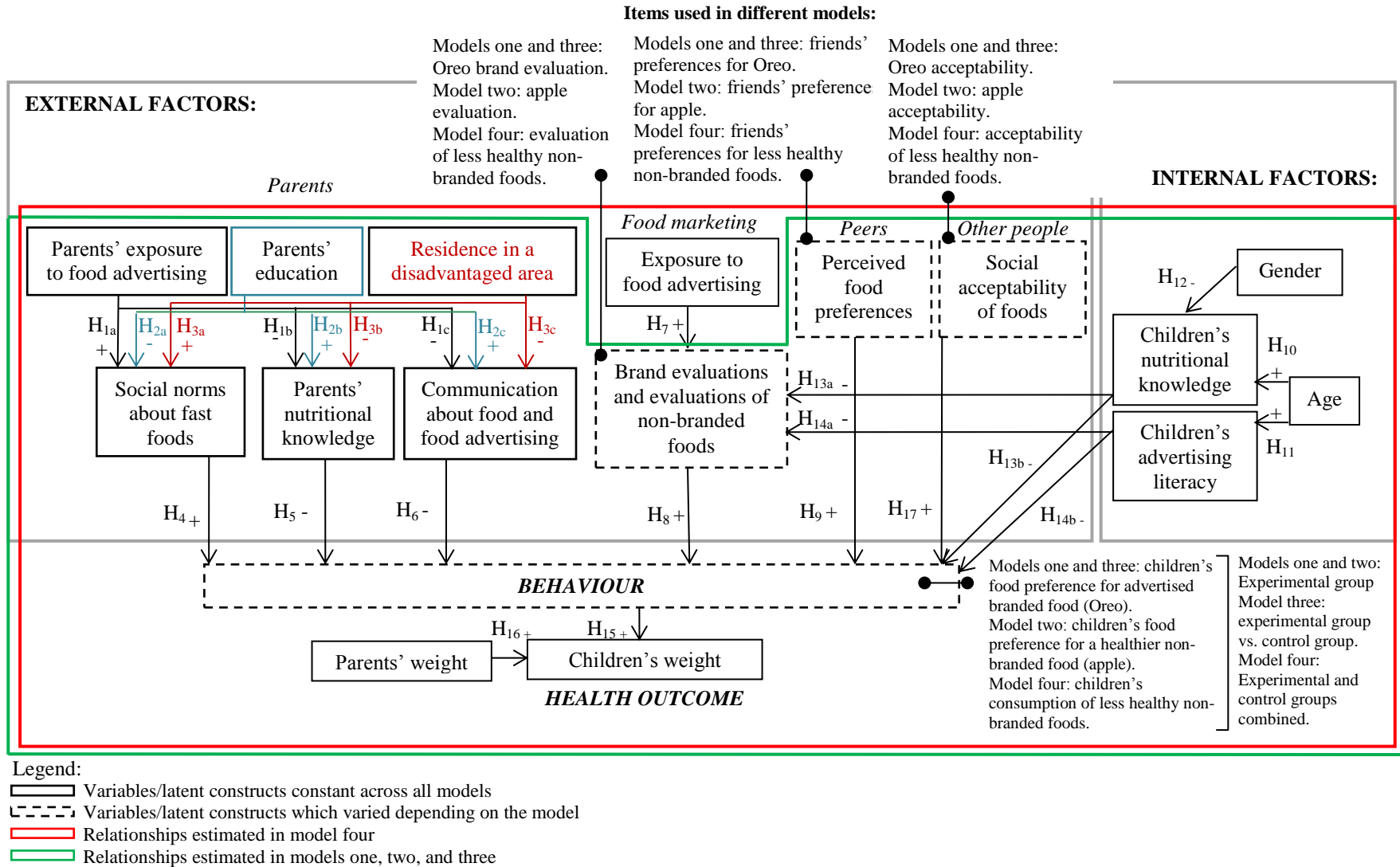


Figure 28: SEM Models Estimated Using the Fieldwork Data

As shown in Figure 29, model one included only the items related to Oreo biscuits, namely Oreo brand evaluation, friends’ preferences for Oreo, social acceptability of Oreo biscuits, and children’s understanding of Oreo’s selling and persuasive intents (advertising literacy). A similar strategy was employed while setting up model two (preference for an apple) and model four (consumption of less healthy foods). Model three used the same Oreo-related items as in model one, and compared them to a similar measurement and structural models but with the control sample of children (N=179). In model four, children’s advertising literacy was modelled as a latent construct consisting of two aggregate scores reflecting children’s understanding of the selling and persuasive intents in advertisements for less healthy foods (i.e., special deal and new product/character advertisements). The aggregate score of children’s understanding of Oreo’s selling and persuasive intents was not used in model four since it was directly related to the experimental stimulus and was not expected to be linked to the dependent variable used in that model. In model four, measures of children’s exposure to fast food advertising and the frequency of their exposure to promotion in local



Legend:

- Variables/latent constructs constant across all models
- Variables/latent constructs which varied depending on the model
- Relationships estimated in model four
- Relationships estimated in models one, two, and three

Figure 29: Causal Relationships Assessed Using the Fieldwork Data

fast food restaurants were used to create a latent construct of their overall exposure, which resulted in a complete estimation of the conceptual framework as demonstrated in Figure 29. Parents' variables and children's nutritional knowledge were constant across all SEM models estimating their influences for each of the studied foods. The results of the data analyses are discussed in the next section.

8.4. Results of ANOVA

Three-way ANOVA was conducted to estimate if there were any differences in children's preference for Oreo biscuits and an apple between the experimental and control groups, controlling for children's age (seven to ten years vs. 11 to 13 years), gender, and interactions between the predictors (type of exposure*age, type of exposure*gender, age*gender, and type of exposure*age*gender). As shown in Table 35 and Figure 30, no statistically significant differences were observed in the data, indicating that the levels of preference for Oreo biscuits and an apple were similar across the two groups. Additional two-way ANOVAs, undertaken separately for the experimental and control groups, did not reveal any statistically significant differences between younger and older girls in the experimental group ($F(1, 90)=0.075$, $p=0.785$) and also between boys from different age categories in the experimental ($F(1, 85)=0.936$, $p=0.336$) and control groups ($F(1, 79)=0.745$, $p=0.391$) for Oreo.

Table 35: Results of Three-Way ANOVAs						
	Type III Sum of Squares	df	Mean Square	F	<i>p</i>	Effect size (Partial Eta Squared) ¹
A) How much would you like to eat Oreo for your lunch tomorrow?						
Corrected Model	12.523 ^a	7	1.789	1.301	.249	.026
Intercept	4237.914	1	4237.914	3081.820	.000	.899
Type of exposure (experimental vs. control group)	.678	1	.678	.493	.483	.001
Gender	.808	1	.808	.587	.444	.002
Age (younger vs. older children)	4.190	1	4.190	3.047	.082	.009
Type of exposure*Gender	2.960	1	2.960	2.153	.143	.006
Type of exposure*Age	1.762	1	1.762	1.282	.258	.004
Gender*Age	.012	1	.012	.009	.925	.000
Type of exposure*Gender*Age	1.628	1	1.628	1.184	.277	.003
Error	475.796	346	1.375			
Total	4769.000	354				
Corrected Total	488.319	353				
B) How much would you like to eat an apple for your lunch tomorrow?						
Corrected Model	7.407 ^b	7	1.058	1.256	.271	.025
Intercept	5538.568	1	5538.568	6575.097	.000	.950
Type of exposure (experimental vs. control group)	.157	1	.157	.187	.666	.001
Gender	.810	1	.810	.961	.328	.003
Age (younger vs. older children)	2.464	1	2.464	.000	.996	.000
Type of exposure*Gender	2.617	1	2.617	3.107	.079	.009
Type of exposure*Age	2.066	1	2.066	2.452	.118	.007
Gender*Age	.840	1	.840	.997	.319	.003
Type of exposure*Gender*Age	.718	1	.718	.853	.356	.002
Error	291.455	346	.842			
Total	5907.000	354				
Corrected Total	298.862	353				

Notes:

^a – Adjusted R Squared=0.006.

^b – Adjusted R Squared=0.005.

¹ – Coefficients around 0.01 indicate small effect size, that 1% of variance is explained by the independent variable. Coefficients equal to 0.06 (6%) designate medium effect size and 0.136 (13.6%) suggest large effect size (Cohen 1988).

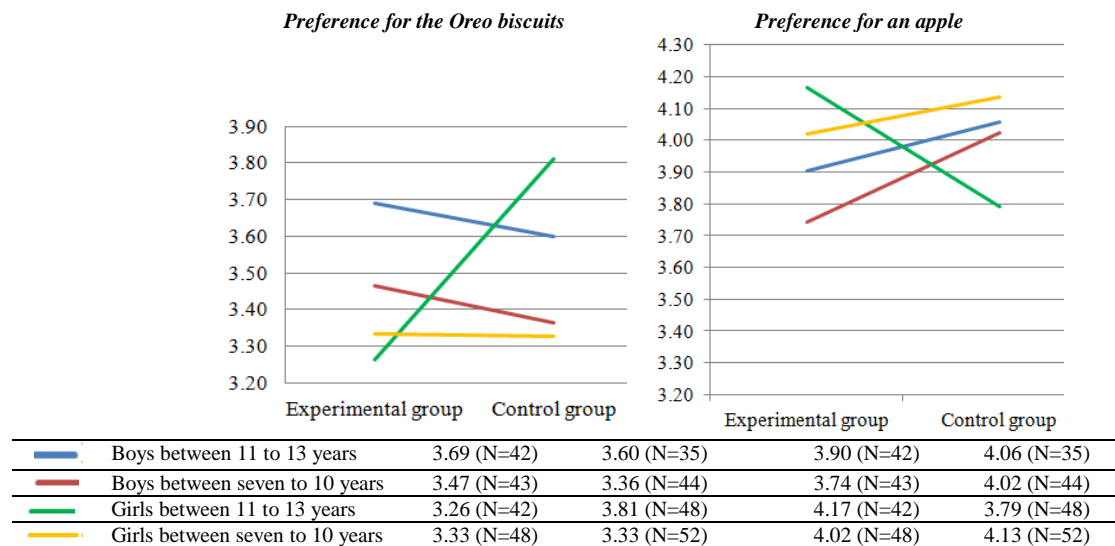


Figure 30: Results of Three-way ANOVA

Likewise, no significant differences were detected between younger and older girls from the experimental ($F(1, 90)=0.627, p=0.430$) and control groups ($F(1, 100)=3.061, p=0.083$) in their preferences for an apple. Also, no difference was observed amongst boys' preferences for an apple (experimental group: $F(1, 85)=0.616, p=0.435$ and control group: $F(1, 79)=0.031, p=0.860$). As shown in Table 35, ANOVAs explained less than 1% of variance in children's preferences for the two foods. Hence, additional analysis was carried out with children's evaluations of foods as covariates (ANCOVA), which resulted in an increase in the percentage of explained variance to up to 47% for Oreo biscuits and 23% for an apple. The results demonstrated the importance of attitudes which exerted either a small or large influence on children's food preferences (see effect sizes in Table 36) and it was expected that a more comprehensive analysis with SEM would further increase the percentage of explained variance in the dependent variables.

In contrast to previous research that has demonstrated that exposure influences children in favour of advertised food products (Borzekowski and Robinson 2001; Kaufman and Sandman 1984; Roedder et al. 1983), such effects were not observed in the current study. Although this may have occurred due to the characteristics of the current sample, the absence of significant effects suggests that the type of exposure and socio-demographic characteristics alone were insufficient to explain substantial variance in the dependent variables. Researchers have already agreed that advertising represents only one of the factors influencing children's food consumption (Livingstone and Helsper 2004). Since the aim of the current study was not to confirm that food advertising influences children, as this topic has been explored in depth

elsewhere (Cairns et al. 2009; Cairns et al. 2013; Hastings et al. 2003), but to examine more comprehensively which factors influence children, an absence of significant effects in ANOVA were considered acceptable. At this stage, further and more sophisticated analysis was carried out using SEM, which tested the influence of all external and internal factors in one model, which is discussed in the next section.

Table 36: Results of Three-Way ANCOVAs						
A) How much would you like to eat Oreo for your lunch tomorrow?						
	Type III Sum of Squares	df	Mean Square	F	<i>p</i>	Effect size (Partial Eta Squared) ²
Corrected Model	236.218 ^a	11	21.474	29.317	.000	.486
Intercept	5.305	1	5.305	7.242	.007	.021
Do you think Oreo is funny?	.534	1	.534	.729	.394	.002
Do you think Oreo is tasty?	176.816	1	176.816	241.393	.000	.414
Do you think Oreo could make you popular with other children?	2.679	1	2.679	3.658	.057	.011
Do you think Oreo is healthy? ¹	7.546	1	7.546	10.302	.001	.029
Type of exposure (experimental vs. control group)	.104	1	.104	.142	.706	.000
Gender	.301	1	.301	.411	.522	.001
Age (younger vs. older children)	3.734	1	3.734	5.098	.025	.015
Type of exposure*Gender	1.550	1	1.550	2.117	.147	.006
Type of exposure*Age	.524	1	.524	.715	.398	.002
Gender*Age	.632	1	.632	.863	.354	.003
Type of exposure*Gender*Age	.419	1	.419	.572	.450	.002
Error	249.777	341	.732			
Total	4744.000	353				
Corrected Total	485.994	352				
B) How much would you like to eat an apple for your lunch tomorrow?						
Corrected Model	75.100 ^b	11	6.827	10.453	.000	.252
Intercept	34.192	1	34.192	52.350	.000	.133
Do you think apple is funny? ¹	.844	1	.844	1.292	.257	.004
Do you think apple is tasty? ¹	44.168	1	44.168	67.624	.000	.165
Do you think apple could make you popular with other children?	5.059	1	5.059	7.746	.006	.022
Do you think apple is healthy? ¹	1.563	1	1.563	2.393	.123	.007
Type of exposure (experimental vs. control group)	.363	1	.363	.556	.456	.002
Gender	.683	1	.683	1.046	.307	.003
Age (younger vs. older children)	.032	1	.032	.050	.824	.000
Type of exposure*Gender	.374	1	.374	.572	.450	.002
Type of exposure*Age	.252	1	.252	.386	.535	.001
Gender*Age	1.184	1	1.184	1.813	.179	.005
Type of exposure*Gender*Age	.051	1	.051	.078	.781	.000
Error	222.718	341	.653			
Total	5882.000	353				
Corrected Total	297.819	352				

Notes:

Statistically significant coefficients are marked in green.

^a – Adjusted R Squared=0.469.

^b – Adjusted R Squared=0.228.

¹ – Recoded variables were used in the analysis. Refer to Chapter Seven, section 7.4.4 for recoding.

² – Coefficients around 0.01 indicate small effect size, 0.06 designate medium effect size, and 0.136 suggest large effect size (Cohen 1988).

8.5. Assessing Measurement Model Validity

As discussed above, the estimation of structural models with SEM requires a preliminary assessment of the validity and reliability of the measurement models. To confirm that there were no age or gender differences in the data that could require multigroup comparison, two-way ANOVAs were performed for the variables designated for each model to explore such

effects. Amongst the variables designated for model one, younger children rated Oreo biscuits as healthier ($F(1, 174)=4.23, p=0.041$) and demonstrated lower nutritional knowledge ($F(1, 175)=8.63, p=0.004$) than their older counterparts. Also, boys tended to rate Oreo biscuits as healthier ($F(1, 174)=5.61, p=0.019$) and exhibited lower nutritional knowledge ($F(1, 175)=4.97, p=0.027$). One age*gender interaction was observed for the evaluation of Oreo's social appeal ($F(1, 174)=4.58, p=0.034$).

For model two, significant gender differences were observed only in the experimental group where girls exhibited higher preferences for an apple ($F(1, 175)=3.81, p=0.053$) and reported higher social acceptability for this food ($F(1, 174)=4.65, p=0.032$). There were no statistically significant gender differences ($F(1, 178)=0.721, p=0.718$) or age*gender interactions ($F(1, 178)=0.646, p=0.787$) amongst the variables designated for model three tested with the control sample of children. The younger children in the sample, however, exhibited lower nutritional knowledge ($F(1, 178)=31.678, p=0.000$), lower social acceptability of Oreo biscuits ($F(1, 178)=4.670, p=0.032$), and lower friends' preferences for Oreo biscuits ($F(1, 178)=4.243, p=0.041$). Altogether, the differences in children's nutritional knowledge depending on age and gender detected by ANOVAs were already incorporated in the conceptual framework (Figure 29), which excluded the need for multigroup analysis. Since other gender and age differences observed in the data were not expected to influence the robustness of the models, the multigroup SEM and assessment of the measurement validity in models one and two by age or gender were not required.

The two-way ANOVAs for items designated for model four showed that younger children ($F(1, 350)=36.75, p=0.000$) and boys ($F(1, 350)=4.97, p=0.026$) exhibited lower nutritional knowledge, the differences already captured by the conceptual framework. Younger children tended to rate burger/french fries/soft drink as healthier ($F(1, 350)=4.46, p=0.036$) and more socially appealing ($F(1, 350)=4.71, p=0.031$). In contrast to previous research (Pescud, Pettigrew, Donovan, Cowie, and Fielder 2012), younger children consumed fast foods more often than their older counterparts ($F(1, 349)=7.87, p=0.005$). They also exhibited lower understanding of the selling and persuasive intents in the special deal ($F(1, 350)=12.34, p=0.001$) and new product/character advertisements ($F(1, 350)=3.96, p=0.047$), conforming with the expectations of the conceptual framework. Boys in the sample rated burgers/french fries/soft drink as tastier ($F(1, 350)=12.51, p=0.000$), more socially appealing ($F(1, 350)=6.21, p=0.013$), and reported their friends' stronger preferences for burger/french

fries/soft drink ($F(1, 350)=6.15, p=0.014$). Boys also reported more frequent consumption of fast foods ($F(1, 349)=5.03, p=0.026$) in agreement with previous research (Larson et al. 2008). Since more frequent gender differences were observed in the data, additional paths were set up from gender to children's food evaluation, friends' food preferences, and social acceptability factors in model four.

Having identified the models which required the inclusion of additional gender and age influences, latent variables were modelled and their construct and discriminant validities were examined. The analysis was performed separately for children's and parents' datasets. Models one, two, and three did not require the assessment of discriminant validity because they contained only one latent construct from the children's data (food evaluation). Therefore, the discriminant validity assessment was carried out only for model four, which consisted of four latent constructs. As for the parents' data, two latent constructs were used in the models (parent-child communication about food and food advertising and social norms about fast foods) and the analysis was conducted separately for the sample of parents from the experimental group (models one and two), the control group (model three), and the combined sample (model four).

As shown in Table 37, all manifest variables forming Oreo brand evaluation (model one) were statistically significant (<0.05) and exhibited acceptable fit of the data to the conceptual model. Although items exhibited low AVE (0.22) and CR (0.49), the loadings were significant with t values above 2.00 and were retained for the structural model. In contrast, the evaluation of an apple exhibited poor model fit (Table 37) with one non-significant loading for social appeal ($p=0.948$) and a negative loading for funny (-0.153). The latter, in particular, indicated that an apple was not perceived as entertaining by the children in the experimental group. Due to the low loadings, the AVE and CR were below the desired criteria (0.28 and 0.31, respectively) (Table 37). Since there was no obvious latent construct for the evaluation of an apple, a path analysis was carried out to identify which items could be used in model two as predictors of children's preference for an apple. The analysis indicated that only taste evaluation should be retained as shown in Table 38. Except for the evaluation of burger/french fries/soft drink, other latent variables exhibited acceptable AVE and CR in model four with an overall acceptable model fit (Table 39). As a result, all items forming the evaluation of less healthy non-branded were retained for the structural model. The two

constructs tested in the parents' data yielded good factor loadings (except for one item), acceptable AVE and CR, and high GOF indices as indicated in Table 40.

Children's data	Model 1 ¹		Model 2 ⁴	
	Oreo brand evaluation		Evaluation of apple	
	Standardised factor loading	<i>t</i> value	Standardised factor loading	<i>t</i> value
Items:				
Do you think this food is funny?	.511 (<i>p</i> =.013)	2.490	-.152 (<i>p</i> =.041)	-2.023
Do you think this food is tasty?	.325 (<i>p</i> =.029)	2.429	.287 (<i>p</i> =.000) ¹	3.950
Do you think this food is healthy?	.319 ^{2,4}	--	1.000 ^{2,4}	--
Do you think this food could make you popular with other children?	.596 (<i>p</i> =.016)	2.405	.005 (<i>p</i> =.948)	.065
	AVE	.22 (<i>low</i>)	.28 (<i>low</i>)	
	CR	.49 (<i>low</i>)	.31 (<i>low</i>)	

Notes:

Loadings below 0.5 are marked in red.

¹ – Model fit: $\chi^2=0.303$, *df*=2, *p*=0.859, CFI=1.00, NFI=0.991, TLI=1.336, and RMSEA=0.000 (N=175).

² – Item used in a recoded form to mitigate violation from normality. Refer to Chapter Seven, section 7.4.4 for recoding.

³ – Model fit: $\chi^2=11.467$, *df*=3, *p*=0.009, CFI=0.654, NFI=0.624, TLI=0.308, and RMSEA=0.127.

⁴ – Factor loading constrained to 1 to set the scale for the latent construct and *p* was not calculated.

Dependent variable: Preference for an apple	Unstandardised regression weight	Standardised regression weight	<i>t</i> value	<i>p</i>
Evaluation of an apple:				
Do you think apple is funny? ¹	-.021	-.020	-0.309	.757
Do you think apple is tasty? ¹	.629	.483	7.376	.000
Do you think apple is healthy? ¹	-.164	-.093	-1.419	.156
Do you think apple could make you popular with other children?	.081	.108	1.649	.099

Notes:

¹ – The recoded variables used in the analysis. Refer to Chapter Seven, section 7.4.4 for recoding.

Model fit: $\chi^2=30.459$, *df*=6, *p*=0.000, CFI=0.646, NFI=0.615, TLI=0.411, RMSEA=0.153, and R Squared=0.25.

Statistically significant coefficient is marked in green.

Items:	Standardised factor loading	<i>t</i> value
Evaluation of burger, French fries, and soft drink:		
Do you think it is funny? ¹	.215 ²	--
Do you think it is tasty?	.689 (<i>p</i> =.002)	3.138
Do you think it is healthy? ¹	.192 (<i>p</i> =.026)	2.223
Do you think it could make you popular with other children?	.403 (<i>p</i> =.003)	2.972
	AVE	.18 (<i>low</i>)
	CR	.41 (<i>low</i>)
Friends' consumption of less healthy foods:		
Bread and sausage	.501 ²	--
French fries	.757 (<i>p</i> =.000)	8.458
Burger, French fries, and soft drink	.844 (<i>p</i> =.000)	8.425
	AVE	.51 (<i>acceptable</i>)
	CR	.75 (<i>acceptable</i>)
Children's advertising literacy:		
Special offer (aggregate score)	.738 ²	--
New product/character (aggregate score)	.772 (<i>p</i> =.007)	2.694
	AVE	.57 (<i>acceptable</i>)
	CR	.73 (<i>acceptable</i>)
Children's consumption of non-branded less healthy foods:		
How often do you eat fast food from restaurants such as McDonald's, KFC or Pizza Hut?	.616 (<i>p</i> =.000)	7.398
How often do you eat treats and lollies?	.582 ²	--
How often do you have soft drink?	.718 (<i>p</i> =.000)	7.430
	AVE	.41 (<i>acceptable</i>)
	CR	.67 (<i>acceptable</i>)
Children's regular exposure to advertising of less healthy foods:		
I see advertising for treats, lollies, soft drink or fast food	.358 ²	--
Our local fast food restaurants have special deals, like family packs and meal deals	.544 (<i>p</i> =.000)	5.064
	AVE	.21 (<i>low</i>)
	CR	.34 (<i>low</i>)

Notes:

Loadings below 0.5 are marked in red.

¹ – Item used in a recoded form to mitigate violation from data normality.

² – Factor loading constrained to one to set the scale for the latent construct and *p* was not calculated.

Model fit: $\chi^2=187.776$, *df*=67, *p*=0.000, CFI=0.868, NFI=0.816, TLI=0.794, and RMSEA=0.071.

Table 40: Standardised Factor Loadings: Parents' Data (Models One, Two, and Four)							
Items:	<i>Model 1¹</i>		<i>Model 2³</i>		<i>Model 4⁴</i>		
Parent-child communication about food advertising and foods:	Standardised factor loading	<i>t value</i>	Standardised factor loading	<i>t value</i>	Standardised factor loading	<i>t value</i>	
I try to help my child understand what s/he sees on TV	.831 ²	--	.792 ²	--	.813 ²	--	
I try to help my child understand the difference between advertisements and programs	.777 (<i>p</i> =.000)	11.066	.750 (<i>p</i> =.000)	10.164	.771(<i>p</i> =.000)	15.390	
I try to explain to my child the difference between good foods and bad foods	.422 (<i>p</i> =.000)	5.434	.425 (<i>p</i> =.000)	5.432	.421 (<i>p</i> =.000)	7.691	
When my child sees a food advertisement I try to explain the motives behind the advertisement	.835 (<i>p</i> =.000)	11.984	.870 (<i>p</i> =.000)	11.973	.853 (<i>p</i> =.000)	17.148	
I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	.703 (<i>p</i> =.000)	9.783	.795 (<i>p</i> =.000)	10.824	.730 (<i>p</i> =.000)	14.390	
	AVE	.53 (<i>acceptable</i>)	.55 (<i>acceptable</i>)		.47 (<i>acceptable</i>)		
	CR	.84 (<i>acceptable</i>)	.85 (<i>acceptable</i>)		.72 (<i>acceptable</i>)		
Parents' social norms about fast foods:							
Members of my family/extended family eat fast food at least once per week	.616 (<i>p</i> =.000)	5.482	.615 (<i>p</i> =.000)	5.481	.595 (<i>p</i> =.000)	8.354	
My friends eat fast food at least once per week	.760 (<i>p</i> =.000)	5.212	.761 (<i>p</i> =.000)	5.204	.788 (<i>p</i> =.000)	8.091	
People who live in my neighbourhood eat fast food at least once per week	.609 ²	--	.608 ²	--	.658 ²	--	
	AVE	.44 (<i>acceptable</i>)	.44 (<i>acceptable</i>)		.54 (<i>acceptable</i>)		
	CR	.70 (<i>acceptable</i>)	.70 (<i>acceptable</i>)		.85 (<i>acceptable</i>)		

Notes:

Loadings below 0.5 are marked in red.

¹ – Model fit: $\chi^2=48.043$, $df=19$, $p=0.000$, $CFI=0.937$, $NFI=0.903$, $TLI=0.881$, and $RMSEA=0.094$.

² – Factor loading constrained to one to set the scale for the latent construct and p was not calculated.

³ – Model fit: $\chi^2=51.011$, $df=19$, $p=0.000$, $CFI=0.934$, $NFI=0.902$, $TLI=0.875$, and $RMSEA=0.098$.

⁴ – Model fit: $\chi^2=81.850$, $df=19$, $p=0.000$, $CFI=0.937$, $NFI=0.921$, $TLI=0.883$, and $RMSEA=0.097$.

The assessment of discriminant validity showed acceptable coefficients in the children's data (Table 41). Although shared variance (r^2) between children's regular exposure to food advertising and children's consumption of less healthy foods (0.649) and the evaluation of burger/french fries/and soft drink (0.324) was below their AVE scores, this was considered acceptable because a causal path between the above-mentioned variables existed in the conceptual framework which required the presence of shared covariance. No significant correlations were observed between parent-child communication and parents' social norms about fast foods across all models, suggesting discriminant validity of items (Table 41). Acceptable discriminant validity confirmed that structural models could now be set up and estimated, which is covered in depth in the next section.

8.6. Models' Testing with Structural Equation Modelling

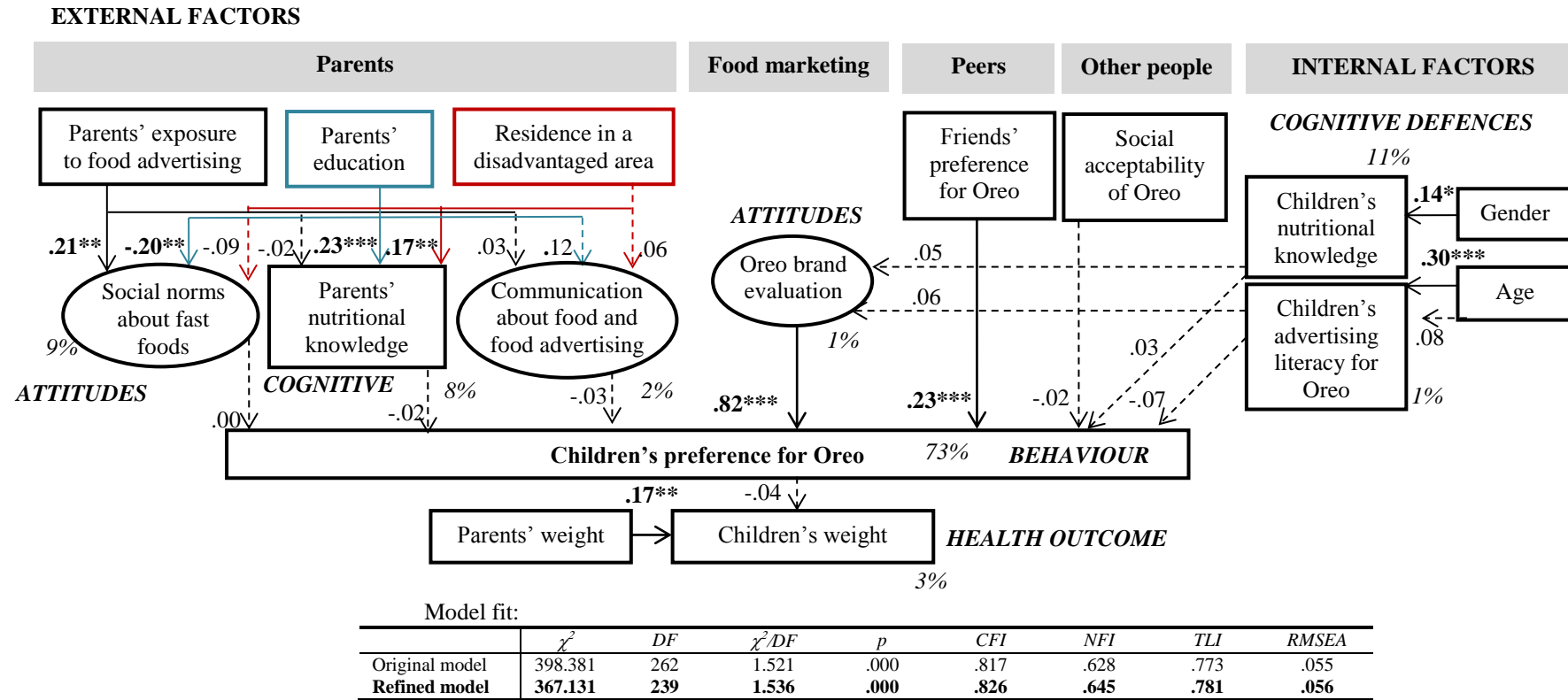
Model One

In contrast to the measurement model discussed in the previous section, the attitude about Oreo's fun did not yield a statistically significant loading in the full structural model (see Appendix 53). The model was respecified and assessed again without this problematic item which led to an increase in the model fit (Figure 31). All other manifest variables exhibited statistically significant loadings (Table 43). In the refined model, only two factors

Table 41: Discriminant Validity Assessment				
Correlated constructs:	Correlation (<i>p</i>)	<i>r</i> ²	AVE	Discriminant validity
Children's data (Model 4)				
Friends' consumption of less healthy foods and evaluation of burger, French fries, and soft drink	.652 (<i>p</i> =.004)	.425	Friends' consumption=.51 Food evaluation=.18	✓ x
Children's advertising literacy and evaluation of burger, French fries, and soft drink	.088 (<i>p</i> =.309)	.001	Food evaluation=.18 Advertising literacy=.57	✓ ✓
Children's consumption of non-branded less healthy foods and evaluation of burger, French fries, and soft drink	.510 (<i>p</i> =.005)	.260	Food evaluation=.18 Children's food consumption =.41	x ✓
Children's advertising literacy and friends' consumption of less healthy foods	.178 (<i>p</i> =.013)	.032	Advertising literacy=.57 Friends' consumption=.51	✓ ✓
Children's consumption of non-branded less healthy foods and friends' consumption of less healthy foods	.323 (<i>p</i> =.000)	.104	Children's food consumption=.41 Friends' consumption=.51	✓ ✓
Children's consumption of non-branded less healthy foods and advertising literacy	-.030 (<i>p</i> =.687)	.000	Children's food consumption=.41 Advertising literacy=.57	✓ ✓
Children's consumption of non-branded less healthy foods and children's regular exposure to advertising of less healthy foods	.806 (<i>p</i> =.000)	.649	Children's food consumption=.41 Exposure to advertising=.21	x x
Children's evaluation of burger, French fries, and soft drink and children's regular exposure to advertising of less healthy foods	.569 (<i>p</i> =.012)	.324	Food evaluation=.18 Exposure to advertising=.21	x x
Children's advertising literacy and children's regular exposure to advertising of less healthy foods	.480 (<i>p</i> =.000)	.230	Advertising literacy=.57 Exposure to advertising=.21	✓ ✓
Friends' consumption of less healthy foods and children's regular exposure to advertising of less healthy foods	.398 (<i>p</i> =.001)	.158	Friends' consumption=.51 Exposure to advertising=.21	✓ ✓
Parents' data (Models 1)				
Parent-child communication about food advertising and foods and parents' social norms about fast foods	-.051 (<i>p</i> =.592)	.003	Communication=.53 Social norms=.44	✓ ✓
Parents' data (Models 2)				
Parent-child communication about food advertising and foods and parents' social norms about fast foods	-.042 (<i>p</i> =.662)	.002	Communication=.55 Social norms=.44	✓ ✓
Parents' data (Model 4)				
Parent-child communication about food advertising and foods and parents' social norms about fast foods	-.088 (<i>p</i> =.182)	.008	Communication=.47 Social norms=.54	✓ ✓

significantly predicted children's preference for Oreo biscuits as a snack option for their lunch (DV₁). These were children's brand evaluation of Oreo ($\beta=0.819$, $p=0.008$, H₈) and friends' preferences for Oreo ($\beta=0.227$, $p=0.000$, H₉) (Figure 31 and Table 42). Of these two factors, brand evaluation exhibited the strongest influence (see standardised regression weights in Table 42). The examination of unstandardised regression weights (*b*) indicated that a one-point increase in children's brand evaluation was related to a four-point increase in children's preference for the biscuits (DV₁). As the intercept for the DV₁ was 2.659, which fell between "No" and "Not sure" answer options, a four-point increase in the dependent variable indicated a strong influence of attitudes. In contrast, a one-point increase in friends' preferences led only to 0.25 points increase in DV₁, suggesting a much lesser influence.

In line with H₁₂, girls exhibited higher nutritional knowledge than boys ($\beta=-0.139$, $p=0.052$). Although children's nutritional knowledge increased with age ($\beta=0.303$, $p=0.000$, H₁₀), it did not result in less positive Oreo brand evaluation ($p=0.492$, H_{13a}) or lower preferences for the advertised snack ($p=0.406$, H_{13b}). Contrary to H₁₁, age was not related to children's ability to comprehend Oreo's selling and persuasive intents in the experimental group (advertising literacy) ($p=0.303$). Although children's understanding of Oreo's persuasive and selling



Legend:

- ← Significant path
- ←--- Non-significant path
- Exogenous latent constructs
- Manifest exogenous variables or manifest dependent variable

Notes:

Standardised regressions weights (β) are reported for the experimental group (N=175)
 *. Correlation is significant at the 0.06 level (2-tailed)
 **. Correlation is significant at the 0.05 level (2-tailed)
 ***. Correlation is significant at the 0.01 level (2-tailed)

Figure 31: Factors Influencing Children's Preference for Oreo Biscuits (Model One)

Paths:	Unstandardised regression weights (<i>b</i>)	Standardised regression weights (β)	<i>t</i> value	<i>p</i>	Hypotheses
Parents' exposure to food advertising → parents' social norms about fast foods	.260	.208	2.306	.021	H _{1a} Supported
Parents' exposure to food advertising → parents' nutritional knowledge	-.140	-.023	-.313	.755	H _{1b} Not supported
Parents' exposure to food advertising → communication about food advertising and foods	.039	.032	.405	.685	H _{1c} Not supported
Parents' education → parents' social norms about fast foods	-.150	-.200	-2.227	.026	H _{2a} Supported
Parents' education → parents' nutritional knowledge	.839	.233	3.111	.002	H _{2b} Supported
Parents' education → communication about food advertising and foods	.088	.120	1.496	.135	H _{2c} Not supported
Residing in a disadvantaged area → parents' social norms about fast foods	-.026	-.090	-1.027	.305	H _{3a} Not supported
Residing in a disadvantaged area → parents' nutritional knowledge	.233	.169	2.258	.024	H _{3b} Supported
Residing in a disadvantaged area → communication about food advertising and foods	.017	.059	.743	.458	H _{3c} Not supported
Parents' social norms about fast foods → children's preference for Oreo (<i>DV₁</i>)	.000	.000	.000	1.000	H ₄ Not supported
Parents' nutritional knowledge → children's preference for Oreo (<i>DV₁</i>)	-.008	-.028	-.454	.650	H ₅ Not supported
Communication about food advertising and foods → children's preference for Oreo (<i>DV₁</i>)	-.037	-.026	-.423	.672	H ₆ Not supported
Children's Oreo brand evaluation → children's preference for Oreo (<i>DV₁</i>)	4.866	.819 ¹	2.640	.008	H ₈ Supported
Friends' preference for Oreo → children's preference for Oreo (<i>DV₁</i>)	.247	.227	3.846	.000	H ₉ Supported
Children's age → children's nutritional knowledge	.203	.303	4.233	.000	H ₁₀ Supported
Children's age → children's advertising literacy for Oreo	.223	.078	1.030	.303	H ₁₁ Not supported
Children's gender → children's nutritional knowledge	.320	.139	1.940	.052	H ₁₂ Supported
Children's nutritional knowledge → children's Oreo brand evaluation	.009	.053	.492	.623	H _{13a} Not supported
Children's nutritional knowledge → children's preference for Oreo (<i>DV₁</i>)	.029	.030	.406	.685	H _{13b} Not supported
Children's advertising literacy for Oreo → children's Oreo brand evaluation	.002	.051	.473	.636	H _{14a} Not supported
Children's advertising literacy for Oreo → children's preference for Oreo (<i>DV₁</i>)	-.015	-.068	-.919	.358	H _{14b} Not supported
Children's preference for Oreo → children's weight (<i>DV₂</i>)	-.018	-.044	-.566	.571	H ₁₅ Not supported
Parents' weight → children's weight (<i>DV₂</i>)	.157	.173	2.205	.027	H ₁₆ Supported
Social acceptability of Oreo → children's preference for Oreo (<i>DV₁</i>)	-.021	-.021	-.357	.721	H ₁₇ Not supported

Notes:

¹ – The strongest predictor.

Latent constructs:	Manifest variables:	Unstandardised regression weights (<i>b</i>)	Standardised regression weights (β)	<i>t</i> value	<i>p</i>
Parents' social norms about fast foods	Members of my family/extended family eat fast food at least once per week	1.380	.624	5.614	.000
	My friends eat fast food at least once per week	1.288	.727	5.612	.000
	People who live in my neighbourhood eat fast food at least once per week	1.000 ¹	.638	--	--
Communication about food advertising and foods	I try to help my child understand what s/he sees on TV	1.000 ¹	.727	--	--
	I try to help my child understand the difference between advertisements and programs	1.150	.680	11.004	.000
	I try to explain to my child the difference between good foods and bad foods	.427	.400	4.911	.000
	When my child sees a food advertisement I try to explain the motives behind the advertisement	1.477	.908	10.623	.000
	I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	1.436	.826	10.174	.000
Children's Oreo brand evaluation	Do you think Oreo is tasty?	4.166	.687	2.898	.004
	Do you think Oreo is healthy?	1.000 ¹	.257	--	--
	Do you think Oreo is could make you popular with other children?	1.699	.253	2.156	.031

Notes:

¹ – Factor loading constrained to one to set the scale for the latent construct. Hence, the *p* was not calculated.

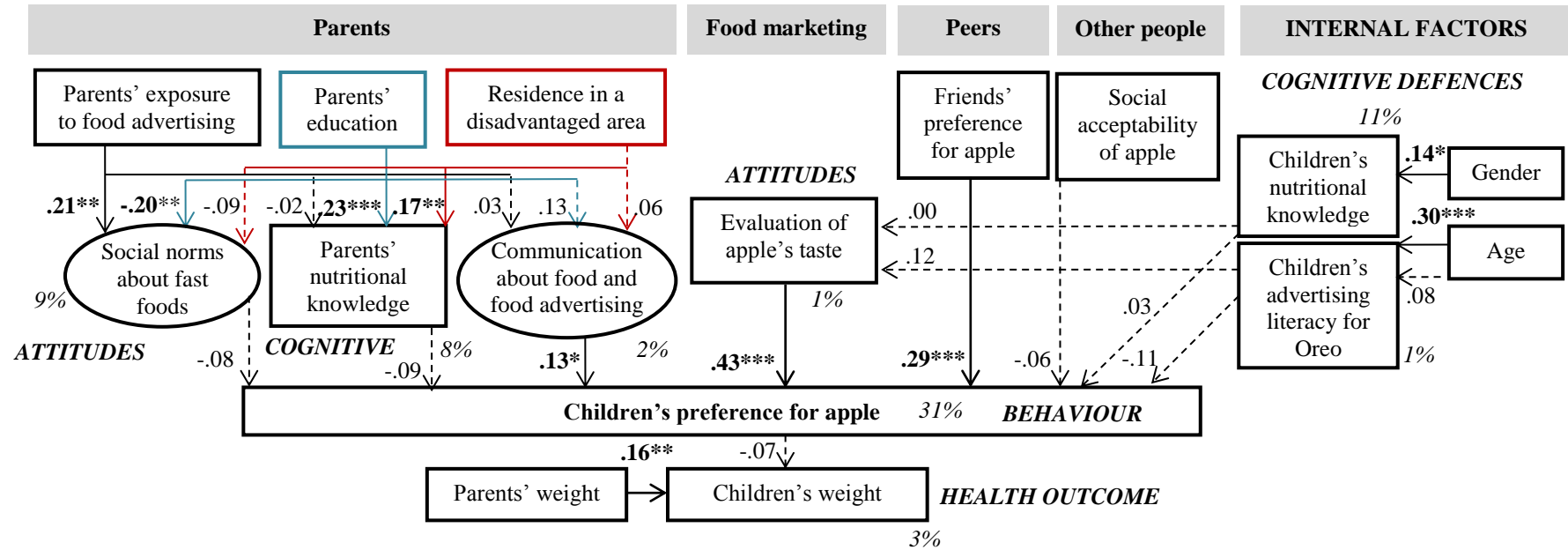
intents exerted a negative influence on food preference, the regression coefficient did not reach statistical significance ($p=0.358$, H_{14a}). The path from advertising literacy to Oreo brand evaluation also was not statistically significant ($p=0.636$, H_{14a}). Children's perceptions about the frequency of consumption of Oreo biscuits by other people (social acceptability) were not related to their food preferences either ($p=0.721$, H_{17}).

A number of statistically significant effects were observed in the parents' data showing that parents' more frequent exposure to fast food advertising ($\beta=0.208$, $p=0.021$, H_{1a}) and lower educational attainment ($\beta=-0.200$, $p=0.026$, H_{2a}) were related to more positive social norms about fast foods. Higher education ($\beta=0.233$, $p=0.002$, H_{2b}) and residence in more advantageous socio-economic areas ($\beta=0.169$, $p=0.026$, H_{3b}) predicted higher nutritional knowledge amongst the parents. Even though the regression coefficients between parents' nutritional knowledge (H_5), parent-child communication about food and food advertising (H_6), and children's Oreo preference were negative, they did not reach statistical significance in model one. Likewise, social norms about fast foods held by parents did not influence children's preferences for Oreo biscuits ($p=1.000$, H_4). Children's preference for the advertised product did not exhibit any statistically significant relationship with children's weight ($p=0.571$, H_{15}) and it was only parents' weight that was related to higher weight in children (DV_2) ($\beta=0.173$, $p=0.027$, H_{16}). Altogether, model one explained 73% of variance in children's preference for the advertised food product (DV_1) and 3% in children's weight (DV_2). Out of the total variance explained in children's preference, 67% was attributed to Oreo brand evaluation. Although the χ^2 was statistically significant (367.131, $p=0.000$), other GOF indices showed acceptable fit and were considered acceptable given the overall model complexity ($\chi^2/DF=1.536$, $CFI=0.826$, $NFI=0.645$, and $TLI=0.781$). The RMSEA index also showed a good fit of the data to the model (0.056).

Model Two

In contrast to model one, three variables exhibited statistically significant influences in model two which looked at children's preference for an apple, a healthier alternative to the advertised biscuits (Figure 32). As in model one, the first two factors were the attitudes in a form of the evaluation of an apple's taste ($\beta=0.434$, $p=0.000$, H_8) and friends' preference for an apple ($\beta=0.293$, $p=0.000$, H_9) (Table 44). The direction of the relationship between the variables was positive, indicating that more positive taste ratings and higher preferences for an apple amongst friends were related to higher preferences for an apple (DV_1) (Table 45).

EXTERNAL FACTORS



Model fit:

χ^2	DF	χ^2/DF	p	CFI	NFI	TLI	RMSEA
307.746	199	1.546	.000	.834	.662	.789	.056

Legend:

- ← Significant path
- ←--- Non-significant path
- Exogenous latent constructs
- Manifest exogenous variables or manifest dependent variable

Standardised regression weights (β) are reported for the experimental group (N=175)

- *. Correlation is significant at the 0.06 level (2-tailed)
- **. Correlation is significant at the 0.05 level (2-tailed)
- ***. Correlation is significant at the 0.01 level (2-tailed)

Figure 32: Factors Influencing Children's Preferences for An Apple (Model Two)

Paths:	Unstandardised regression weights (<i>b</i>)	Standardised regression weights (β)	<i>t</i> value	<i>p</i>	Hypotheses
Parents' exposure to food advertising → parents' social norms about fast foods	.259	.207	2.297	.022	H _{1a} Supported
Parents' exposure to food advertising → parents' nutritional knowledge	-.146	-.024	-.237	.744	H _{1b} Not supported
Parents' exposure to food advertising → communication about food advertising and foods	.034	.025	.317	.751	H _{1c} Not supported
Parents' education → parents' social norms about fast foods	-.149	-.198	-2.205	.027	H _{2a} Supported
Parents' education → parents' nutritional knowledge	.844	.234	3.129	.002	H _{2b} Supported
Parents' education → communication about food advertising and foods	.103	.129	1.615	.106	H _{2c} Not supported
Residing in a disadvantaged area → parents' social norms about fast foods	-.027	-.094	-1.070	.285	H _{3a} Not supported
Residing in a disadvantaged area → parents' nutritional knowledge	.235	.171	2.278	.023	H _{3b} Supported
Residing in a disadvantaged area → communication about food advertising and foods	.017	.056	.700	.484	H _{3c} Not supported
Parents' social norms about fast foods → children's preference for apple (<i>DV₁</i>)	-.091	-.082	-1.086	.278	H ₄ Not supported
Parents' nutritional knowledge → children's preference for apple (<i>DV₁</i>)	-.020	-.087	-1.334	.182	H ₅ Not supported
Communication about food advertising and foods → children's preference for apple (<i>DV₁</i>)	.133	.128	1.891	.059	H ₆ Supported
Children's evaluation of apple's taste → children's preference for apple (<i>DV₁</i>)	.549	.434 ¹	6.814	.000	H ₈ Supported
Friends' preference for apple → children's preference for apple (<i>DV₁</i>)	.244	.293	4.632	.000	H ₉ Supported
Children's age → children's nutritional knowledge	.203	.303	4.233	.000	H ₁₀ Supported
Children's age → children's advertising literacy for Oreo	.223	.078	1.030	.303	H ₁₁ Not supported
Children's gender → children's nutritional knowledge	.320	.139	1.940	.052	H ₁₂ Supported
Children's nutritional knowledge → children's evaluation of apple's taste	-.001	-.001	-.018	.986	H _{13a} Not supported
Children's nutritional knowledge → children's preference for apple (<i>DV₁</i>)	.005	.006	.100	.920	H _{13b} Not supported
Children's advertising literacy for Oreo → children's evaluation of apple's taste	.016	.115	1.530	.126	H _{14a} Not supported
Children's advertising literacy for Oreo → children's preference for apple (<i>DV₁</i>)	-.019	-.106	-1.668	.095	H _{14b} Not supported
Children's preference for apple → children's weight (<i>DV₂</i>)	-.035	-.070	-.903	.367	H ₁₅ Not supported
Parents' weight → children's weight (<i>DV₂</i>)	.143	.158	2.017	.044	H ₁₆ Supported
Social acceptability of apple → children's preference for apple (<i>DV₁</i>)	.124	.058	.916	.359	H ₁₇ Not supported

Notes:

¹ – The strongest predictor.

Latent constructs:	Manifest variables:	Unstandardised regression weights (<i>b</i>)	Standardised regression weights (β)	<i>t</i> value	<i>p</i>
Parents' social norms about fast foods	Members of my family/extended family eat fast food at least once per week	1.393	.630	5.632	.000
	My friends eat fast food at least once per week	1.273	.720	5.642	.000
	People who live in my neighbourhood eat fast food at least once per week	1.000 ¹	.639	--	--
Communication about food advertising and foods	I try to help my child understand what s/he sees on TV	1.000 ¹	.792	--	--
	I try to help my child understand the difference between advertisements and programs	1.164	.750	10.167	.000
	I try to explain to my child the difference between good foods and bad foods	.419	.428	5.472	.000
	When my child sees a food advertisement I try to explain the motives behind the advertisement	1.296	.896	11.965	.000
	I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	1.267	.794	10.815	.000

Notes:

¹ – Factor loading constrained to one to set the scale for the latent construct. Hence, the *p* was not calculated.

Model two also showed that the more parents communicated with their children about food and food advertising, the higher were their children's preference for an apple when they were exposed to the Oreo advertisement ($p=0.059$). Although the communication variable had a t value below 2.00 (1.891, $p=0.059$) and exhibited a relatively small influence on DV₁ ($\beta=0.133$), this relationship was still considered meaningful (Table 44). This finding supported H₆ and highlighted the importance of parents as socialisation agents who transfer knowledge to their children.

Children's age was again positively related to nutritional knowledge ($\beta=0.203$, $p=0.000$, H₁₀). Girls also exhibited higher nutritional knowledge ($\beta=0.320$, $p=0.052$, H₁₂) and similar to model one, the attitudinal component exerted the strongest influence on DV₁ (see standardised regression weights in Table 45). Family background variables yielded statistically significant paths (parents' exposure to fast food advertising (H_{1a}) → social norms about fast foods, parents' education (H_{2a}) → social norms about fast foods, and parents' education (H_{2b}) → parents' nutritional knowledge, residing in a disadvantaged area (H_{3b}) → parents' nutritional knowledge). However, again, parental factors included in the model (H₄ and H₅) did not seem to transfer into statistically significant effects on children's preference for an apple (Figure 32). The social acceptability of an apple's consumption was not related to children's overall preference for an apple ($p=0.359$, H₁₇), possibly due to little variance in the data (see Appendix 51 for descriptive statistics).

Similar to model one, children's preference for an apple were not related to their weight ($p=0.367$, H₁₅). Only parents' weight predicted children's weight ($\beta=0.158$, $p=0.044$, H₁₆), where parents with heavier weight also tended to have overweight or obese children (Table 44). The model explained less variance in children's food preferences (31%) than model one, but was considered acceptable since no manipulation was performed for this type of food during the experiment. All manifest variables in the measurement model exhibited statistically significant loadings on their corresponding latent constructs (Table 45). Except for a significant χ^2 (307.746, $p=0.000$), model two exhibited acceptable fit ($\chi^2/DF=1.546$, CFI=0.834, NFI=0.662, and TLI=0.789) with a very good RMSEA index of 0.055 (Figure 32).

Model Three

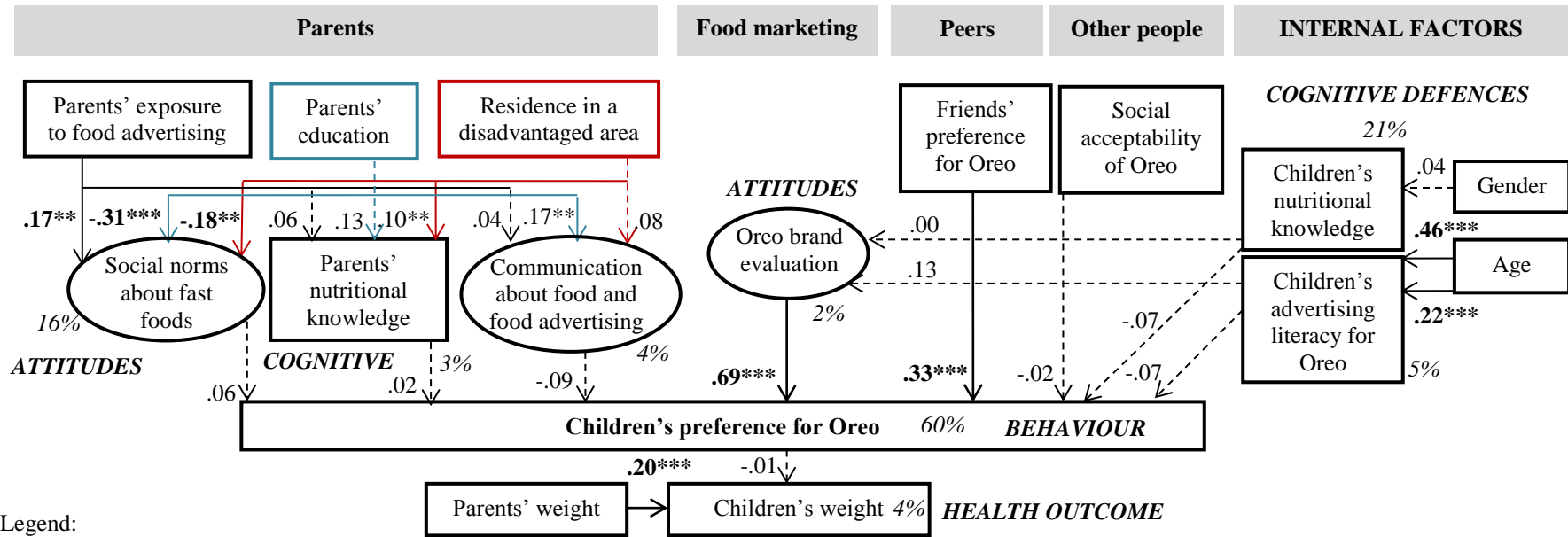
This section reports the results of the multigroup invariance analysis. As it was expected that the influence of food advertising would occur through brand evaluation (attitudinal component), the analysis compared model one (experimental group) with similar measurement and structural models set up using the control group sample. Only the statistics for the control sample are summarised in this section because the results observed in the experimental sample has already been discussed above in model one (Figure 31 and Table 42). The invariance analysis showed some minor differences between the two samples, whereby residence in a disadvantaged area was related to more positive social norms about fast foods in the control group ($\beta=-0.183$, $p=0.026$) (Figure 33 and Table 46), which was not observed amongst the parents in the experimental group. Next, in the control group, parents' education was not related to their nutritional knowledge ($p=0.075$, H_{2b}), but instead predicted the frequency of communication about food and food advertising with children ($\beta=0.168$, $p=0.031$, H_{2c}). Several differences were observed in the children's data, where girls and boys did not differ in terms of their nutritional knowledge ($p=0.521$, H_{12}) and children's age was related to advertising literacy ($\beta=0.222$, $p=0.002$), supporting H_{11} .

Despite the differences discussed above, similar to the experimental sample (model one), more positive evaluation of Oreo brand ($\beta=0.694$, $p=0.008$, H_8) and higher preferences for the same food amongst friends ($\beta=0.336$, $p=0.000$, H_9) predicted preference for Oreo in the control group. The standardised as well as unstandardised regression weights from Oreo brand evaluation to respondents' preference were slightly higher in the experimental group in comparison to the control group ($b=4.866/\beta=0.82$ vs. $b=4.846/\beta=0.70$), suggesting the potential influence of the experimental stimulus. These differences, however, did not reach statistical significance ($t=-0.520$). Children's understanding of Oreo's persuasive and selling intents was not related to children's preference for Oreo biscuits, which was expected because the children in the control group saw a toy advertisement. All manifest variables exhibited statistically significant loadings in the unconstrained measurement model (Table 47).

Model Four

Similar to the three models discussed above, respondents' attitudes (evaluation of burger/french fries/soft drinks) ($\beta=0.706$, $p=0.014$, H_8) and friends' preferences for similar food ($\beta=0.152$, $p=0.025$, H_9) predicted children's consumption of less healthy non-branded foods (burgers, treat/lollies, and soft drinks) (Figure 34 and Table 48). As expected, children's

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Model fit and multigroup comparisons:

	χ^2	DF	χ^2/DF	p	CFI	NFI	TLI	RMSEA	Δdf	$\Delta\chi^2$	p for $\Delta\chi^2$
Unconstrained model	870.432	482	1.806	.000	.781	.634	.728	.048	--	--	--
Measurement weights	878.844	493	1.783	.000	.783	.630	.736	.047	11	8.412	.676
Measurement intercepts	888.551	505	1.760	.000	.784	.626	.744	.046	23	18.119	.751
Structural weights	899.317	526	1.710	.000	.790	.622	.760	.045	44	28.885	.962
Structural intercepts	902.266	530	1.702	.000	.791	.620	.763	.045	48	31.834	.965
Structural means	909.160	538	1.690	.000	.791	.618	.767	.044	56	38.728	.962
Structural covariances	912.732	546	1.672	.000	.794	.616	.773	.044	64	42.300	.983
Structural residuals	914.866	553	1.654	.000	.796	.615	.779	.043	71	44.434	.994
Measurement residuals	929.135	565	1.644	.000	.795	.609	.782	.043	83	58.703	.980
Saturated model	.000	0			1.000	1.000		.092			
Independence model	2377.454	600	3.962	.000	.000	.000	.000				

Figure 33: Multigroup Comparison for Children's Preferences for Oreo Biscuits (Model Three)

Paths:	Unstandardised regression weights (<i>b</i>)	Standardised regression weights (β)	<i>t</i> value	<i>p</i>	Hypotheses
Parents' exposure to food advertising → parents' social norms about fast foods	.237	.172	2.089	.037	H _{1a} Supported
Parents' exposure to food advertising → parents' nutritional knowledge	.401	.064	.852	.394	H _{1b} Not supported
Parents' exposure to food advertising → communication about food advertising and foods	.053	.045	.578	.563	H _{1c} Not supported
Parents' education → parents' social norms about fast foods	-.242	-.307	-3.599	.000	H _{2a} Supported
Parents' education → parents' nutritional knowledge	.479	.134	1.783	.075	H _{2b} Not supported
Parents' education → communication about food advertising and foods	.114	.168	2.160	.031	H _{2c} Supported
Residing in a disadvantaged area → parents' social norms about fast foods	-.058	-.183	-2.219	.026	H _{3a} Supported
Residing in a disadvantaged area → parents' nutritional knowledge	.149	.104	1.367	.169	H _{3b} Not supported
Residing in a disadvantaged area → communication about food advertising and foods	.023	.084	1.088	.276	H _{3c} Not supported
Parents' social norms about fast foods → children's preference for Oreo (<i>DV₁</i>)	.072	.058	.972	.331	H ₄ Not supported
Parents' nutritional knowledge → children's preference for Oreo (<i>DV₁</i>)	.006	.023	.420	.674	H ₅ Not supported
Communication about food advertising and foods → children's preference for Oreo (<i>DV₁</i>)	-.134	-.094	-1.695	.090	H ₆ Not supported
Children's Oreo brand evaluation → children's preference for Oreo (<i>DV₁</i>)	4.846	.694 ¹	2.632	.008	H ₈ Supported
Friends' preference for Oreo → children's preference for Oreo (<i>DV₁</i>)	.333	.336	6.390	.000	H ₉ Supported
Children's age → children's nutritional knowledge	.294	.461	6.933	.000	H ₁₀ Supported
Children's age → children's advertising literacy for Oreo	.557	.222	3.029	.002	H ₁₁ Supported
Children's gender → children's nutritional knowledge	.104	.043	.642	.521	H ₁₂ Not supported
Children's nutritional knowledge → children's Oreo brand evaluation	-.009	-.068	-.780	.436	H _{13a} Not supported
Children's nutritional knowledge → children's preference for Oreo (<i>DV₁</i>)	.000	.000	-.006	.995	H _{13b} Not supported
Children's advertising literacy for Oreo → children's Oreo brand evaluation	.004	.127	1.303	.193	H _{14a} Not supported
Children's advertising literacy for Oreo → children's preference for Oreo (<i>DV₁</i>)	-.016	-.069	-1.197	.231	H _{14b} Not supported
Children's preference for Oreo → children's weight (<i>DV₂</i>)	-.002	-.005	-.067	.946	H ₁₅ Not supported
Parents' weight → children's weight (<i>DV₂</i>)	.194	.203	2.600	.009	H ₁₆ Supported
Social acceptability of Oreo → children's preference for Oreo (<i>DV₁</i>)	-.005	-.005	-.086	.931	H ₁₇ Not supported

Notes:

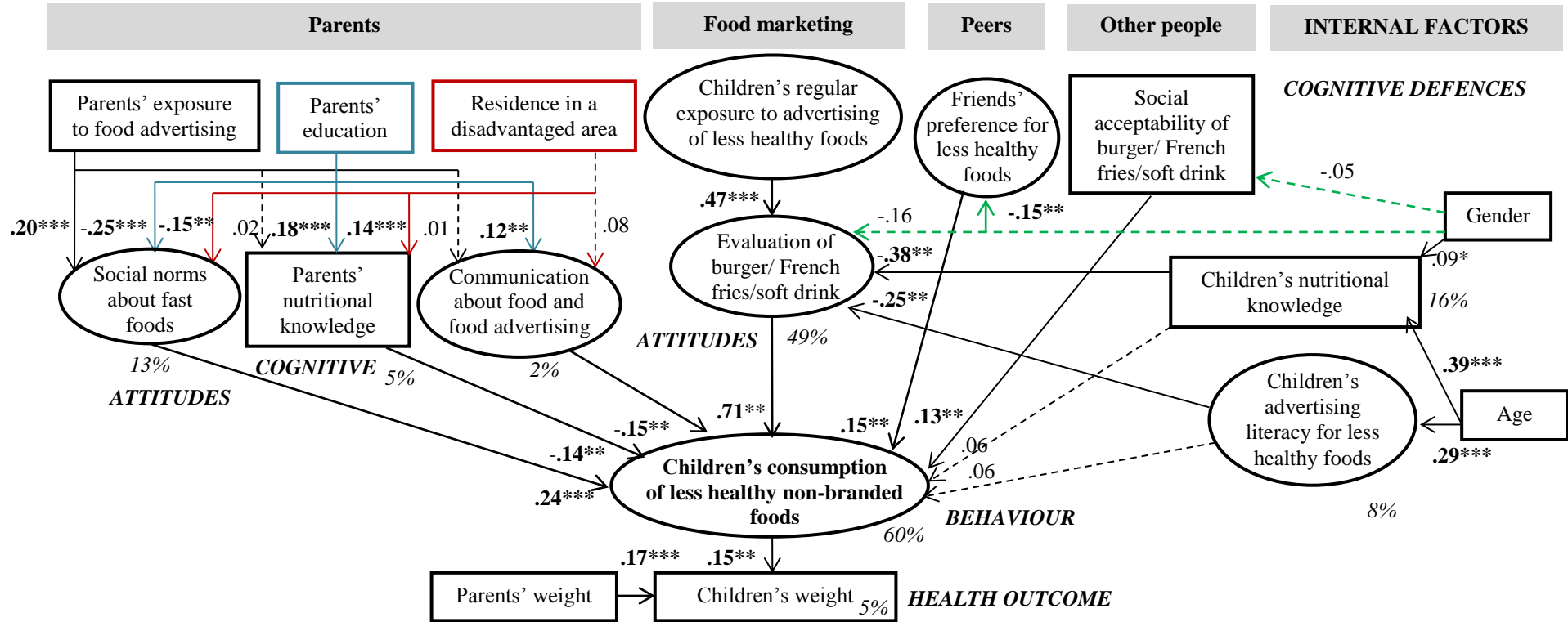
¹ – The strongest predictor.

Latent constructs:	Manifest variables:	Unstandardised regression weights (<i>b</i>)	Standardised regression weights (β)	<i>t</i> value	<i>p</i>
Parents' social norms about fast foods	Members of my family/extended family eat fast food at least once per week	1.177	.587	6.370	.000
	My friends eat fast food at least once per week	1.346	.806	6.860	.000
	People who live in my neighbourhood eat fast food at least once per week	1.000 ¹	.697	--	--
Communication about food advertising and foods	I try to help my child understand what s/he sees on TV	1.000 ¹	.751	--	--
	I try to help my child understand the difference between advertisements and programs	1.303	.747	9.958	.000
	I try to explain to my child the difference between good foods and bad foods	.625	.474	6.178	.000
	When my child sees a food advertisement I try to explain the motives behind the advertisement	1.543	.921	12.427	.000
	I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	1.633	.873	11.761	.000
Children's Oreo brand evaluation	Do you think Oreo is tasty?	6.385	.894	2.483	.013
	Do you think Oreo is healthy?	1.000 ¹	.217	--	--
	Do you think Oreo is could make you popular with other children?	2.380	.288	2.184	.029

Notes:

¹ – Factor loading constrained to one to set the scale for the latent construct. Hence, the *p* was not calculated.

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Model fit:

χ^2	DF	χ^2/DF	p	CFI	NFI	TLI	RMSEA
923.181	444	2.079	.000	.800	.684	.762	.055

Legend:

- ← Significant path
- ← - - Non-significant path
- ← - - Path introduced based on preliminary data analysis (see section 8.5)
- Exogenous latent constructs
- Manifest exogenous variables or manifest dependent variable

Notes:

- Standardised regression weights are reported (β)
- *, Correlation is significant at the 0.06 level (2-tailed)
- **, Correlation is significant at the 0.05 level (2-tailed)
- ***, Correlation is significant at the 0.01 level (2-tailed)
- N=354

Figure 34: Factors Influencing Children's Consumption of Less Healthy Non-Branded Foods (Model Four)

Table 48: Model Four, Children's Consumption of Less Healthy Non-Branded Foods (Structural Model)						
Paths:	Unstandardised regression weights (<i>b</i>)	Standardised regression weights (β)	<i>t</i> value	<i>p</i>	Hypotheses	
Parents' exposure to food advertising→parents' social norms about fast foods	.260	.198	3.245	.001	H _{1a}	Supported
Parents' exposure to food advertising→parents' nutritional knowledge	.129	.021	.395	.693	H _{1b}	Not supported
Parents' exposure to food advertising→communication about food advertising and foods	.010	.007	.120	.905	H _{1c}	Not supported
Parents' education→parents' social norms about fast foods	-.196	-.255	-4.125	.000	H _{2a}	Supported
Parents' education→parents' nutritional knowledge	.643	.179	3.373	.000	H _{2b}	Supported
Parents' education→communication about food advertising and foods	.103	.124	2.164	.030	H _{2c}	Supported
Residing in a disadvantaged area→parents' social norms about fast foods	-.045	-.150	-2.491	.013	H _{3a}	Supported
Residing in a disadvantaged area→parents' nutritional knowledge	.197	.140	2.631	.009	H _{3b}	Supported
Residing in a disadvantaged area→communication about food advertising and foods	.026	.079	1.388	.165	H _{3c}	Not supported
Parents' social norms about fast foods→children's consumption of less healthy non-branded foods (<i>DV₁</i>)	.189	.241	3.305	.000	H ₄	Supported
Parents' nutritional knowledge→children's consumption of less healthy non-branded foods (<i>DV₁</i>)	-.024	-.141	-2.342	.019	H ₅	Supported
Communication about food advertising and foods→children's consumption of less healthy non-branded foods (<i>DV₁</i>)	-.106	-.146	-2.244	.025	H ₆	Supported
Children's regular exposure to advertising of less healthy foods→children's evaluation of burger/French fries/soft drink	.053	.475	2.589	.010	H ₇	Supported
Children's evaluation of burger/French fries/soft drink→children's consumption of less healthy non-branded foods (<i>DV₁</i>)	2.781	.706 ¹	2.454	.014	H ₈	Supported
Friends' preference for less healthy foods→children's consumption of less healthy non-branded foods (<i>DV₁</i>)	.181	.152	2.246	.025	H ₉	Supported
Children's age→children's nutritional knowledge	.253	.388	7.938	.000	H ₁₀	Supported
Children's age→children's advertising literacy for less healthy foods	.803	.287	5.610	.000	H ₁₁	Supported
Children's gender→children's nutritional knowledge	.214	.090	1.848	.065	H ₁₂	Not supported
Children's nutritional knowledge→children's evaluation of burger/French fries/soft drink	-.054	-.379	-2.413	.016	H _{13a}	Supported
Children's nutritional knowledge→children's consumption of less healthy non-branded foods (<i>DV₁</i>)	.035	.062	.678	.498	H _{13b}	Not supported
Children's advertising literacy for less healthy foods→children's evaluation of burger/French fries/soft drink	-.008	-.253	-2.068	.039	H _{14a}	Supported
Children's advertising literacy for less healthy foods→children's consumption of less healthy non-branded foods (<i>DV₁</i>)	.008	.064	.782	.434	H _{14b}	Not supported
Children's consumption of less healthy non-branded foods→children's weight (<i>DV₂</i>)	.107	.155	2.345	.019	H ₁₅	Supported
Parents' weight→children's weight (<i>DV₂</i>)	.154	.165	3.004	.003	H ₁₆	Supported
Social acceptability of burger/ French fries/soft drink→children's consumption of less healthy non-branded foods (<i>DV₁</i>)	.086	.127	2.166	.030	H ₁₇	Supported
Additional paths:						
Children's gender→social acceptability of burger/ French fries/soft drink	-.106	-.054	-1.020	.308	--	--
Children's gender→friends' preference for less healthy foods	-.167	-.149	-2.453	.014	--	--
Children's gender→children's evaluation of burger/French fries/soft drink	-.055	-.162	-1.846	.065	--	--

Notes:

¹ –The strongest predictor.

nutritional knowledge ($\beta=0.388$, $p=0.000$, H_{10}) and understanding of the selling and persuasive intents in advertisements for less healthy foods ($\beta=0.287$, $p=0.000$, H_{11}) increased with age. In support of H_{1a} , more frequent exposure to fast food advertising amongst the parents was related to more positive social norms about fast foods ($\beta=0.198$, $p=0.001$). Parents' educational attainment was inversely related to parents' social norms about fast foods ($\beta=-0.255$, $p=0.001$), supporting H_{2a} . In line with previous research (Variyam et al. 1999), parents with higher education exhibited higher nutritional knowledge ($\beta=0.179$, $p=0.000$, H_{2b}). Residence in an area with people who have higher levels of occupation and education was related to less positive social norms ($\beta=-0.150$, $p=0.013$, H_{3a}), but there was no influence on the parent-child communication about food and food advertising ($p=0.165$, H_{3c}) (Table 48). The family background variables used in model four explained 13% of variance in parents' social norms, 5% in their nutritional knowledge, and 2% in parent-child communication patterns (Figure 34).

Model four also revealed a number of new factors influencing children's food consumption in addition to the ones discussed above. It showed that when parents held more positive social norms about fast foods, their children tended to consume less healthy non-branded foods more often ($\beta=0.241$, $p=0.000$, H_4). The children whose parents possessed higher nutritional knowledge ($\beta=-0.141$, $p=0.019$, H_5) and communicated with them more often about foods and food advertising ($\beta=-0.146$, $p=0.025$, H_6), in contrast, consumed unhealthy foods less frequently. In support of H_7 , children's self-reported regular exposure to the less healthy foods advertisements and promotions in local fast food restaurants was associated with more positive attitudes about burger/french fries/soft drink taste, fun, healthiness, and social appeal ($\beta=0.475$, $p=0.010$). The latter, in turn, was positively related to children's more frequent consumption of fast foods, lollies, and soft drinks ($\beta=0.706$, $p=0.014$, H_8), as hypothesised in the conceptual framework (Figure 34). The indirect mediating effect of regular exposure on respondents' consumption through attitudes (exposure \rightarrow attitudes \rightarrow consumption) was small ($\beta_{(0.47)} \times \beta_{(0.71)}=0.33$) and accounted for 11% out of the total 60% of variance in DV_1 . Model four showed that when children thought that other people approved of frequent consumption of burger/french fries/soft drink (social acceptability), they also tended to consume less healthy non-branded foods more often ($\beta=0.127$, $p=0.030$, H_{17}).

Although gender differences were observed during the preliminary data analysis (see section 8.5), they reached statistical significance only for friends' preferences for burger/french

fries/soft drink ($\beta=-0.149, p=0.014$), but not for the social acceptability ($\beta=-0.054, p=0.308$) and food evaluation ($\beta=-0.162, p=0.065$) (see paths marked in green in Figure 34). The model also indicated that girls' friends exhibited lower preferences for less healthy foods as compared to boys' friends and also less positive evaluation of burger/french fries/soft drink. While there were no differences between girls' and boys' nutritional knowledge ($p=0.065, H_{12}$), children with higher nutritional knowledge exhibited less positive attitudes about burger/french fries/soft drink's taste, fun, healthiness, and social appeal ($p=0.039, H_{14a}$). While the path between nutritional knowledge and consumption was not statistically significant ($p=0.434, H_{14b}$), this cognitive defence seemed to influence children's food consumption indirectly, through the attitudinal component (nutritional knowledge \rightarrow attitudes \rightarrow consumption). The regression weight was small ($\beta_{(-0.38)} \times \beta_{(0.71)}=-0.27$) and accounted for 7% of variance in children's food consumption.

In support of H_{14a} , children with greater understanding of the selling and persuasive intents in less healthy foods advertisements exhibited less positive attitudes about burger/french fries/soft drink ($\beta=-0.253, p=0.039, H_{14a}$), which, in turn, exhibited a small negative mediating effect on children's dietary behaviour ($\beta_{(-0.25)} \times \beta_{(0.71)}=-0.18$). The latter accounted for 3% of variance in DV_1 . The non-significant regression weights between the two cognitive defences and DV_1 (nutritional knowledge \rightarrow consumption and advertising literacy \rightarrow consumption) suggested complete rather than partial mediation amongst the variables. In support of H_{15} , greater consumption of less healthy non-branded foods (DV_2) was observed amongst children with higher weight as compared to the children with normal weight ($DV_2: \beta=0.155, p=0.019, H_{15}$).

Altogether, the predictors used in the model explained 60% of variance in children's consumption of less healthy foods (Figure 34). The highest percentage of variance was explained by children's attitudes, which accounted for 50% of variance. Children's regular exposure to the advertising of less healthy foods, children's nutritional knowledge, and advertising literacy explained 49% of variance in their attitudes (evaluation of burger/french fries/soft drink). Although the percentage of variance explained in weight was small (5%) (Figure 34), it was considered acceptable given that only two independent variables were used to predict changes in DV_2 . Across all external and internal factors related to children's food consumption, the strongest influences emanated from children's food evaluation ($\beta=0.706$) (attitudes), followed by the social norms held by parents ($\beta=0.241$). Peers ($\beta=0.152$), parents'

nutritional knowledge ($\beta=-0.141$), parent-child communication about food and food advertising ($\beta=-0.146$), and the social acceptability of less healthy foods ($\beta=0.127$) tended to exert similar degrees of influence on children's food consumption (Figure 34).

While exposure to advertising of less healthy foods exerted by far the strongest effect on children's food evaluation ($\beta=0.475$), their nutritional knowledge also exerted a modest influence ($\beta=-0.379$), followed by the advertising literacy ($\beta=-0.253$) (Figure 34). Most items in the measurement model yielded statistically significant loadings. Although there were two variables which demonstrated standardised factor loadings below 0.50 (Hair et al. 2010) ("*I try to explain to my child the difference between good foods and bad foods*") and ("*I see advertising for treats, lollies, soft drink or fast food*"), they were retained in the measurement model as they demonstrated *t* values above 2.00 and $p<0.05$ (Table 49).

Table 49: Model Four, Children's Consumption of Less Healthy Non-Branded Foods (Measurement Model)					
Latent constructs:	Manifest variables:	Unstandardised regression weights (<i>b</i>)	Standardised regression weights (β)	<i>t</i> value	<i>p</i>
Parents' social norms about fast foods	Members of my family/extended family eat fast food at least once per week	1.298	.618	8.613	.000
	My friends eat fast food at least once per week	1.294	.753	8.910	.000
	People who live in my neighbourhood eat fast food at least once per week	1.000 ¹	.669	--	--
Communication about food advertising and foods	I try to help my child understand what s/he sees on TV	1.000 ¹	.864	--	--
	I try to help my child understand the difference between advertisements and programs	1.207	.801	16.065	.000
	I try to explain to my child the difference between good foods and bad foods	.419	.413	5.661	.000
	When my child sees a food advertisement I try to explain the motives behind the advertisement	1.089	.766	6.970	.000
	I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	1.068	.630	6.634	.000
Children's evaluation of burger/French fries/soft drink	Do you think this food is funny?	1.000 ¹	.180	--	--
	Do you think this food is tasty?	2.195	.324	2.438	.015
	Do you think this food is healthy?	2.177	.459	2.597	.009
	Do you think this food is could make you popular with other children?	2.484	.317	2.729	.006
Children's regular exposure to advertising of less healthy foods	I see advertising for treats, lollies, soft drink or fast food	.199	.195	3.725	.000
	Our local fast food restaurants have special deals, like family packs and meal deals	1.000 ¹	1.000	--	--
Friends' preference for less healthy foods	Friends' preferences for sausage and bread	1.000 ¹	.506	--	--
	Friends' preferences for French fries	1.706	.772	8.259	.000
	Friends' preferences for burger/French fries/soft drink	2.050	.827	8.011	.000
Children's advertising literacy for less healthy foods	Special deal advertisement	1.000 ¹	1.000	--	--
	New product/character advertisement	.656	.571	12.977	.000
Children's consumption of less healthy non-branded foods	How often do you eat fast food from restaurants such as McDonald's, KFC or Pizza Hut?	.779	.650	7.313	.000
	How often do you eat treats and lollies?	1.000 ¹	.537	--	--
	How often do you have soft drink?	1.284	.651	7.317	.000

Notes:

¹ – Factor loading constrained to one to set the scale for the latent construct. Hence, the *p* was not calculated.

Due to the higher complexity and estimation of more latent constructs in model four, the χ^2 was higher (923.181, $p=0.000$), indicating that there were deviations between observed and

expected covariance matrices. The NFI and TLI indices were lower (0.684 and 0.762, respectively) in comparison to the previous models. Still, the CFI and RMSEA were acceptable (0.800 and 0.055, respectively), suggesting a good fit of the data to the conceptual framework (Figure 34). Since model complexity can result in lower goodness of fit indices (Kenny and McCoach 2003), the fit observed in model four was considered acceptable. As shown in Table 48, more hypotheses were confirmed in model four, corroborating the appropriateness of the survey method chosen to complement the experiment. Since the data collected through the survey were not influenced by experimental manipulation and reflected children's general food consumption, model four represented the closest approximation of data to the everyday complex social reality.

8.7. Summary

Two statistical techniques were employed to analyse the full-scale fieldwork data. The analysis of covariance did not detect any substantial differences in respondents' preferences for the advertised product as a result of experimental exposure. A more comprehensive analysis conducted with SEM led to a substantial increase in the percentage of variance explained in children's preference for Oreo biscuits from 49% (ANCOVA) to 73%, corroborating the appropriateness of this method for data analysis.

Four SEM models were estimated to empirically confirm the relationships outlined in the conceptual framework. Although not all hypotheses were confirmed in each of the models, several important findings emerged. First, when children were exposed to a food advertisement, as was the case with Oreo biscuits in model one, their preference for Oreo as a lunch option, which is more likely to be consumed in the public space of schools, was influenced by Oreo brand evaluation and friends' preferences for these biscuits. Contrary to expectations, in model one children's understanding of the Oreo advertisement's selling and persuasive intents and their nutritional knowledge did not reduce preferences for, and evaluation of, the advertised product. However, the non-significant influence of Oreo advertising literacy might stem from little variance in data (Appendix 50). Because these two cognitive defences were inversely related to the evaluation of burger/french fries/soft drink in model four, which relied on cross-sectional data, it was concluded that Oreo's brand was rated less negatively than burger/french fries/soft drink and was not perceived as a less healthy food despite its high sugar content.

Because children were asked about their preferences for a healthier snack after the exposure, another model was set up to estimate what factors influenced preferences for an apple (model two). While similar variables predicted preference for an apple (attitudes and friends), parent-child communication about food and food advertising also exerted a small influence, previous parental discussion of foods and also of the commercial intent in food advertisements mitigated the influences of advertising in children who were exposed to the Oreo advertisement. A similar effect was observed in model four, where children's consumption of less healthy non-branded foods was assessed. These results highlight how parents can serve as barriers to food advertising, emphasising their important role in fight against the childhood obesity.

Model three pointed to another important finding – that is, when children were not exposed to any food advertisements, food evaluation and perceptions about friends' food preferences for the same snack influenced children's preferences in a similar way as when children were subjected to the experimental manipulation (model one). Because brand evaluation and peers exerted influences both in the experimental and non-experimental conditions, they could form the basis of future intervention programs to curb childhood obesity and change children's diets. The invariance analysis performed during the assessment of model three was used to examine whether the influence of experimental manipulation on children's food preferences occurred through Oreo brand evaluation. Although both standardised and unstandardised regression weights from Oreo brand evaluation to Oreo preference were higher in the experimental group (Oreo brand evaluation → food preference), they did not reach statistical significance to indicate substantial differences. Still, there was some indication of a stronger relationship between brand evaluation and DV₁ in the experimental condition.

When no experimental manipulation was performed and the influence of children's overall exposure was examined alongside the influence of other factors on their consumption of less healthy foods (model four), a wider range of influential factors was observed. It showed that parents' favourable social norms about fast foods, friends' preferences for burgers, and the acceptability of burgers' frequent consumption amongst other people were related to more frequent consumption of less healthy foods by the respondents. Model four also confirmed that more frequent parent-child communication about food and food advertising and higher nutritional knowledge amongst parents tended to reduce children's consumption of less healthy foods. Children's nutritional knowledge and advertising literacy exerted small

mediating effects on children's consumption through attitudes. Most importantly, model four detected a positive relationship between children's consumption of less healthy foods and weight. The evaluation of foods and friends' food preferences were statistically significant in models one, two, three (control sample), and four, demonstrating their consistent influence on children. Having explained the models estimated in the current study, the next chapter discusses the key findings together with the limitations of the study and directions for future research.

Chapter Nine: Discussion and Conclusions

9.1. Introduction

This chapter highlights the key findings which yielded important theoretical, methodological, and empirical contributions. Each contribution is discussed in relation to extant knowledge to explain how this study provides insights for social marketing and public health disciplines. Where appropriate, the findings are compared to more recent studies published between 2010 and 2013 while the data were collected and analysed for the current study. The limitations of the study are carefully explained providing directions for future research. The last section discusses how the insights from this study can be used in the prevention of childhood obesity and social marketing campaigns.

9.2. Contributions

9.2.1. Theoretical Contributions

This study has carried out an extensive review of theoretical and empirical articles from the public health and marketing disciplines published between 1970 and 2010. Altogether, 12 gaps were identified in our knowledge about factors that influence children's dietary behaviour and lead to childhood obesity. These gaps were used to form the basis of a new, comprehensive, yet parsimonious conceptual framework which concentrated on internal factors encompassing cognitive, attitudinal, and behavioural dimensions of children's food socialisation. By mapping out the influence of previously overlooked cognitive defences, such as advertising literacy and nutritional knowledge alongside the influence of external factors (food advertising, parents, peers, and "other" people), the framework provides a more comprehensive explanation of factors associated with children's dietary behaviour and diet-related health outcome (weight). Recent research into childhood obesity highlights the multi-factorial nature of the processes influencing children's food consumption (Livingstone and Helsper 2004). Therefore, food advertising represented only one of the many factors influencing children in the proposed framework, leading to a more reliable conceptualisation of everyday social conditions. In contrast to previous conceptual frameworks, this framework proved to be more suitable for direct empirical estimation, which resulted in a number of significant empirical contributions discussed below.

9.2.2. Methodological Contributions

Earlier research has produced fragmented empirical knowledge that lacked the analysis of indirect effects ($X_1 \rightarrow X_2 \rightarrow Y$) or the estimation of the magnitude of influence of socialisation agents on children's dietary behaviour. By contrast, this study chose a more comprehensive research strategy. It relied both on qualitative and quantitative research methods to gain in-depth insights into factors influencing children's dietary behaviour. The qualitative stage helped refine the conceptual framework and understand in more depth children's behaviour as a result of their daily exposure to food advertising. The quantitative stage resulted in the collection of a relatively large dataset representative of the general Australian population in terms of weight. Furthermore, the quantitative study relied on more than one data collection method and consisted of three components – a randomised controlled experiment with children, a survey of children, and a survey of the children's parents. This approach was chosen to overcome the limitation of experiments which often overlook other important factors related to variance in the treatment variables (Bagozzi 1977).

As this study was the first to complement an experiment with a survey and to analyse data with two different statistical techniques, certain limitations of experiments were observed – that is, their ability to isolate specific effects for a short period of time and their inability to account for a bigger picture of factors simultaneously influencing children's dietary behaviour. For example, the analysis of variance traditionally applied to experimental data did not detect any differences between the experimental and control groups. Hence, the research investigating the influence of food advertising on children in the laboratory setting might produce mixed or non-significant results due to the omission of other factors. Also, children are exposed to food advertisements on a regular basis and future research needs to go beyond the widely-expected hypothesis that children who take part in an experiment will always be influenced by researchers' manipulation, demonstrating higher preferences for advertised products. The analysis of the experimental data using SEM allowed us to control for this omission by integrating the influences of external and internal factors, producing new empirical contributions discussed below.

9.2.3. Empirical Contributions

Currently, there are several studies conducted in Australia about factors influencing children's dietary behaviour or development of obesity (Ambrosini et al. 2009; Carter et al. 2011; Dixon et al. 2007; Gibson et al. 2007; Jones and Kervin 2010; O'Dea 2008; Pettigrew et al. 2013;

Wake, Hardy et al. 2007). However, the current study has provided the most extensive analysis of both external and internal factors influencing children's food preferences/consumption, offering a number of important contributions for policy-makers, parents, teachers, health practitioners, and other stakeholders worldwide. These contributions are discussed in more detail below.

Brand Evaluation and Evaluation of Non-Branded Foods

To understand in more depth how food advertising influences children, the developed conceptual framework hypothesised that the influence of food marketing on children occurs through attitudes (i.e., brand evaluation or evaluation of non-branded foods). The latter were operationalised as evaluation of four food attributes, namely fun, taste, healthiness, and ability of this to make a child popular with other children (social appeal) (Pettigrew et al. 2011). These themes are frequently used while advertising foods to children (HJKF 2007). Yet, little research was previously available about the role of such evaluations on children's dietary behaviour (Rozendaal et al. 2009). In this study, the evaluations of foods were used in SEM models to assess their relationships with food preferences (models one, two, and three) and food consumption (model four). While it was expected that these evaluations would form one latent construct, it was mainly the advertised food product (biscuits in models one and three) and less healthy foods (burger/french fries/soft drink in model four) that formed latent variables in stark contrast to an apple (model two). Since only three foods were used in the current study, further work is necessary to test the evaluation items across a wider range of foods.

The importance of attitudes was highlighted by two findings. First, evaluations proved to be related to children's dietary behaviour in the models with experimental and also cross-sectional data. Model three, which performed the invariance assessment of the measurement and structural models between the experimental and control groups, confirmed that brand evaluation predicted children's preference for Oreo biscuits also when the children were not exposed to any experimental manipulation. Model three additionally showed that the regression weight from attitudes to food preference were higher in the experimental sample. Although the difference did not reach statistical significance, this result suggested that food advertising influenced children's dietary behaviour through attitudes as postulated in the conceptual framework.

Second, the results suggested that overall evaluations (latent constructs) exerted the strongest influence on children's dietary behaviour. Further examination of loadings in the measurement models indicated that taste rating (models one and three) and health perception (model four) represented the most potent components of these evaluations. Earlier, it has been observed that advertising might reinforce children's impression that fast foods form part of a normal diet (Hoek and Gendall 2006). The most recent study in Australia has also cautioned that exposure can result in more positive evaluations of an energy-dense and nutrient-poor food product (Pettigrew et al. 2013) and that the current nutrient guidelines developed by the food industry in Australia are more lenient than the government nutrient criteria (Hebden et al. 2010). These findings, together with the results of the current study, caution that the use of health appeals in food advertisements can be misleading as children might believe that consumption of less healthy foods is acceptable. Although changing taste attitudes might be challenging because of a taste barrier amongst frequent fast food users (French et al. 2001), modifying the attitudes about the healthiness and taste of foods may offer a potential venue for curbing childhood obesity. The emphasis on generally healthy lifestyles might represent an adequate approach since health perceptions and care about one's health are inversely associated with the frequency of fast food consumption (French et al. 2001).

Magnitude of Influence of Different Socialisation Agents

Only five studies have previously looked into the effects of several socialisation agents on children's food preferences in a single empirical assessment (Baker et al. 2003; Bolton 1983; Buijzen et al. 2008; Norton et al. 2000; Stoneman and Brody 1981). Although they demonstrate that the influence of external agents varies, they do not provide conclusive evidence about the magnitude of the strength for each socialisation agent. Extant empirical evidence about external agents, including the influence of internal child-related characteristics remains modest (Cairns et al. 2013) and certainly calls for new contributions. The current study collected data from both children and parents, employed more advanced statistical modelling techniques, and as a result assessed for the first time the magnitude of influence of every external and internal factor in one single model. The analysis showed that the attitudes that children form about non-branded foods (less healthy foods in model four and an apple in model two) and branded foods (Oreo biscuits in models one and three) exerted the strongest influence on their food preferences/consumption. Because the influence was observed both in the experimental (models one, two, and three) and cross-sectional data (model four),

inferences can be made about the consistency of this factor across the models. As has already been mentioned above, attitudes should represent one of the directions for future intervention.

Next, peers exerted the second strongest influence in the models that relied on experimental data (models one, two, and three), whereas parents' social norms about fast foods represented the second strongest influence on children's consumption of less healthy foods when the cross-sectional data were examined (model four). In model four, parents' nutritional knowledge, parent-child communication about food and food advertising, peers' food preferences for less healthy foods, and the social acceptability of less healthy foods tended to exert similar influences on children. This, in particular, suggests that parental impact might counterbalance the influence of peers or other people, provided that parents hold less positive social norms about fast foods, possess higher nutritional knowledge, and more importantly, communicate with their children about food and food advertising, as was shown in model four.

A frequently cited meta-analysis (see Harold 1986) suggests that television advertising accounts for 2% of variance in children's behaviour. In the absence of other studies estimating the influence of food advertising on children, the current study is the first to quantify the magnitude of such influence. In the current sample, children's regular exposure to fast food advertising and promotion in local fast food restaurants accounted for 22% out of a total 49% of variance explained in attitudes (model four). Exposure also exerted the strongest influence on children's evaluation of burger/french fries/soft drink, followed by children's nutritional knowledge and advertising literacy, which exerted similar degree of influence on children's attitudes and transferred into small negative mediating effects on food consumption. Therefore, children's nutritional knowledge and advertising literacy should be strongly incorporated into social marketing campaigns despite the recently raised scepticism about their effectiveness (see Harris and Graff 2012).

Parents

Although it is generally assumed that parents are more knowledgeable as consumers (Seiders and Petty 2007), this study demonstrated that they are as equally susceptible to the influence of food advertising as their children. Similar to Grier et al. (2007), the current study shows that the more frequent exposure to fast food advertising was related to more positive social norms about fast food, which reflected parents' perception of the consumption of less healthy foods amongst family members, friends, and people who lived in their neighbourhood.

However, in contrast to previous research, this study is the first to estimate further effects of parents' exposure to food advertising on their children through the analysis of a series of indirect (mediating) effects. This study observed that more positive social norms about fast food held by parents were in turn related to more frequent consumption of less healthy foods by children, which then predicted respondents' greater weight. Since this is the first study to detect such an indirect pathway, it has substantially advanced our knowledge about parents' role in childhood obesity which needs to be considered in the development of intervention programs. Due to a significant path between parents' self-reported exposure to advertising of less healthy foods and their normative beliefs across all tested models, the belief that adults have higher persuasion knowledge about advertisers' tactics (Friestad and Wright 1994) and can withstand persuasive advertising needs to be substantially re-considered.

Previously, it has been suggested that children and adolescents need to exhibit sufficient awareness, understanding, ability, and motivation to resist food advertising (Harris et al. 2009). This study suggest that the ability to resist advertising (Harris et al. 2009) and control one's consumer responses (Friestad and Wright 1994) are also crucial in determining the outcomes of persuasive tactics amongst adults. As there is evidence to suggest the presence of low awareness about the tactics used to advertise foods to children on non-broadcast media amongst Australian parents (Kelly, Chapman, Hardy, King, and Farrell 2009), lower consumer knowledge can substantially reduce parents' ability to educate their children about traditional or new forms of marketing. Therefore, parents' knowledge about food advertising and ability to resist food marketing are crucial in preventing childhood obesity and shielding children from food advertising.

While advertising spokespeople argue that parents determine their children's food consumption (Sykora 2003), food marketing differs substantially depending on the target audience – for example, healthy appeals are used in advertisements for parents and fun appeals in the case of children (Cairns et al. 2009). As a result, the degree of parents' vulnerability to food advertising observed in the current study is alarming. A recent study in Australia has shown that parents are more likely to choose a food product dense in energy and poor in nutrition over a healthy alternative when they are advertised with a sports celebrity or a nutrition message (Dixon et al. 2011). Also, specifically designed food advertisements have been shown to influence parents' perceptions of foods' nutritional benefits, taste, fun, and social appeal (Jones and Fabrianesi 2007). The most recent experimental study with parents in

Australia also suggests that exposure to food advertising can result in more favourable evaluations of commonly advertised energy-dense, nutrient-poor foods, greater desire to consume them, and beliefs that such foods can be frequently consumed (Pettigrew, Quester, Tarabashkina, Chapman, and Miller 2013). As the advertising of energy dense and poor in nutrients foods aimed at children is also shifting towards parents (Dixon et al. 2011), this study reveals pathways through which parents' exposure to advertising might influence their children leading to the development of unhealthy lifestyles.

The results of the current study also suggest that parents' social norms about fast foods had a spill-over effect on their children's food consumption since they were positively related to the intake of soft drink and lollies in addition to fast foods. It is possible that parents' acceptance of one type of less healthy food might transfer into higher tolerance of other foods high in fat, sugar, and salt. Younger children especially depend on their parents and exposure to unhealthy role models might be harmful for children's future dietary behaviour and health due to poor food socialisation. Although parents' influence was weaker than of other factors, these still highlight the importance of their social norms. Hence, interventions targeting parents' normative beliefs need to be considered as a viable initiative. This study also showed that children whose parents exhibited greater nutritional knowledge tended to consume fewer unhealthy foods. Therefore, increasing parents' nutritional knowledge represents another important direction for curbing childhood obesity.

Two important observations were made about the role of parent-child communication about food and food advertising. That is, while the frequency of communication was inversely related to children's general consumption of less healthy foods in model four, it was also shown to influence positively children's preference for a healthier snack (an apple) when children were exposed to the advertisement for a less healthy food type (model two). Because model two relied on experimental data, this suggests that previous parental discussion of foods and also of the commercial intent in food advertisements served as a barrier to advertising, resulting in children's higher preferences for a healthier snack. As was already discussed in the literature review, evidence about the effects of such communication on children in the food consumption context has been missing. Previous studies have largely concentrated on family communication about consumption (general consumer goals) (Moschis and Churchill 1978) or the styles of communication (concept- and socio-oriented)

(Buijzen 2009; Buijzen et al. 2008) and the role of the communication about food and food advertising in particular has never been examined in depth before the current study.

This study also identified important background variables that affected outcomes in parents, such as parents' exposure to food advertising, level of education, and residence in lower socio-economic areas. These findings demonstrated complex interactions between environmental factors that transferred into further effects on children. Parents' social norms about fast foods were more positive amongst parents who were more frequently exposed to advertisements for less healthy foods. Therefore, more ethical advertising aimed at parents should be encouraged. In contrast, parents with higher education and those who lived in areas with residents holding higher education and occupation levels, demonstrated less positive normative beliefs about fast foods. When it comes to the area of residence, a number of studies have reported that socio-economic status influences children's food consumption (Ambrosini et al. 2009; Kopelman et al. 2007; Larson et al. 2008; Northstone and Emmett 2005; Pescud et al. 2012). While a similar trend was observed in the current study, the estimation of all causal relationships postulated in the conceptual framework showed that the impact of SES on children's consumption of less healthy foods was transferred through (mediated by) parents' more positive social norms about fast food and their lower nutritional knowledge, which calls for the re-estimation of parents' role in the childhood obesity pandemic.

The literature suggests that fast food restaurants heavily advertise in lower SES areas (Lewis et al. 2005) and this is unlikely to change in the future. Lower SES areas generally tend to have fewer healthier food alternatives when eating outside the home (Block, Scribner, and DeSalvo 2004; Lewis et al. 2005; Morland, Wing, Roux, and Poole 2002; Powell, Chaloupka, and Bao 2007). This might negatively impact adults' social norms on top of their exposure to fast food advertising. Since the availability of fast food restaurants has previously been shown to be related to higher BMI in adults (Mehta and Chang 2008; Powell, Auld, Chaloupka, O'Malley, and Johnston 2007), closer attention should be paid to food consumption/preferences in lower socio-economic areas. Overall, this study highlighted the link between parents' normative beliefs, nutritional knowledge, communication patterns and children's consumption of less healthy foods, confirming parents' long-term influence on children when it comes to food consumption (Branen and Fletcher 1999). These new insights were possible largely due to the application of SEM during the data analysis.

Peers

This study has demonstrated that friends' preferences for any type of food, both less healthy (Oreo biscuits) and healthier (an apple), were high if their friends' perceived preferences for similar snacks were also high. A similar trend was observed for children's consumption of less healthy foods (model four), suggesting that children's food intake can be improved if favourable models are exhibited amongst their friends. Since peers' food preferences exhibited the second most significant influence on children's food preferences and the third strongest influence on their consumption of less healthy foods in this study, the role of peers as socialisation agents is undisputable. In a study by French et al. (2001) it was reported that peers' lower concern for healthy eating was associated with frequent use of fast food restaurants (French et al. 2001). A recent study in Australia showed that weight similarities amongst friends (12 to 15 years adolescents) were driven by preferences for friends belonging to a similar weight category (de la Haye, Robins, Mohr, and Wilson 2011). Previous research and the results of the current study show that peers who do not display healthy eating patterns might also reinforce unhealthy eating habits amongst their friends, increasing the frequency of the consumption of less healthy foods outside home. Therefore, this study supports a recent suggestion by Gerrits et al. (2009) who proposed to target peer norms that endorse unhealthy diets.

Peers' influence observed in the current study in the sample of younger children also conforms with patterns reported recently for adolescents. For example, frequency of consumption of soft drinks amongst adolescents was explained by the perceptions about soft drinks' consumption amongst other students (Perkins et al. 2010), while the intake of fruit, vegetables, and snacks was associated with perceptions about peers' consumption of similar foods (Lally, Bartle, and Wardle 2011). The consumption of snacks (peanuts, chips, cheese, and sausage, pastry, cake, cookies, candy bars, and chocolate) and soft drinks has also been observed to be higher in adolescents whose friends exhibit higher consumption of such foods, especially when they are available in school canteens (Wouters, Larsen, Kremers, Dagnelie, and Geenen 2010).

Despite the negative influence of friends observed in the current study, their positive influence should not be overlooked, as was the case with respondents' preference for an apple (model two), suggesting that peers offer a potential for encouraging the development of healthy life styles, which should be built on by stakeholders. This conclusion is corroborated

by evidence from a longitudinal study of US adolescents, which showed that peer support for healthy eating at age 15 was associated with lower fast food intake at age 20 amongst males (Larson et al. 2008). Although no similar effects have been observed amongst girls (Larson et al. 2008), it would appear that intervention programs need to be peer-based.

Influence of “Other” People

Social Cognitive Theory suggests that the types of models that dominate social environments in which individuals operate will determine the behavioural models that are followed (Bandura 2002). To account for the influence of the wider community and other people in the childhood obesity context, this study has looked at the influence of parents’ area of residence on their normative beliefs about fast food, and also at children’s perceptions of how often other people thought it was acceptable to consume different foods. Parents’ variables were held constant across all the models, while the social acceptability perceptions collected directly from children were incorporated in the models that had a similar food outcome as a dependent variable. As discussed above, residence in an area with low occupation and education levels predicted more positive norms about fast foods amongst parents. In the children’s data, little variance yielded no statistically significant influences in the first three models. Only model four showed that when children believed that frequent consumption of less healthy foods was acceptable amongst other people, they tended to consume less healthy foods more often. Although social acceptability exerted the smallest influence on children, the trends observed both in the parents’ and children’s data should dictate the need for a community-based approach to childhood obesity in line with recent recommendations (Harris and Graff 2011).

Gender Differences

This study did not observe any statistically significant differences between boys and girls in relation to their understanding of the selling and persuasive intents in the three different food advertisements (advertising literacy). This result supports the literature that there is no theoretical reason to expect gender differences in children’s susceptibility to food advertising (IOM 2006). Still, boys in the current study consistently exhibited lower nutritional knowledge in comparison to girls (models one, two, and four). Although nutritional knowledge was not related to children’s Oreo brand evaluation (model one) and evaluation of an apple’s taste (model two), higher nutritional knowledge did exert a medium reverse influence on the evaluation of burger/french fries/soft drink in model four. As boys tended to

have a more positive evaluation of burger/french fries/soft drink and reported higher preferences for such foods amongst their friends, they should form a specific target of future social marketing campaigns.

Advertising Literacy

Previous studies about children's susceptibility to advertising have concentrated on very young children aged up to eight years (Galst 1980; Gorn and Goldberg 1982; Stoneman and Brody 1981) who certainly have limited defence abilities against advertising. The current study collected data from children aged between seven to 13 years to yield a more diverse dataset for empirical analysis. Instead of children's biological age, this study relied on respondents' understanding of the selling and persuasive intents in advertisements and examined the relationship between this understanding, attitudes and dietary behaviour. It is generally believed that children who critically process advertising will be less susceptible to its influence (Bandyopadhyay, Kindra, and Sharp 2001; Robertson and Rossiter 1974), conforming with the Persuasion Knowledge Model (Friestad and Wright 1994). The descriptive statistics for the Oreo advertisement (Appendix 51) showed that children in the experimental group comprehended the selling and persuasive intents in the advertisement which they were exposed to, regardless of age. Even though an aggregate score was created, it did not seem to mitigate the skewed data and no significant effect was observed on children's food preferences or evaluations of Oreo (models one and two). The small variance also explains why the path from age to advertising literacy was not significant in the experimental group (model one).

While these results appear to support previous studies in which advertising literacy did not lessen participants' preference for advertised foods during the experiments (Mallinckrodt and Mizerski 2007; Ross et al. 1984), it should not be completely disregarded as in this study it did reduce children's evaluation of less healthy food in model four which relied on the non-experimental cross-sectional data. Previously, media literacy training has reduced children's susceptibility to tobacco and alcohol advertising (Austin and Johnson 1997; Primack et al. 2006). Because educational training increases children's understanding of food advertisers' intent (Lin and Peng 2010), increasing children's awareness about food advertising should continue to be seen as a tool to reduce children's susceptibility to food advertising and curbing the obesity.

Although advertising literacy for less healthy foods resulted in less positive attitudes and also an indirect negative effect on less healthy food consumption in the current study, understanding of advertisers' persuasive and selling intents might not always serve as a barrier against advertising for a number of reasons. First, children might be interested in trying out advertised products even when they fully understand the purpose of advertising, as has been observed during the focus groups (see Chapter Five). This could also be one of the reasons why children's advertising literacy was inactive in our experiment. Second, less healthy foods are generally very palatable. Hence, it is not only the recognition of the commercial intent of advertising and the ability to resist it that matter in the context of food advertising as was suggested by Harris et al. (2009), but also children's ability to resist taste craving. Even adult consumers cannot at times effectively resist advertising (Rozendaal et al. 2009), so it does seem logical that children who do not use their knowledge about food advertising also need to develop an ability to weigh long-term health consequences of consumption over short-term rewards (Harris and Graff 2011). The above-mentioned factors certainly represent challenges in curbing childhood obesity, but they also suggest important targets for intervention programs since they highlight the areas of children's greatest vulnerability to food advertising.

Nutritional Knowledge

The literature suggests that higher nutritional knowledge amongst adults is positively associated with the consumption of fruit and vegetables and negatively associated with the consumption of fats (Wardle, Parmenter, and Waller 2000). While scholars concur that children's nutritional knowledge and understanding of nutritional phraseology increase with age (Wiman and Newman 1989), mixed empirical results currently dominate the field about the relationship between children's nutritional knowledge, food intake (Gibson et al. 1998; Gracey et al. 1996; Zive et al. 1998), and weight (Reinehr et al. 2003). This has led some scholars to conclude that nutritional education cannot effectively mitigate the effects of food advertising (Harris and Graff 2012). As shown in the current study, nutritional knowledge did not reduce children's preferences for advertised products in the experiment (models one, two, and three), but still exerted a mitigating effect on children's evaluation of non-branded less healthy foods in model four, which further transferred into a small indirect effect on their consumption of less healthy foods.

The non-significant path from children's nutritional knowledge to food evaluation in models one and three, as compared to the significant path in model four, suggests that children did not perceive biscuits as less healthy foods and that the Oreo brand was not viewed negatively. This finding is corroborated by our qualitative data (see Chapter Five, section 5.7.4), where children inferred from their parents that having biscuits after school was "healthy" if they were eaten with a piece of fruit. Although children who took part in focus groups and the experiment were from different samples, the qualitative data can still be used to explain certain trends in the empirical models. In the light of this finding, more educational training should be encouraged amongst children to explain which foods have low nutritional value. Similar training should be conducted amongst parents, since the latter serve as important communicators of knowledge about advertising and foods, as shown in models two and four. Furthermore, the literature suggests that nutritional education leads to higher nutritional knowledge (Rasnake et al., 2005; Tuuri et al., 2009) and also self-efficacy to consume fruit and vegetables amongst children (Tuuri et al., 2009). The current study highlights the importance of this form of children's cognitive defence, which should be exploited by parents, schools, and other stakeholders. Because nutritional information is communicated to children through multiple channels (Rasnake et al. 2005), special attention should be paid to how other people, friends, and food advertising affect children's perceptions of what constitutes a healthy diet.

Food Consumption and Weight

As discussed in Chapter Two, extant empirical evidence about the link between food consumption and weight gain has been predominantly confirmed amongst adults. It has been observed that adults' frequency of eating at fast food restaurants is associated with weight gain (Duffey et al. 2007; French et al. 2000; Jeffery et al. 2006; Pereira et al. 2005) and higher intake of fat, total energy, and sugar-sweetened beverages (Larson et al. 2011; Paeratakul et al. 2003). In contrast, the relationship between food marketing and children's health as a precursor to food consumption has been much harder to establish in comparison to its influence on attitudes or preferences (IOM 2006). Generally, overweight and obesity develop when consumed calories exceed expended calories (WHO 2006b). To examine this relationship in more detail, children in this study were asked to report the frequency of their consumption of fast foods, treats/lollies, and soft drinks, after their completion of the post-experimental tasks. The current study has demonstrated that consumption of less healthy

foods was in fact related to higher weight in children, confirming for the first time this relationship amongst a younger population with cross-sectional data.

Previously, it has been observed that frequent fast food consumption during adolescence is associated with weight gain in early adulthood (Niemeier et al. 2006). Because the extant evidence shows that consumption of fast foods at age 15 is also related to increased fast food consumption at age 20 (Larson et al. 2008), the trend observed in the current study warns about the development of unhealthy food habits at an early age and their transference into adulthood. This study also observed a positive indirect pathway from children's exposure to fast food advertising/promotions in local fast food restaurants to weight gain through children's attitudes, revealing the role of food advertising in the obesity context. The trends observed in the current study have been corroborated by recent studies conducted while the data for this study were collected and analysed. For example, Larson et al. (2011) reported that frequent consumption of foods from fast food restaurants increases the risks of overweight and obesity in young adults. Also, the potential danger of frequent soft drink consumption and higher weight for adolescents has been corroborated by Laska, Murray, Lytle, and Harnack (2012) and Perkins et al. (2010).

Another important contribution of the current study pertains to the estimation of relationships that examine the role of background variables. For example, higher BMI scores have been reported amongst Australian children from lower SES areas (Booth et al. 2006; Burke et al. 2001; Magarey et al. 2003; O'Dea 2003, 2008; Pescud et al. 2012; Wake, Hardy et al. 2007). Having observed that residence in areas with low education and occupation status was related to negative outcomes in parents, the current study demonstrated a plausible pathway between SES, social norms about fast food, parents' nutritional knowledge, children's consumption of less healthy foods, and weight gain, offering an in-depth analysis of the mechanisms underlying childhood obesity.

Finally, this study examined the relationship between children's exposure to advertising and their food preferences, controlling for participants' weight, and did not observe any effects in the experiment. Although earlier studies have tested whether childhood obesity is related to greater susceptibility to food advertising (Halford et al. 2008; Halford, Boyland, Hughes, Oliveira et al. 2007; Halford, Boyland, Hughes, Stacey et al. 2007; Halford et al. 2004), such approach suffers from reverse causality as it is not clear whether less healthy choices

represent an outcome of an exposure or of the need to maintain higher weight (Laska et al. 2012; Rodríguez, Sjöberg, Lissner, and Moreno 2011). Despite the widespread belief that experiments can establish causality between food advertising and children's health outcomes (IOM 2006), they may not be as effective as previously thought. Generally, it is highly unlikely that a child will gain weight after being exposed to a food advertisement. Therefore, longitudinal data offer more evidence for discerning this relationship because weight gain takes time to develop.

9.3. Limitations of the Study

9.3.1. Research Design and Reverse Causality

This study was based on a relatively large, non-student sample of children and parents with diverse socio-economic characteristics. It used an experiment and survey to study several factors that influence children's dietary behaviour. The inclusion of previously validated measures and the extensive pre-testing undertaken prior to the empirical analysis insured the reliability and validity of the conclusions drawn from the empirical results. Still, several limitations remain. In particular, due to time constraints tracking longitudinal changes in children's weight due to food consumption or prolonged exposure to food advertising was not possible and preference was given to the experimental and survey methods. Next, although children's consumption of fast foods, lollies, and soft drinks was related to higher weight, this conclusion was drawn from cross-sectional data which are not optimal for establishing causation (Laska et al. 2012; Rodríguez et al. 2011). Therefore, panel and longitudinal studies which would also measure children's exposure to food advertising are likely to be more effective for the examination of long-term influences of food advertising on children.

It is also difficult to establish causality for the external and internal factors used in the current study (except for the influence of exposure in model three) due to the cross-sectional nature of data. Nonetheless, the presence of statistically significant relationships between the variables serves as an indication of potential influence of the used predictors. Also, the collection of cross-sectional data has substantially mitigated the limitations of the experiment and contributed to our knowledge about the factors influencing children's consumption of non-branded less healthy foods. Finally, the results of this study are corroborated by a number of longitudinal studies which have shown that higher fat and energy intake (Jeffery and French 1999), as well as frequent use of fast food restaurants (Pereira et al. 2005) are associated with weight gain in adults.

9.3.2. Internal Validity

It is possible that the children in the experimental group could figure out the purpose of the current study when they were asked about their food preferences, in which case, they could either report higher preferences for a healthier alternative (an apple) or lower their preferences for the advertised food product (biscuits). While the three-way ANOVAs reported in Chapter Eight (Table 35) did not detect statistically significant differences between the two groups, future research could check for this influence by asking children about their view of the intended purpose of the study during their debriefing. There may have been some bias in self-reported measures of the consumption of less healthy foods due to potential under-reporting previously observed amongst overweight adults (Kretsch, Fong, and Green 1999), overweight children (Fisher, Johnson, Lindquist, Birch, and Goran 2000; Waling and Larsson 2008), overweight adolescents (Bandini, Schoeller, Cyr, and Dietz 1990), and older children (Waling and Larsson 2008). Several steps were taken to reduce such bias in the current study. First, prior to the distribution of surveys, all participants were advised that no personally identifiable data would be collected from them. Second, except for a small proportion of the younger children who requested assistance, most participants completed the surveys independently from the researcher/research assistants. Most importantly, children completed the CQs without parental supervision, which ensured less bias.

Also, additional empirical tests were conducted to examine if there were any differences in self-reported consumption of less healthy foods depending on weight. The analysis showed that overweight/obese children reported lower preferences for Oreo biscuits and an apple in the experimental group. However, a similar trend was observed in the control group (Appendix 54A), which excluded doubts about the under-reporting during the experiment. The tests also did not detect any significant differences depending on weight or its interaction with age or type of exposure (Appendix 54A). A similar analysis performed using the cross-sectional data showed that overweight/obese participants generally reported more frequent consumption of less healthy foods (statistically significant difference detected), treats/lollies, and soft drinks (no statistically significant difference detected) (Appendix 54B). Although it is still possible that some under-reporting occurred due to the negative stigma attached to less healthy foods (Waling and Larsson 2008; Westerterp and Goris 2002), children's consumption was positively correlated with their parents' estimates of their children's consumption of fast foods and family consumption of similar foods (Appendix 54C), suggesting successful concurrent validity of the data collected from the children.

Finally, the children in the current study were exposed to the Oreo food advertisement only three times during the ten minutes of the Internet surfing, which might not be enough to exert substantial influence. It is also potentially problematic that the advertised product was available in stores at the time of the experiment and that the children could have seen advertisements promoting it prior to their participation in this study. Hence, an unfamiliar or new product would be more desirable while doing research with children. The random assignment of participants to groups, however, ensured that children in the control and experimental groups were equivalent in this aspect, as has previously been done by Chernin (2008).

9.3.3. External Validity

Only residents of South Australia took part in this study which limits the generalisability of the findings to other Australian states or other countries. Some bias could have occurred at the recruitment stage when potential participants were advised that their children would be compensated for their time with \$10 and would receive a toy. Also, the participants came largely from Anglo/European backgrounds. As Indigenous people and Pacific Islanders did not take part in this study, the effects observed in the sample might not be applicable to them. Finally, 61.3% of the participants in the current sample participated in the experiment with a sibling. Most of these children had only one additional sibling participant – only 11 families (3%) had three children from the same family and two families had four children taking part in the study. While this could affect the independence of observations, the research team ensured that children from the same family were assigned to different conditions to mitigate this effect.

9.3.4. Measures

Several measures used in the study had some limitations. First, data about children's consumption of less healthy foods were collected using respondents' own recall. Although a food-diary method (Buijzen 2009; Finnerty, Reeves, Dabinett, Jeanes, and Vögele 2009; Gibson et al. 1998; Oliveria et al. 1992) could have resulted in more detailed records, it was avoided due to time constraints during the full-scale fieldwork and the length of the CQ which could lead to undesirable participants' fatigue. The diary method was also avoided as it could result in inaccurate records since the children would be required to recall rather than note down consumed foods. The children were instead asked about their consumption of foods,

which was expected to capture their general behaviour including possible variations between week days and weekends (De Castro 1991). Next, while younger children (seven to ten years) could have experienced problems while assessing the frequency of their food consumption, the analysis reported in Appendix 54C confirmed significant correlations between the younger children's consumption of less healthy foods and their parents' estimates of their children's consumption of fast foods, validating the data collected from the children. Second, it is also possible that the children could have over-estimated their friends' preferences for healthy foods or under-estimated them for less healthy foods. Collecting data directly from peers, however, was not feasible in this study due to its mall intercept design.

Third, the two items used to measure children's regular exposure to the advertising of less healthy foods exhibited low factor loadings in the measurement model, despite overall statistical significance (model four). To overcome this limitation future research could use more than two indicators (Hair et al. 2010) in the analysis by assessing children's exposure across wider media channels. Despite low factor loadings, children's self-reported exposure to the advertising of less healthy foods was considered more advantageous as it increased the validity of the pathway from food marketing to weight through food consumption and eliminated the reverse causality problem in the case of television watching and weight gain (IOM 2006). Although children's general viewing data (TV watching and Internet surfing) were collected from their parents (Appendix 37, Q44-Q47), they were not used as a precursor to diet due to inference inaccuracies (see IOM 2006). Children's ability to resist advertising, which was not measured in the current study but has been recently proposed in the literature (Harris et al. 2009) should be used in future research to explain the reasons behind children's consumer choices.

Next, the direct measures of children's biometrics on the research site were avoided as this could lead to undesired emotional distress amongst children with higher weight. Instead, this study relied on parents' recall of their children's height and weight. Although the collected data could be inaccurate as it is likely that not all parents would correctly recall their children's height and weight, such data collection method has been proven to be a reasonably accurate estimate of childhood obesity (Banach et al. 2007). Finally, parents' exposure to fast food advertising was measured using only one item which aimed to tap into parents' overall exposure to the promotion of less healthy foods. This measure could not identify if the advertisements that parents saw were designated for adults or children. Hence, this distinction

should be made in future research and appropriate analysis carried out to assess their influence on parents. Due to the extensive promotion of foods across different channels, this measure also could not point out the most influential sources of advertising which could be explored in future studies. Future research could also go beyond the measure used in the current study by asking parents about the approximate number of advertisements they were exposed to on an average day (i.e., five, ten, or more), which would yield a more quantifiable estimate.

9.4. Directions for Future Research

There are several important directions for future research emanating from the current study. First, it is important that the proposed conceptual framework and the results observed in this study are replicated in other countries against different obesity rates and public policy related to nutritional labelling, obesity, and dietary recommendations. While the current study observed a number of important precursors to poor food consumer socialisation, the analysis of public policy across different countries and of the changes in rates of obesity as a result of policy implementation represent the next, important step for social marketing and public health as it will identify important policy benchmarks.

Second, as was observed in the experimental data, most children understood the selling and persuasive intents of the advertisement they were exposed to. Yet, their food preferences were largely influenced by their attitudes about Oreo biscuits (brand evaluation). Since children's ability and motivation to resist advertising (see Harris et al. 2009) were not directly measured in this study, children's resistance to advertising should be considered as a potential area for future investigation. Further research about factors that influence children's attitudes is also highly encouraged as the former exerted the strongest influence on children's food preferences and food consumption in the current study. Next, as was mentioned above, research using the panel or cohort data which controls for children's exposure to food marketing is highly recommended to confirm a causal link between diet and weight.

As for other potential factors influencing children's dietary behaviour, dieting and portion sizes were not considered in the current study, although they might be associated with weight and food preferences (see IOM 2006). Lower preferences for foods high in fat and sugar could also be partially explained by weight control concerns, which are particularly high amongst women (Glanz, Basil, Maibach, Goldberg, and Snyder 1998) and adolescent girls

(Fulkerson, French, and Story 2004) and tend to increase with age (Glanz et al. 1998). In addition, this study controlled only for genetic predisposition to weight gain through parents' BMI and did not collect data about children's physical activity. Since there is evidence that physical exercise is associated with weight loss (Jakicic 2009; Tremblay and Willms 2003; Westerterp 2010), this factor should be considered in future research. The evidence base about the influence of foods offered in schools also remains scarce. As discussed above, a recent study conducted in the Netherlands suggested that consumption of snacks (peanuts, chips, cheese, and sausage, pastry, cake, cookies, candy bars, and chocolate) and soft drinks was higher amongst adolescents whose friends frequently consumed similar foods and also when such snacks were available at schools (Wouters et al. 2010). Since school canteens were not studied in the current study, future research is recommended to investigate how schools contribute to the development of childhood obesity.

Except for parents' education in the control sample (model three) and overall sample (model four), this study did not detect many significant predictors of parent-child communication. Because the latter was important in predicting behavioural outcomes in children, future research should concentrate on factors that could substantially increase the frequency of parent-child communication about food and food advertising. Preferably, a qualitative inquiry should be employed to yield in-depth insights. Finally, although the conceptual framework developed in the current study was robust both with experimental and survey data, it does not represent an exhaustive or complete framework because it does not account for the role of culture or the larger culture of eating, which have been described in the literature (Feunekes et al. 1998).

9.5. Conclusion

Using Social Cognitive Theory, the consumer socialisation approach, and the appropriate statistical techniques, the current study identified a number of important influential mechanisms related to childhood obesity. It went beyond previously reported studies, first, by developing a comprehensive, yet parsimonious conceptual framework, which included external and internal, child-related factors influencing children's dietary behaviour and weight. Second, by including the factors that have not previously been examined, or have produced mixed results in one conceptual framework, this study clarified a number of influential pathways affecting children's food preferences and consumption. Third, the combination of cognitive, attitudinal, and behavioural dimensions in one framework and the

reliance on insights from both the public health and marketing disciplines proved to be a successful research strategy. Fourth, the current study collected data not only from children, but also their parents, which resulted in a rich dataset rarely acquired previously by researchers. All measures underwent a rigorous validation process to ensure their validity and reliability. The current study also relied on parents' and children's self-reported exposure to the advertising of less healthy foods and avoided the widely-used measure of television viewing time which has low measurement validity (IOM 2006). Several methods for data collection (i.e., an experiment and a survey) and different statistical techniques were used, which resulted in important methodological and empirical contributions to the field.

This study demonstrated that more positive social norms about fast foods, lower parental nutritional knowledge, less frequent communication about food and food advertising between parents and children, perceptions that the consumption of less healthy foods is socially acceptable, and children's positive evaluation of less healthy foods were related to more frequent consumption of a range of unhealthy foods. Therefore, this study confirms that children's food preferences, as well as childhood obesity, have multi-factoral nature (Livingstone and Helsper 2004), alerting parents and stakeholders to the fact that an environment dominated by unhealthy behavioural models presented in the media, practised in neighbourhoods, or demonstrated by friends can substantially undermine social marketing initiatives. Previously, the link between food promotion and children's obesity has been hard to detect (Jolly 2011) and this study found that children's more frequent consumption of less healthy foods was related to higher weight. This study estimated the magnitude of food advertising on children through their attitudes using the mediation analysis, which revealed a small influence on dietary behaviour. In contrast, advertising exerted by far the strongest influence on children's attitudes as compared to other predictors, which in turn led to higher consumption of less healthy foods.

Childhood represents a critical stage for the development of obesity (Epstein, Wing, and Valoski 1985; Venn et al. 2007; Wang and Lobstein 2006) and it is not surprising that extensive research and obesity prevention policies have recently focused on children (Hebden, Chey, and Allman-Farinelli 2012; Reisch and Gwozdz 2011). Children nowadays are growing up in an environment filled by advertising across multiple media channels (Linn 2004) and in contrast to previous generations, they make frequent independent purchases and over-manoeuvre parents due to access to their own money (Golan and Crow 2004; Roberts,

Blinkhorn, and Duxbury 2003). Given these recent changes in children's consumer roles, it is crucial that they make healthy food choice that will prevent undesired health implications both during the childhood and adulthood.

Food advertising to children has dramatically increased during the last two decades and targets young consumers across a range of different channels (CSPI 2003). Due to the increasing use of digital advertising and of mobile phones, the extent of promotion to children will be likely to increase even further and this study demonstrates that the influence occurs through the attitudes. Currently, restrictions on food advertising has then been nominated as one of the most effective interventions to fight the childhood obesity pandemic (Haby et al. 2006). Several ecological studies tend to confirm such an approach (Haby et al. 2006; Lobstein and Dobb 2005). A recent analysis of the household consumption data from 1984 to 1992 for Quebec, where fast food advertising to children has been banned since 1980, shows that French-speaking households with children purchased significantly less fast foods in comparison to the English speaking households in Quebec and Ontario (Dhar and Baylis 2011).

While the above-mentioned studies provide some evidence in favour of stricter regulation of food advertising to children, reduction in, or stricter regulations of, food marketing to children might not be as effective as originally expected. First, fast foods have been around for a very long time. It is a well-established industry and individuals' awareness of its offerings is high. Therefore, reduction in television food advertising cannot automatically erase consumers' extant knowledge about and awareness of such foods. Second, reduction in television advertising might lead to an increase in advertising on the Internet, in-store advertising, advergames, and in apps on mobile phones. Internet advertising already represents a popular medium attracting a growing proportion of budgets (Bollars et al. 2013; Calvert 2008; McGinnis, Gootman, and Kraak 2006) and digital advertising in general is expected to be a significant medium in the coming years (Bollars et al. 2013). Third, a ban proposed only in one state or province may not be effective if there is media overlap from other jurisdictions that have less strict advertising regulations (Dhar and Baylis 2011).

Finally, as was observed in the current study, even if children's exposure to advertising is reduced, the negative impact of peers and of social norms about the acceptability of less healthy foods might still negatively influence children if socialisation agents uphold unhealthy

lifestyles. This finding supports Bandura's (2002) proposition that even when individuals have limited or no exposure to media, they might still be influenced by the individuals who have experienced exposure and adopted displayed behavioural models. Similar to Grier et al. (2007), this study found that parents' exposure to fast food advertising leads to more positive social norms about fast foods. The later resulted in more frequent consumption of a range of unhealthy foods by children, highlighting the complex and, at the same time, controversial nature of food advertising in the formation of children's food preferences, and its influence on parents. Given these findings, restrictions on food advertising to children alone will not be sufficient if parents remain exposed to and, most importantly, influenced by advertising that misleadingly emphasizes the nutritional value of less healthy foods. A community-based approach would seem more advisable because advertisers now reach out not only to children and parents, but also to peers, and other adults, all of whom need to be considered by policy-makers.

It is projected that by 2030 around 60% of the worldwide adult population will be overweight or obese (Kelly, Yang, Chen, Reynolds, and He 2008). Chronic diseases take decades to develop and many of them have roots in childhood (CSPI 2003). Alarmingly, in Australia, the younger generation is gaining weight faster than their parents (Hebden et al. 2012). The cost of obesity in Australia amounts to \$58 billion per year (ABS, 2009) and the healthcare costs are more likely to double by 2025 (Aitken, Allman-Farinelli, King, and Bauman 2009). Monitoring and managing chronic conditions associated with overweight and obesity amongst adolescents only (15 to 19 years) range between \$164.8 to \$305.1 million per year (Booth et al. 2009). Recent reviews of marketing practices have shown that food advertising continues to use integrated marketing techniques reaching out to children, their parents, and peers (Cairns et al. 2013). While the role of research remains crucial in advising public policy-makers about possible interventions and extant evidence-bases, the translation of research into policy, unfortunately, lags behind and remains substantially outpaced by the innovation and development in the food industry.

Appendices

Appendix 1: Human Ethics Research Committee Approval for Exploratory Study



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23 September 2010

Professor PG Quester
Business School

Dear Professor Quester

PROJECT NO: *Children's food consumer socialisation: An evaluation of the impact of marketing communication, parents and peers on children's food*
H-162-2010

I write to advise you that I have approved the above project on behalf of the Human Research Ethics Committee. Please refer to the enclosed endorsement sheet for further details and conditions that may be applicable to this approval.

The expiry date for this project is: 31 March 2011

Where possible, participants taking part in the study should be given a copy of the Information Sheet and the signed Consent Form to retain.

Please note that any changes to the project which might affect its continued ethical acceptability will invalidate the project's approval. In such cases an amended protocol must be submitted to the Committee for further approval. It is a condition of approval that you immediately report anything which might warrant review of ethical approval including (a) serious or unexpected adverse effects on participants (b) proposed changes in the protocol; and (c) unforeseen events that might affect continued ethical acceptability of the project. It is also a condition of approval that you inform the Committee, giving reasons, if the project is discontinued before the expected date of completion.

A reporting form is available from the Committee's website. This may be used to renew ethical approval or report on project status including completion.

Yours sincerely

 Professor Garrett Cullity
Convenor
Human Research Ethics Committee



THE UNIVERSITY
OF ADELAIDE
AUSTRALIA

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CRICOS Provider Number 00123M

Applicant: Professor PG Quester

Department: Business School

Project Title: *Children's food consumer socialisation: An evaluation of the impact of marketing communication, parents and peers on children's food*

THE UNIVERSITY OF ADELAIDE HUMAN RESEARCH ETHICS COMMITTEE

Project No: H-162-2010

RM No: 0000010646

APPROVED for the period until: 31 March 2011

It is noted that this study will be conducted by Liudmila Tarabashkina, PhD candidate.

Refer also to the accompanying letter setting out requirements applying to approval.

Professor Garrett Gullity
Convenor
Human Research Ethics Committee

Date: 22 SEP 2010

Appendix 2: Human Ethics Research Committee Approval for Quantitative Pilot Tests and Full-scale Fieldwork

FACULTY OF THE
PROFESSIONS
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7 April 2011

Professor P Quester
Business School

Dear Professor Quester

PROJECT NO: H-076-2011

Children's food consumer socialisation: an evaluation of the impact of marketing communication, parents, peers and social norms on children's food choice and obesity

I write to advise you that the Human Research Ethics Committee has approved the above project. Please refer to the enclosed endorsement sheet for further details and conditions that may be applicable to this approval.

Approval is current for one year. The expiry date for this project is: 30 April 2012


Where possible, participants taking part in the study should be given a copy of the Information Sheet and the signed Consent Form to retain.

Where possible, participants taking part in the study should be given a copy of the Information Sheet and the signed Consent Form to retain.

Please note that any changes to the project which might affect its continued ethical acceptability will invalidate the project's approval. In such cases an amended protocol must be submitted to the Committee for further approval. It is a condition of approval that you immediately report anything which might warrant review of ethical approval including (a) serious or unexpected adverse effects on participants (b) proposed changes in the protocol; and (c) unforeseen events that might affect continued ethical acceptability of the project. It is also a condition of approval that you inform the Committee, giving reasons, if the project is discontinued before the expected date of completion.

A reporting form is available from the Committee's website. This may be used to renew ethical approval or report on project status including completion.

Yours sincerely

 PROFESSOR GARRETT CULLITY
Convenor
Human Research Ethics Committee



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CRICOS Provider Number 00123M

Applicant: Professor P Quester

School: Professions Office

Project Title: *Children's food consumer socialisation: an evaluation of the impact of marketing communication, parents, peers and social norms on children's food choice and obesity*

THE UNIVERSITY OF ADELAIDE HUMAN RESEARCH ETHICS COMMITTEE

Project No:

H-076-2011

RM No: 0000011380

APPROVED for the period until:

30 April 2012

Thank you for the participant information sheet and revised documents dated 5.4.11.

Refer also to the accompanying letter setting out requirements applying to approval.

PROFESSOR GARRETT CULLITY
Convenor
Human Research Ethics Committee

Date: 7 APR 2011

Appendix 3: Human Ethics Research Committee: Approval of Changes made to Children's and Parents' Questionnaires after Pilot Tests

☆ from **Sabine Schreiber** sabine.schreiber@adelaide.edu.au [hide details](#) 22 Aug [Reply](#) ▼

reply-to sabine.schreiber@adelaide.edu.au
to Liudmila Tarabashkina <liudmila.tarabashkina@adelaide.edu.au>
date 22 August 2011 11:47
subject RE: H-076-2011

📌 Important mainly because it was sent directly to you.

Dear Liudmila

The revised children's and parental questionnaires for your project submitted on 8 August 2011, have been approved. This email is confirmation of that approval.

Regards
Sabine

Sabine Schreiber
Secretary, Human Research Ethics Committee
Research Ethics and Compliance Unit
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CRICOS Provider Number 00123M

Appendix 4: Cross-Sectional Research: Factors Influencing Children's Food Preferences, Consumption, and Weight (1970-2010)

Display in the upcoming tables:

(Direction of relationship), children's age, country, reference, sample characteristics, statistical method, children's weight measurement + optional: measurement of TV watching or main findings in a succinct form, parents (mothers or/and fathers) taking part in the study.

The results were split by age, namely 6 to 11 years corresponding to children, and 12 to 18 years for adolescents. When it was not possible to determine results for each group due to authors' aggregation of age groups (i.e. 8 to 15 years), results were presented in the section for older children (i.e., 12 to 18 years).

Notes:

B/G – Analysis for boys & girls separately

B+G – Boys & girls studied together

BMI – Body Mass Index

Purple text – Studies carried out in New Zealand

C – Caregiver

Cor. – Correlation

EFA – Exploratory Factor Analysis

F – Fathers

FJV – fruit, juice, and vegetables

G – Girls

GLM – General Linear Model

H/d – Hours per day

H/w – Hours per week

H/y – Hours yesterday

M – Mothers

Log. reg. – Logistic regression

MC – Main caretaker

M+F – Mothers & fathers participated in a study

NW – Normal weight children

NWC – Normal weight children

NW M – Normal weight mothers

OBC – Obese children

OC – Overweight children

OM – Overweight mothers

OWOB – Overweight and obese

P – Parents answered the question

Q – Questions

Red text – Studies carried out in Australia

Reg. – Regression

SEM – Structural Equation Modelling

TRA – Theory of Reasoned Action

(+) – Positive association

(-) – Negative association

(?) – Unclear findings or measurement

Table 1: Parent-Related Factors				
Hypothesised effects:	Age category			
	6 to11 years		12 to18 years	
	Significant association	No association	Significant association	No association
Availability of foods in the household				
sweets→children's fats/sugar/junk food consumption	(+) 3-10 y.o., B+G, USA (Gable and Lutz 2000) cross-sectional data (cor.) M+F.			
chips/salty snacks→children's junk food intake	(+) 3-10 y.o., B+G, USA (Gable and Lutz 2000) cross-sectional data (cor.) M+F.			
fruit/veg.→children's fruit/juice/vegetables consumption	(+) 4-6 th grades, B+G, USA (Cullen et al. 2003) cross-sectional data (SEM: parental + child's reports on FJV availability) M+F. (+) 4-6 th grades, B+G, USA (Cullen et al. 2001) cross-sectional (cor.). (+ for G) 3 rd grade, B+G, B/G, USA (Reynolds, Hinton, Shewchuk, and Hickey 1999) cross-sectional data (SEM).	4-6 th grades B, USA (Cullen, et al. 2003) cross-sectional data (SEM: parental + child's reports on FJV availability; model less reliable for B) M+F. For B, 3 rd grade, B+G, B/G, USA (Reynolds, et al. 1999) cross-sectional data (SEM).		
fast foods→children's fast food consumption			(+) 12 y.o., follow up at 17 y. o., B/G, USA, (Bauer, Larson, Nelson, Story, and Neumark-Sztainer 2009) longitudinal data (log. reg.).	
Accessibility →children's fruit/juice/vegetables consumption →fruit and vegetables intake	(+) 4-6 th grades, B+G, G, USA (Cullen, et al. 2003) cross-sectional data (SEM: parental + child's reports on FJV availability; model less reliable for B) M+F. (+) 10-12 y.o., B+G, Norway (Bere and Klepp 2004) cross-sectional data (reg.).			
Food Consumption Modelling				
fruit consumption→ children's fruit consumption	(+) 9-11 y.o., B+G, UK (Gibson, Wardle, and Watts 1998) cross-sectional data (reg.) M.			
fruit and vegetables consumption →children's fruit and veg. consumption	(+ for medium and high Fr. & Veg. availability families) 4 th grade, B+G, USA (Kratt, Reynolds, and Shewchuk 2000) cross-sectional data (multigroup SEM). (+) 10-12 y.o., B+G, Norway (Bere and Klepp 2004) cross-sectional data (reg.).	For low fruit and veg. availability families: 4 th grade, B+G, USA, (Kratt, et al. 2000) cross-sectional data (multigroup SEM).		
fruit/juice/vegetables consumption→children's fruit/juice/ consumption	(+) 4-6 th grades, B+G, USA (Cullen, et al. 2001) cross-sectional data (cor.).			
salt avoidance→ children's energy intake	(-) 3-5 y.o., B+G, USA (Zive et al. 1998) (reg.) (BMI).			
fat avoidance→ children's fat and sodium intake	(-) 3-5 y.o., B+G, USA (Zive, et al. 1998) (reg.) (BMI).			

soft drink consumption→children's soft drink consumption	(+) 8-13 y.o., B+G, USA (Grimm, Harnack, and Story 2004) cross-sectional data (log. reg. adjusted for age and gender).			
general parent's snacks intake→children's snack intake	(+) 9-13 y.o., B+G, UK (Brown and Ogden 2004) cross-sectional data (cor.) (BMI).			
general parental food intake→children's general food intake	(+) 9-13 y.o., B+G, UK (Brown and Ogden 2004) cross-sectional data (cor.) (BMI).		(+) 15 y.o., B+G, Netherlands (Feunekes, de Graaf, Meyboom, and van Staveren 1998), cross-sectional data (cor.) M/F.	
fat intake (% of total energy intake)→children's fat intake	(+) 5 y.o., G, USA (White) (Francis, Hofer, and Birch 2001) cross-sectional data from a longitudinal study (cor.) (BMI) M.			
overall nutrient intake→children's nutrient intake	(+) 3-5 y.o., B+G, USA (Oliveria et al. 1992) longitudinal data, M+F (cor.).			
Parental Controlling and Teaching				
Parents' Nutritional Knowledge				
→ children's nutritional knowledge	(+) 9-11 y.o., B+G, UK (Gibson, et al. 1998) cross-sectional data (cor.) (NK=fat/sugar content) M.			
→children's total energy intake	(-) 9-11 y.o., B+G, UK (Gibson, et al. 1998) cross-sectional data (cor.) M.			
→children's fat intake	(-) 4-5 y.o., B+G, USA (Contento et al. 1993), cross-sectional (ANOVA, k-means cluster analysis) M.			
→children's fibre intake	(+) 9-11 y.o., B+G, UK (Gibson, et al. 1998) cross-sectional data (cor.) M.			
→children's intake of macronutrients		9-11 y.o., B+G, UK (Gibson, et al. 1998) cross-sectional data (cor.) M.		
→children's fruit consumption	(+) 9-11 y.o., B+G, UK (Gibson, et al. 1998) cross-sectional data (cor.+ reg.) M.			
→children's vegetables consumption		9-11 y.o., B+G, UK (Gibson, et al. 1998) cross-sectional data (cor.) M.		
→ children's confectionary consumption		9-11 y.o., B+G, UK (Gibson, et al. 1998) cross-sectional data (cor.) M.		
parents' salt knowledge →children's sodium consumption	(-) 3-5 y.o., B+G, USA (Zive, et al. 1998) (reg.) (BMI).			
→children's dietary adequacy (compliance with food recommendations)	(+) 3,5 y.o., parents filled in the questionnaire, Belgium (Vereecken and Maes 2010) cross-sectional data (MANOVA) M.			
→children's diet	(+) 2-5 y.o., B+G, USA (Variyam, Blaylock, Lin,		(+) 5-17 y.o., B+G, USA (Variyam, et al. 1999) (nutrient	

	Ralston, and Smallwood 1999) (nutrient demand function estimation) M.		demand function estimation) M.	
Parents' Control over Children's Food Intake				
→children's weight	(- for G) 3 rd grade B/G, USA (Robinson 2001) cross-sectional data (reg.) (BMI, triceps skinfold) mostly M.			
→children's energy intake	(-) 3-5 y.o., B+G, USA (Zive, et al. 1998) (reg.) (BMI).			
→children's healthy and unhealthy food intake	(+) 9-13 y.o., B+G, UK (Brown and Ogden 2004) cross-sectional data (cor.) (BMI).			
Encouraging children to eat at mealtimes rather than in response to hunger; encouraging to finish all food given to them→children's ability to regulate food intake	(-) 3-5 y.o., B/G, USA (Johnson and Birch 1994) (cor.) (BMI).			
Restrictions				
→children's interest in and request of restricted foods (food type: not specified)	(+) 5 ±0.12 y.o., B+G, USA (Fisher and Birch 1999a) (experiment 1, ANOVA).			
→children's selection and intake of restricted foods	(+) 3-5 y.o., B+G, USA (Fisher and Birch 1999a) (experiment 2, ANOVA). (+) 4.6-6.4 y.o., G, USA (Fisher and Birch 2000) cross-sectional data from longitudinal study (SEM) M+F (opportunity to choose 10 snacks after lunch with no restriction).	(for B), 3-5 y.o., B/G, USA (Fisher and Birch 1999b) experiment (access to 10 snacks in an unrestricted environment) M+F.		
→eating in absence of hunger	(+) 9 y.o., G, USA (Fisher and Birch 2002) longitudinal data (5, 7, and 9 years) (10 snacks) (BMI) normal weight M (path analysis). (+) 7 y.o., G, USA (Fisher and Birch 2002) longitudinal data(5, 7 years) (10 snacks) (BMI) M+F (log. reg.).			
→intake of restricted foods:	(+ for G), 3-5 y.o., B/G, USA (Fisher and Birch 1999a) experiment (access to 10 snacks in an unrestricted environment) M+F.			
→children's weight	(+) 5-7 y.o., G, USA (Lee, Mitchell, Smiciklas-Wright, and Birch 2001) longitudinal data (cor.) (BMI) (restrictions have been higher for girls with high fat diet in comparison to the low fat diet group).		(+) 10-19 y.o., B+G, USA (Kaur et al. 2006) cross-sectional data (SEM) (BMI) M+F.	
Socio-Demographic Characteristics				
Parents' Education				

→children's weight	(-) 1-5 y.o., B+G, USA (White, Black, & Hispanic) (Dennison, Erb, and Jenkins 2002) cross-sectional data (logit. regression) (odds of being overweight have been higher for children with TV set in their rooms) (BMI). (- for G) 3 rd grade B/G, USA (Robinson 2001) cross-sectional data (cor.) (BMI, triceps skinfold). (-) 4-5 y.o., B+G, Australia (Wake, Hardy, Sawyer, and Carlin 2007), longitudinal data (log. reg.).			
→TV on during meals			(-) 4,5, 6th grades, B+G, USA (Coon, Goldberg, & Rogers, 2001) cross-sectional data.	
→children's TV watching			(-) 1, 5-6 th grades B+G, Australia (Hesket et al., 2007) cross-sectional (regression, the effect was partly mediated by family viewing environment) M.	
→children's healthy eating pattern			(+)14 y.o., B+G, Australia (Ambrosini et al., 2009) cross-sectional (BMI) (cor.) food consumption data from mothers.	
→children's dietary adequacy (compliance with food recommendations)	(+) 3,5 y.o., parents filled in the questionnaire, Belgium (Vereecken and Maes 2010) cross-sectional data (MANOVA) M.			
→mothers' nutritional knowledge →children's nutrients' consumption	(+) 2-17 y.o., B+G, USA (Variyam, et al. 1999) cross-sectional data (econometric estimations in separate equations for nutrient intake and determinants of mothers' nutritional knowledge) M.			
Socio-Economic Status				
→children's TV watching	(-) 5-7 y.o., B+G, Germany (Mueller, Koertringer, Mast, Languix, and Frunch 1999) cross-sectional data (U-test, χ^2 and t-test) (BMI) (measurement of SES has not been reported).			
→children's weight	(-) 6-13 y.o., B/G, B+G, Australia (O'Dea 2003), cross-sectional data (mean comparison). (-) primary school children, B+G, Australia (O'Dea 2008), cross-sectional data (χ^2). (-) 4-5 y.o., B+G, Australia (Wake, et al. 2007), cross-sectional data from a longitudinal		(-) (for G) 12 y.o., Australia (Burke, Beilin, and Dunbar 2001), longitudinal data (BMI) M+F. (-) 13-18 y.o., B/G, B+G, Australia (O'Dea 2003), cross-sectional data (mean comparison).	(for B) 12 y. o., B/G, Australia (Burke, et al. 2001) longitudinal data (BMI) M+F.

	study (SEIFA disadvantage index) (log. reg.).			
→ children's food consumption	→ "junk" food consumption: (-) 4-7 y.o., B+G, UK (Northstone and Emmett 2005) cross-sectional data from a longitudinal dataset. → consumption of fried foods and fizzy drinks: (-) 9-11 y.o., B+G, UK (Kopelman, Roberts, and Adab 2007) cross-sectional data (χ^2).		→ "junk" food consumption: (-) 14 y.o., B+G, Australia (Ambrosini et al. 2009) cross-sectional data (BMI) (cor.) food consumption data from mothers. → fast food consumption: (-) 15 y.o., B/G, USA (Larson et al. 2008), longitudinal data (χ^2).	
Age → children's "junk" food diet	(-) 4-7 y.o., B+G, UK (Northstone and Emmett 2005) cross-sectional data from a longitudinal dataset.			
Families' Income				
→ children's weight	(-) 3-10 y.o., B+G, USA (Gable and Lutz 2000) cross-sectional data (log. reg.) M+F. (-) 4-5 y.o., B+G, Australia (Wake, et al. 2007), longitudinal data (log. reg.).		(- for B) 7-15 y.o. B/G, Australia (New South Wales) (Wang, Patterson, and Hills 2002) cross-sectional data (log. reg.) (BMI).	
→ children's less healthy diet			(-) 14 y.o., B+G, Australia (Ambrosini, et al. 2009) cross-sectional data (BMI) (cor.) food consumption data from mothers.	
Being a Single Parent				
→ TV on during meals			(-) 4,5, 6th grades, B+G, USA (Coon, Goldberg, Rogers, and L. 2001) cross-sectional data.	
→ children's weigh	(-) 3-10 y.o., B+G, USA (Gable and Lutz 2000) cross-sectional data (χ^2) M+F (overlap with lower household income was registered). (-) 6-13 y. o., B+G, Australia (Perth) (Gibson et al. 2007) cross-sectional data (multivariate analysis?) (BMI) M.			
→ healthy eating pattern			(-) 14 y.o., B+G, Australia (Ambrosini, et al. 2009) cross-sectional data (BMI) (cor.) food consumption data from mothers.	
Parents' Weight				
→ children's weight	(+) 0-15 y.o., B+G, Australia (South Australia) (Magarey, Daniels, Boulton, and Cockington 2003) longitudinal study (cor.) M, M+F greater risks. (+) 7-15 y.o., B/G, Australia (New South Wales) (Wang, et al. 2002) cross-sectional data (log. reg.) (BMI). (+) 6-13 y. o., B+G,		(+) 21-29 y.o., B+G, USA (Whitaker, Wright, Pepe, Seidel, and Dietz 1997) longitudinal data: being obese at 1-2 years and having obese parents have increased chances of adult obesity (BMI). (+) 7-15 y.o., B/G, Australia (New South Wales) (Wang, et al. 2002) cross-sectional data (log. reg.) (BMI). (+) 12 y. o., B/G, Australia (Burke, et al. 2001)	

	<p>Australia (Perth) (Gibson, et al. 2007) cross-sectional data (multivariate analysis?) (BMI) M.</p> <p>(+) 5 y.o., G, USA (Francis, et al. 2001) cross-sectional data from longitudinal study (cor.) (BMI) M.</p> <p>(-) 4-5 y.o., B+G, Australia (Wake, et al. 2007), cross-sectional data from a longitudinal study (SEIFA disadvantage index) (log. reg.) →</p>		longitudinal data (BMI) (log. reg.) F/M.	
→children's food consumption		4-5 y. o., B+G, UK (Wardle, Guthrie, Sanderson, Birch, and Plomin 2001) longitudinal data (t-test) M+F (bioelectrical impedance analysis).		
→children's preference for vegetables	(-) 4-5 y. o., B+G, UK (Wardle, et al. 2001) longitudinal data (t-test) M+F (bioelectrical impedance analysis): Lower for children from obese families than from lean families.			
→children's preference for high-fat foods/sedentary activities	(+) 4-5 y. o., B+G, UK (Wardle, et al. 2001) longitudinal data (t-test) M+F (bioelectrical impedance analysis): Higher for children from obese families than from lean families.			
Parents' Attitudes				
Parents' Liking of Foods				
parents' liking of confectionary → children's confectionary consumption	(+) 9-11 y.o., B+G, UK (Gibson, et al. 1998) cross-sectional data (reg.) M.			
parents' liking of food categories → children's food categories liking	(+) 2-3 y.o., B+G, USA (Skinner et al. 1998) cross-sectional data (GLM) M+F.			
Influence of Food Marketing on Parents				
exposure to fast food advertising → parents' attitudes about fast foods and social norms	(+) parents of children between 2 to 12 years, USA (Grier, Mensinger, Huang, Kumanyika, and Nicolas 2007), cross-sectional study (reg.).			
parents' attitudes about fast foods → children's fast food consumption		Parents of children between 2 to 12 years, USA (Grier, et al. 2007), cross-sectional study (reg.), consumption data collected from parents		

parents' social norms about fast foods → children's fast food consumption	(+) parents of children between 2 to 12 years, USA (Grier, et al. 2007), cross-sectional study (reg.).			
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Table 2: Food Marketing				
Hypothesised effects:	Age category			
	6 to 11 years		12 to 18 years	
	Significant association	No association	Significant association	No association
TV watching				
Influence on Cognitive Dimension				
→ unhealthy conceptions about food and the principles of nutrition	(+) 4 th and 5 th Grades, B+G, USA (Signorielli and Lears 1992) cross-sectional data (amount of time on a schoolday) (reg.), data collected from children.			
→ lower understanding of nutritional phraseology	(-) 8-12 y.o., B+G, USA (Wiman and Newman 1989) cross-sectional data (amount of television exposure on Saturday mornings) (cor.).			
→ nutritional knowledge	(-) 8-12 y.o., B+G, USA (Wiman and Newman 1989) cross-sectional data (amount of television exposure on Saturday mornings) (cor.).		(-) 15-16 y.o., B/G, Australia (Gracey, Stanley, Burke, Corti, and Beilin 1996) cross-sectional data (television watching during the week) (cor.).	
Influence on Attitudes				
→ liking of fizzy drinks, chocolate and fast food → perceiving that other children of their age ate junk food often → perceiving junk food to be healthy	(+) 5-6 th Grades, B+G, Australia (Victoria) (Dixon, Scully, Wakefield, White, and Crawford 2007) cross-sectional data (hierarchical reg. controlling for grade, gender, SES, TV watching) (weekend and weekday: < 1 h/d, 1-2 h/d, 3-4 h/d, and > 4 h/d).			
Influence on Behaviour				
Food Consumption				
→ consumption of foods high in fat and sugar			(+) 12-15 y.o., B+G, Australia (Tasmania) (Woodward et al. 1997) cross-sectional (cor. with each food cat.) (average N of advertisements per day) (reg.).	
→ fast food restaurants use			(+) Grades 7-12, weekday TV watching for B/G; weekend TV watching only for G, USA (French, Story, Neumark-Sztainer, Fulkerson, and Hannan 2001) cross-sectional data from a longitudinal study (Eating Among Teens study) (log. reg.). (+) for G only, USA (Larson, et al. 2008) longitudinal data, (Eating Among Teens study) (log. reg.).	
→ consumption of fruit and vegetables	(-) 11.7±0.8 y.o., B+G, USA (Boynton-Jarrett et al. 2003) cross-sectional data (reg.) (BMI). (-) 4 th , 5 th , and 6 th graders, B+G, USA (Coon, et al.		(-) 12-15 y.o. B+G, Australia (Ambrosini, et al. 2009) cross-sectional data (BMI) (cor.) M (h/d: < 1 h, 1-2, 2-3, and >3 h, + video watching) food consumption data from mothers.	

	2001) (breakfast, after-school snack, and supper as a sum up score) (reg.).			
→children's energy intake	(+) 8-16 y.o., B+G, USA (Crespo et al. 2001) cross-sectional data (svymean estimate and PROC RLOGIST) (BMI). (+) 3-5 y.o., B+G, USA (Zive, et al. 1998) (cor.) (BMI) (h/w).			
→poor eating habits	(+) 4 th and 5 th Grades, B+G, B/G, USA (Signorielli and Lears 1992) cross-sectional data (amount of time on a schoolday) (reg.), data collected from children.			
→consumption of commonly advertised foods	(+) 5-10 y.o., B+G, New Zealand (Utter, Scragg, and Schaaf 2006) cross-sectional data (log. reg.) (BMI) (soft drinks, hamburgers, and French fries) (h/d: morning, afternoon, and evening) . (+) 4 th , 5 th , and 6 th graders, B+G, USA (Coon, et al. 2001) (pizzas, snack foods, and soda) (reg.). (+) 4-12 y.o., B+G, the Netherlands (Buijzen, Schuurman, and Bomhof 2008) cross-sectional data (hierarchical reg.) (TV viewing + Nielsen advertising broadcast data) (parents listed branded foods consumed by their children which were coded, summed up, and divided by the number of days of the study; children's favourite channel was reported by a parent; final score calculated from data obtained from a market research company). (+) mean age=11.70 years, B+G, USA (Wiecha et al. 2006), longitudinal sample in 1995 and 1997 (11-item measurement of TV watching from (Gortmaker et al. 1999)) (sugar-sweetened beverages, salty snacks, fried potatoes, sweet snacks, candy, and fast food-type main courses).		(+) 11-14 y.o., B+G, New Zealand (Utter, et al. 2006) cross-sectional data (log. reg.) (BMI) (soft drinks, chocolate sweets, hamburgers, and French fries) (h/d: morning, afternoon, and evening) .	
→ snacking			(+) 11-16 y.o., B/G, Holland (Snoek, van Strien, Janssens, and Engels 2006) cross-sectional data (cor.).	
Food Preferences				
→preferences for less healthy foods	(+) 5-6 th Grades, B+G, Australia (Victoria) (Dixon, et al. 2007) cross-sectional data (hierarchical reg. controlling for grade,	7-12 y.o., B+G, Australia (White and Davis 2006), cross-sectional (cor.) (0-10 h/w,		

	gender, SES, TV watching) (weekend and weekday: < 1 h/d, 1-2 h/d, 3-4 h/d, and > 4 h/d).	10-20 h/w, and 20 and more h/w; measures from Signorielli and Staples (1997); hypothetical choice of 6 pairs of foods (healthy vs. less healthy): 38 (57 %) of the children chose only three or less of the healthy options, and only five (7%) chose all six of healthy options.		
Influence on Weight				
→ children's weight	<p>(+) 6-11 y.o., B+G, USA (Dietz and Gortmaker 1985) cross-sectional data (triceps skinfold) (weighted reg. controlling for prior obesity, region, season, population density, race, SES, "other family variables") (h/d).</p> <p>(+) 5-6 graders, B+G, USA (American Indians) (Bernard, Lavallee, Graydonald, and Delisle 1995) (χ^2 and, t-Test) cross-sectional (BMI) (cor.?) (h/w) .</p> <p>(+) 8-16 y.o., B+G, USA (Andersen, Crespo, Bartlett, Cheskin, and Pratt 1998) cross-sectional data (BMI) (4 or more hours→bigger BIM than less than 2 hours) (GLM) (h/y, children).</p> <p>(+ for G) 8-16 y.o., B+G, USA (Crespo, et al. 2001) cross-sectional data (svymean estimate and PROC RLOGIST) (BMI) (h/d; ≤ 1, 2, 3, 4, and ≥ 5).</p> <p>(+) 1-5 y.o., B+G, USA (White, Black, and Hispanic) (Dennison, et al. 2002) cross-sectional (logit. reg.) (odds of being overweight were higher for children with TV set in their rooms) (BMI) (h/w +5).</p> <p>(+) 3-5 y.o. (original cohort), B+G, USA (Proctor et al. 2003) longitudinal study (those who watched TV the most had the highest increase in BMI over time) (mixed re. models) (BMI, triceps skinfold, and sum of 5 skinfolds) (h/d; P).</p> <p>(+) 7-11 y.o., B+G, Canada (Tremblay and Willms 2003)) cross-</p>	<p>5-10 y.o., B+G, New Zealand (Utter, et al. 2006) cross-sectional (log. reg.) (BMI) (h/Sunday → < 1 h, 1-2 h, and ≥ 2 h).</p> <p>3-4 y.o., B+G, USA (Anglo, Mexican, African Amer.) (DuRant, Baranowski, Johnson, and Thompson 1994) (cor.) longitudinal study (1 year) (observations, minutes/d).</p> <p>1-12 y.o., B+G, USA (Vandewater, Shim, and Caplovitz 2004), cross-sectional data (min/day, two 24-h time-use diaries) (OLS) hierarchical multiple regressions) (BMI).</p>	<p>(+) 12-17 y.o., B+G, USA (Dietz and Gortmaker 1985) cross-sectional data (triceps skinfold) (weighted reg. controlling for prior obesity, region, season, population density, race, SES, "other family variables").</p> <p>(+) 8-9 graders, B+G, USA (American Indians) (Bernard, et al. 1995) cross-sectional (BMI) (cor.?) (h/w).</p> <p>(+) 8-16 y.o., B+G, USA (Andersen, et al. 1998) cross-sectional data (BMI) (4 or more hours→bigger BIM than less than 2 hours).</p> <p>(+ for G) 8-16 y.o., B+G, USA (Crespo, et al. 2001) cross-sectional data (svymean estimate and PROC RLOGIST) (BMI).</p> <p>(+) 14-18 y.o., B/G, USA (Eisenmann, Barte, and Wang 2002) cross-sectional data (ANCOVA and logit. reg.) (BMI) (average school day/h, children).</p> <p>(+) for B+G, White/Hispanic G and White B) 9-12th grades, B/G, B+G, USA (Lowry, Wechsler, Galuska, Fulton, and Kann 2002) cross-sectional (White, Black, and Hispanic) (logit. reg.) (BMI) (average school day → ≤ 2 h, 3-4 h, ≥ 5 h).</p> <p>(+) 12-17 y.o., B+G, USA (Kaur, Choi, Mayo, and Harris 2003) longitude. data from 1993 to 1996 (linear reg. for baseline BMI adjusting for ethnicity) (BMI) (average h/d).</p> <p>(+) 30 y.o., B+G, UK (Viner and Cole 2005) long. data (from 1970 -5, 10, and 30 y.o.) (log. reg. controlling for maternal attitudes towards TV, TV viewing, phys. act. at 10 years, gender, soc.-econ. status in childhood/adulthood, birth weight, parental BMI, and height in childhood) additional hour→ 7% obesity risk (frequency of TV/w: "rarely/never," "sometimes," and</p>	<p>6-7th grades, G, USA (Robinson et al. 1993) longitudinal data (2 years) (cor. and reg.) (BMI, triceps skinfold) (h/d).</p> <p>11-14 y.o., B+G, New Zealand (Utter, et al. 2006) cross-sectional (log. reg.) (BMI).</p> <p>(+) 7-13 y.o., B+G, USA (Zimmerman and Bell 2010) longitudinal study (reg.) → none of the television-viewing variables had significant effects when included without the child's baseline BMI or the potential mediators, although the effect of commercial television viewing in 2002 showed a trend toward significance (BMI, parents).</p>

	<p>sectional (logit. regression controlling for age and gender) (BMI) (h/d → categories: ≤ 2h, 2-3 h, and 3-5 h).</p> <p>(+) 2-6 y.o., B+G, UK (Jackson, Djafarian, Stewart, and Speakman 2009), cross-sectional data (GLM) (hours/day) → Each extra hour of watching TV was associated with an extra 1 kg of body fat (BMI) parents.</p> <p>(+) 3-7- y.o., B+G, USA (Jago, Baranowski, Baranowski, Thompson, and Greaves 2005) (minutes watching TV during a 6-12 hours observation) (repeated measures regression) longitudinal (3 years) → (BMI).</p> <p>(+) 2-12 y.o., B+G, USA (O'Brien et al. 2007) longitudinal study (time watching TV two weekdays and both weekend days in a typical week from parents and children) (log. reg.) → Child-reported TV watching after school was the single factor that most clearly separated the groups, with children watching more TV being significantly more likely to be in the overweight group (MANOVA) (BMI).</p> <p>(+) 0-6 y.o., B+G, USA (Zimmerman and Bell 2010) longitudinal study (reg.) → each hour per day of commercial viewing in 1997 was significantly associated with a 0.11 increase in BMI z scores in 2002, after control for sociodemographic covariates, including mother's BMI (BMI, parents).</p>		“often”).	
Confounding Effects alongside TV Watching				
→ children's physical activity	(-) 3-10 y.o., B+G, USA (Gable and Lutz 2000) cross-sectional data (log. reg.).		(-) 6-7 th grades, G, USA (Robinson, et al. 1993), longitudinal data (2 years) (correlation, weaker association with reg. when controlling for age, gender, BMI, parent's education; non-sig relationship in longitudinal sample).	
			(-) 11-16 y.o., B+G, Holland (Snoek, et al. 2006) cross-sectional (cor.) (scale 1-8: “almost	

			never” – “more than 4 h/d”).	
→sedentary lifestyles			(+ for White B, Hispanic/Black G) 9-12 th grades, B/G, B+G, USA (Lowry, et al. 2002) cross-sectional (White, Black, and Hispanic) (log. reg.) (BMI).	
→ consumption of foods during TV watching	→fast food, chips, sweets, pizza: (+) 5-7 y.o., B+G, Germany (Mueller, et al. 1999) cross-sectional data (U-test, χ^2 and, and t-Test) (BMI) . →children’s soft drink consumption: (+) 8-13 y.o., B+G, USA (Grimm, et al. 2004) cross-sectional data (log. reg. adjusted for age and gender).		→ fruit and vegetables ((-) for B+G, White B/G, Hispanic B) 9-12 th grades, B/G, B+G, USA (Lowry, et al. 2002) cross-sectional (White, Black, and Hispanic) (log. reg.) (BMI). →grains, fruit, vegetables, potatoes, beans, and nuts (-) and →pizza/salty snacks and soda (+) 4,5, 6th grades, B+G, USA (Coon, et al. 2001) cross-sectional data (reg. controlling for child’s age, gender, and race, mother’s edu., N of hours mothers worked per week, 2-parent household, income, N of nights as quick supper).	

Table 3: Peer-Related Factors

Hypothesised effects:	Age category			
	6 to 11 years		12 to 18 years	
	Significant association	No association	Significant association	No association
Observational Modelling				
<i>Experiments</i>				
→children’s food choice	3-4 y.o. and 4-5 y.o., B+G, USA (Birch 1980): children showed a shift from choosing their preferred food on day 1 to choosing their nonpreferred food by day 4; smaller children have been more influenced than older).			
<i>Cross-Sectional Surveys</i>				
soft drinks consumption→child’s soft drink consumption	(+) 8-13 y.o., B+G, USA (Grimm, et al. 2004) cross-sectional data (log. reg. adjusted for age and gender).			
→resemblance in food intake			→spirits, low-fat cheese, fried sausages, French fries, beer, and minced meat: (+) 15 y.o., B+G (Feunekes, et al. 1998) (cor.) → chips and meat pies: (+) 12-15 y.o., B+G, Australia (Williams et al. 1993), cross-sectional data (cor.)	
peer normative beliefs	→fruit/juice/vegetables consumption: (-) 4-6 th grades, B+G, USA (Cullen, et al. 2001) cross-sectional data (cor.)→although peers thought that consuming fruit was good, children’ consumption of fruit was less frequent.		→intake of foods saturated in fats: (+) 12.2 ±2.3 y.o., B+G, Costa Rica (Monge-Rojas, Nunez, Garita, and Chen-Mok 2002) cross-sectional data (measure: peer eating practices, selection of food by peers, food beliefs transmitted by peers, type of food consumed by peers, places where peers consume food, approval by peers of new eating and physical activity habits, and adaptation to eating and physical activity	

			pattern of peers, analysed with EFA, inference method not clear).	
peers' care about eating healthy food- ->fast food consumption:			(-) 12 y.o., follow up at 17 y. o., for B only, USA, (Bauer, et al. 2009) longitudinal data (log. reg.): one standard deviation increase in the adolescents' report at age 12 that their friends cared about eating healthy food, was related to 26% decrease in odds of being in a higher fast food intake category at age 17.	

Table 4: Child-Related Factors

Hypothesised effects:	Age category			
	6 to11 years		12 to18 years	
	Significant association	No association	Significant association	No association
Food's Characteristics				
Importance of taste		5-12 y.o. B+G, Australia (Jones and Kervin 2010): significant relationship between the stated importance of taste, fun, or healthy on children's choice of healthy or unhealthy foods.	Adolescents, B+G, USA (Baxter et al. 1999): taste was ranked highest in terms of importance for vending snack choice.	
Nutritional knowledge				
→ intake of macronutrients		9-11 y.o., B+G, UK (Gibson, et al. 1998) cross-sectional data (cor.).		
→fruit/vegetables./ fruit juice consumption		9-11 y.o., B+G, UK (Gibson, et al. 1998) cross-sectional data (cor.).		
→confectionary consumption		9-11 y.o., B+G, UK (Gibson, et al. 1998) cross-sectional data (cor.).		
→ sodium intake	(-) 3-5 y.o., B+G, USA (Zive, et al. 1998) (reg.) (BMI).			
→ number of consumed foods			(+) 15-16 y.o. Australia (Gracey, et al. 1996) (reg.).	
→dissonance between adolescents' knowledge about and their food consumption			(-) 10-18 .y.o., Iran (Mirmiran, Azadbakht, and Azizi 2007): "Eighty-five per cent of adolescents knew that drinking too many soft beverages resulted in overweight or obesity, but only 4.5% of them did not drink soft beverages. Although 89% of adolescents knew that crisps and corn balls	

			are not healthy snacks, 45% of them used such snacks during their break time” (frequency analysis). (-) 11-18 y.o., B+G, Balearic Islands (Pich, Ballester, Thomàs, Canals, and Tur 2010): foods considered unhealthy were still consumed frequently (χ^2).	
→ children’s weight	(-) 8-10 y.o., B+G, Brazil (Triches and Giugliani 2005) (BMI) cross-sectional data (log. reg.): children with less healthy eating options and nutritional knowledge were 5 times more likely to be obese (claimed interaction term).	8-15 y.o., B+G, Germany (Reinehr, Kersting, Chahda, and Andler 2003) (cor.), sig. cor. with children’s age and type of school).		
Socio-Demographic Characteristics				
Gender				
→ healthy eating			14 y.o., G (+) in comparison to B, Australia (Ambrosini, et al. 2009) cross-sectional data (BMI) (t-test) food consumption data from mothers.	
→ fast food consumption			15 y.o. B (+) in comparison to G, USA, (Larson, et al. 2008), longitudinal data (χ^2).	
→ knowledge on healthy foods			(+) for G in comparison to B, 9-11 y.o., UK (Kopelman, et al. 2007) cross-sectional data (χ^2).	
→ nutritional knowledge			(+) for G in comparison to B, 10-18 y.o., Iran (Mirmiran, et al. 2007) (χ^2).	
→ liking of fruit and vegetables preferences			4-16 y.o., G (+) in comparison to B, UK (Cooke and Wardle 2005) (ANOVA).	
Age				
→ being health conscious			9-17 y.o., G, UK (Warwick, McIlveen, and Strugnell 1999): older girls in comparison to younger ones (χ^2).	
→ consumption of fruit and vegetables	9-17 y.o., G, UK (Warwick, et al. 1999): younger children have also reported consuming more fruit and fewer soft drinks in comparison to their older counterparts (χ^2).			

Appendix 5: Experimental Research on Influence of Food Marketing (1970-2010)

Notes:

Red text – Studies carried out in Australia

Attitudinal dimension
<i>Taste rating (N=3)</i>
<p>Authors: (Robinson, Borzekowski, Matheson, and Kraemer 2007) Experiment Age: 3 to 5 years Country: USA Measure: Children tasted the food with McDonalds brand (actual food from the McDonalds) and with no brands. “Take 1 bite [sip] of <i>this</i> food [drink]. Tell me if they taste the same, or point to the food [drink] that tastes the <i>best</i> to you.” Results: Children rated foods with McDonalds brand as better tasting.</p> <p>Authors: (Hite and Hite 1995) Experiment Age: 2 to 6 years Country: USA Measure: Children tasted two foods (cereal and peanut butter). Those samples varied with respect to product composition (store product versus national product) and with respect to brand name and associated packaging (store brand versus nationally advertised brand). Children were asked to rate the taste (‘Good’ or ‘bad’? If ‘good,’ ‘really good’ or ‘kind of good?’ If ‘bad,’ ‘not too bad,’ or ‘really bad?’) and were asked which one they would like most for breakfast. Results: The nationally advertised and, thus, more familiar brand of peanut butter and cereal produced higher taste rating in comparison to a less familiar brand of similar foods and was preferred more often.</p> <p>Authors: (Dixon, et al. 2007) Experiment Age: 5th and 6th Grades Country: Australia Measure: Children were exposed to a half an hour cartoon with 4 stimuli: 1) no explicit references to food; 2) junk food only; 3) junk food and healthy foods; and 4) healthy food only. Pre- and post advertising exposure scores were compared. Results: Children exposed to junk food advertisements did not show enhanced attitudes (boring/fun, yucky/yummy, and unfamiliar/familiar) or intentions favouring unhealthy foods compared to children not exposed to junk food advertisements.</p>
Behavioural dimension
<i>Food consumption (N=9)</i>
<p>Authors: (Resnik and Stern 1977) Experiment Age: 6 to 8 years Country: USA Exposure: Children’s program with an advertisement for potato chips and original advertisements used for the program. Measure: Choosing either between the advertised brand and non-advertised brand of chips as a reward for participation. Results: No difference between the selection of advertised or non-advertised product (both were equally selected).</p> <p>Authors: (Galst 1980) Experiment Age: 3.5 to 6.75 years Country: USA Exposure: Two-week project with 1.5 min. in a cartoon every day Measure: Children were asked to select their daily snacks from the assortment of different snacks. Results: Children’s selection of their daily snacks with added sugar was reduced by the exposure to advertisements with pro-nutritional messages accompanied by positive comments by an adult co-observer (measurement of snacks was collected over 2 weeks) (lunchtime snack).</p> <p>Authors: (Heslop and Ryans 1980) Experiment Age: 4 to 8 years Country: USA Exposure: 22-min cartoon with 3 advertisement breaks. Measure: An opportunity to select the product as a reward and preference for the cereal (“the children were shown pictures of the package labels and asked to state which they preferred”) Results: No effect of manipulations on behaviour.</p> <p>Authors: (Stoneman and Brody 1981) Experiment Age: 4th graders Country: USA Exposure: 4 conditions: 1) television control (4-minute educational segment with no advertisement) 2) television advertisements (4 salty snacks, 4 minutes) 3) television advertisements with similar peer-modelled food preferences 4) television advertisements with dissimilar peer-modelled food preferences.</p>

Measure: Children have been shown slides with 5 advertised and 5 non-advertised salty snacks and have been asked to point to their “favourite” food.
Results: Children in the TV/peer-similar condition preferred salty snacks more often than the children in the TV/peer-dissimilar condition.

Authors: (Cantor 1981)

Experiment:

Age: 3 to 9 years

Country: USA

Exposure: Public health announcement on nutrition with and without humorous elements.

Measure: Children's food consumption (lunchtime) was recorded after the exposure (morning). Two options for dessert: 1) fruit (orange, banana, watermelon, apple) and 2) sweets (cookies, brownies, cheesecake, and gingerbread).

Results: Not clear.

Authors: (Gorn and Goldberg 1982)

Experiment

Age: 5 to 6 and 7 to 8 years

Country: Canada

Exposure: 14-days of exposure to 30 minutes of a cartoon with 4 different stimuli (candy advertisement, no advertisements, fruit advertisements, and public service announcement) in a camp.

Measure: Food selection and consumption (branded and non-branded).

Results: Children who viewed advertisements for candy/fruit juice picked more candy and less fruit. Fruit and no message condition were associated with more fruit choices (snacks made available by the researcher after the experiment).

Authors: (Roedder, Sternthal, and Calder 1983)

Experiment

Age: 9 to 13 years

Country: USA

Exposure: Children were shown an advertisement for a new product (favourable vs. unfavourable version).

Measure: Choosing a prize for their participation from the four listed options, where one of the options was the advertised fictitious food product (M&M chocolate-coated candy, chocolate chip cookies, and Choco-nuts).

Results: Effects only for the 4th graders, not the 8th graders.

Authors: (Halford, Boyland, Hughes, Oliveira, and Dovey 2007)

Experiment

Age: 5 to 7 years

Country: UK

Exposure: a cartoon, 10 food-related and 10 food non-related advertisements

Measure: Selection and consumption of foods (junk foods and grapes)

Results: Energy intake was higher after exposure to food advertisements. Positive correlation between BMI and number of food advertisements recognized; no effects of weight status; No branded food were offered to children after the food ads exposure (measures: selection and consumption) (snacks made available by the researcher after the experiment).

Authors: (Halford, Boyland, Hughes, Oliveira, et al. 2007)

Experiment

Age: 9-11-years old

Country: UK

Exposure: 5 min exposure (10 food-related and 10 food non-related advertisements) followed by a cartoon (10 min)

Measure: Selection and consumption of foods (Quaker Snack-a-Jacks (cheese flavour); Haribo jelly sweets; Cadbury's chocolate buttons; Walker's potato crisps (ready salted flavour); and fruit (green seedless grapes) (max N=5)

Results: Energy intake was higher after exposure to food advertisements; obese children consumed more food than non-obese and overweight; no difference in food consumption in control toy advertisement group (snacks made available by the researcher after the experiment).

Food preferences (N=4)

Authors:(Goldberg, Gorn, and Gibson 1978)

Experiment:

Age: 1st graders

Country: USA

Measure 1: “Parents are away. Here are six snacks-you can eat three of them [...] tell me which three you would want (as snacks) by putting a big X on your page through the three snacks you would want most.”

Results: Children who viewed advertisements tended to select more sugared foods than those in the control group who did not see any messages.

Measure 2: Selection of foods for breakfast: three more nutritious foods (milk, oranges, eggs and toast) and three less nutritious (Sugar Crisps, Fruity Pebbles (cereal), and Grape Kool-Aid). Once completed, the children were provided with a second set of breakfast choices consisting of the same more nutritious alternatives (milk, oranges, eggs and toast) and Cap'n Crunch, Franken-berries, and Cherry Kool-Aid. Two of the four cereals were among the nine advertised products in the commercial conditions and two were not.”

Results: Children who viewed the advertisements tended to select more sugared foods than those in the control group who saw no messages. There were no significant effects for level of exposure (4.5 versus 9 minutes).

Authors: (Roedder, et al. 1983)

Experiment

Age: 9 to 13 years

Country: USA

Exposure: Children were shown an advertisement for a new product (favourable vs. unfavourable version)

Measure: “How much would you like Choco-nuts?” and “How much would you like the taste of Choco-nuts?”

Results: Fourth graders in the favourable group preferred the fictitious product than those who were exposed to the unfavourable condition.

There was no effect of treatment in the eighth graders.

Authors: (Kaufman and Sandman 1984)

Experiment

Age: 5 to 10 years

Country: USA

Exposure: 15-minute cartoon interrupted by 4 advertisements - pairs of sugared foods advertisements (with or without disclaimers added), of filler advertisement, and/or of counter-advertisements (too much sugar is bad for your teeth (adult voice)).

Measure: children's self-reported food preference measured 3 days before the experiment and after the exposure, "What snacks and treats are your favourite? Which ones do you really like the best? Which ones taste yummiest to you? Circle the one in the box that is your favourite."

Results: Children who saw advertisements for sugared food, made less healthy options in the post-test. Children who saw the counter-argument made the most healthful options.

Authors: (Borzekowski and Robinson 2001)

Experiment

Age: 2 to 6 years

Country: USA

Exposure: 28 mins (control: 2 animate shorts of children's top-rated program + educational elements on sea creatures; exposure -/- plus 2 segments of commercials for products frequently advertised on children's television: food and non-food related).

Measure: "Look at the picture and then tell me or point to the picture of the thing that you would want more."

Results: Children exposed to a tape with advertisements were more likely to select advertised product in comparison to children who watched a tape without any advertisements.

Health dimension

Weight effects (N=5)

Authors: (Halford, Gillespie, Brown, Pontin, and Dovey 2004)

Experiment

Age: 9 to 11 years

Country: UK

Exposure: Three videos: a cartoon, a collection of food advertisements, and collection of non-food advertisements.

Measure: post-experimental recognition of 16 advertisements, 8 of which were in the cartoon food advertisements.

Results: Obese and overweight children recognised more food advertisements than lean children; 2) obese and overweight groups ate significantly more than the healthy-weight group; 3) the number of TV food advertisement recognised correlated positively with the amount of food eaten (by weight) after exposure; 4) children ate more of both sweet foods (high and low in fat) and of the high-fat savoury food after exposure to the food advertisements; 5) after the non-food advertisements, the overweight children ate more high-fat and low-fat sweet foods and high-fat savoury food than the healthy-weight children and the obese children ate more of these food items than did either overweight and healthy weight children.

Authors: (Halford, Boyland, Hughes, Oliveira, et al. 2007)

Experiment

Age: 5 to 7 years

Country: UK

Exposure: Three videos were used: a cartoon, a collection of non-food-related advertisements, and a collection of food-related advertisements.

Measure: A chance to select foods from an assortment (lowfat savoury (snack-a-jacks, cheese flavour), low-fat sweet (haribo jelly sweets), high-fat sweet (chocolate buttons), high-fat savoury (walker's ready salted potato crisps), and fruit (green seedless grapes)).

Results: No effect of weight on food selection.

Authors: (Halford et al. 2007)

Experiment

Age: 9 to 11 years

Country: UK

Exposure: Three videos were used: a cartoon, a collection of non-food-related advertisements, and a collection of food-related advertisements.

Measure: A chance to select foods from an assortment (lowfat savoury (snack-a-jacks, cheese flavour), low-fat sweet (haribo jelly sweets), high-fat sweet (chocolate buttons), high-fat savoury (walker's ready salted potato crisps), and fruit (green seedless grapes)).

Results: The total energy intake was significantly higher after exposure to food advertisements than after the control (toy) advertisement. In the exposure to food advertisements group, obese children consumed more food than normal weight and overweight children.

Authors: (Halford et al. 2008)

Experiment

Age: 11 to 13 years

Country: UK

Exposure: 2 videos (10 toys advertisements vs. 10 food advertisements followed by a cartoon).

Measure: food preferences (questionnaire) and recall of advertisements

Results: Control condition: normal weight children showed a preference for unbranded over branded carbohydrate. Overweight and obese children showed greater preference for branded high fat items over unbranded high fat items; they selected significantly more total branded items than the normal weight children in the control condition.

Appendix 6: Information Sheet for Parents (Focus Groups with Children)



INFORMATION SHEET (PARENTS)

Project title: Children's Food Consumer Socialisation: An Evaluation of the Impact of Marketing Communication, Parents, and Peers on Children Food Choice, Purchase Requests, and Obesity

Introduction

Let me introduce myself. My name is Liudmila Tarabashkina – I am a PhD student from Adelaide University studying food marketing to children. The purpose of this focus group study is to examine parental perceptions of children's food brand selection. Your children who will participate in a separate focus group will be asked to discuss food products (brands) they have consumed during the last 24 hours for breakfast and their favourite foods.

Conduct of the discussion

The discussion will approximately take one hour. The discussion will be audiotaped for the transcription purposes, but all information will be kept confidential.

Research outcomes

The information gathered from this discussion will be used to develop a survey questionnaire to assess the impact of food marketing/advertising, parents, and peers on children's brand reference and purchase requests.

Please note:

1. Your child may withdraw from the discussion at any time.
2. Information that your children provide to the researcher will be kept confidential and no other person(s), except for those involved in a research group, will have access to the information you provide.
3. You can address your complaints or any complaints raised by your child to the following persons (also see the attached complaint form):

Prof. Pascale Quester
Principal supervisor
08 830 33986
execdean.professions@adelaide.edu.au

Dr. Cullen Habel
Associate supervisor
08 830 34763
cullen.habel@adelaide.edu.au

Ms Liudmila Tarabashkina
The University of Adelaide Business School
PhD candidate
Phone: **0831 30853**
Email: liudmila.tarabashkina@adelaide.edu.au

Appendix 7: Information Sheet for Children (Focus Groups)



INFORMATION SHEET (CHILDREN)

Purpose of the study

The purpose of this study is to talk about your favourite food.

Conduct of the discussion

The discussion will be audiotaped, but all information will be kept confidential. So, there is no need to know your names. The discussion will approximately take about one hour. There are no right and wrong answers and we will find very helpful anything you would like to tell us.

Please note:

1. You may withdraw from the discussion at any time.
2. Information that you provide to the researcher will be kept confidential and no other person(s), except for those involved in the research group, will have access to the information you provide.
3. If you feel like because of your participation in the discussion, you can withdraw from the discussion at any time and tell your parents about the complaints.

Appendix 8: Parental/Guardian Consent Form for Focus Groups with Children

THE UNIVERSITY OF ADELAIDE HUMAN RESEARCH ETHICS COMMITTEE

STANDARD CONSENT FORM
For Research to be Undertaken on a Child, the Mentally Ill, and those
in Dependant Relationships or Comparable Situations
To be Completed by Parent or Guardian


1.	I,(please print name) consent for my child.....to take part in the research project entitled: Children's Food Consumer Socialisation: An Evaluation of the Impact of Marketing Communication on Children's Food Choice, Purchase Requests, and Obesity.
2.	I acknowledge that I have read the "Information Sheet (Children)" provided to me by the research team.
3.	I acknowledge that the Information Sheet entitled Focus Group Discussion (Children) was explained to my child in my presence by the research worker and that my child was given a chance to ask any questions before his/her participation in the focus group study.
4.	I acknowledge that the focus group with parents and children will be carried out separately.
3.	My consent for my child to participate is given freely.
4.	Although I understand that the purpose of this research project is to examine food consumption and brand preferences among children, it has also been explained to me that the involvement of my child in the project may not be of any benefit to him/her.
5.	I have been informed that, while information gained during the study may be published, my child will not be identified and that none of the personal data will be divulged.
7.	I understand that my child is free to withdraw from the project at any time.
8.	I am aware that the focus group discussion in which my child will participate will be audiotaped.
9.	I am aware that I should retain a copy of the Consent Form which will be signed by my child before the focus group discussion, this Consent Form, and the "Information Sheet (Children)" provided to me and my child one week in advance by the research team.
 (signature) (date)


WITNESS
I have described to(name of subject) the nature of the research to be carried out. In my opinion she/he understood the explanation.
Status in Project:
Name:
..... (signature) (date)


Appendix 9: Children's Consent Form for Focus Groups with Children


THE UNIVERSITY OF ADELAIDE HUMAN RESEARCH ETHICS COMMITTEE



STANDARD CONSENT FORM FOR PEOPLE WHO ARE PARTICIPANTS IN A RESEARCH PROJECT (CHILDREN)

1. I,(please print name)
agree to participate in the discussion about: 
my favourite food.

2. I was explained the goal of the project and the questions that will be asked
during the discussion. 

3. I agree to being audiotaped. 

4. My consent is given freely. 

5. I can withdraw from the discussion at any time.  

.....
(signature) (date)

WITNESS

I have described to(name of subject)
the nature of the research to be carried out. In my opinion she/he understood the explanation.

Status in Project:

Name:

.....
(signature) (date)

Appendix 10: Focus Groups Interview Guide: Younger Children (10 to 11 years)

MODERATOR GUIDE FOR FOCUS GROUP (CHILDREN)

Warm-up: Hello, my name is _____. I am here to talk with you about food you eat and food you like. Here are pictures of different foods. Could you have a look at them and select foods you have eaten yesterday for breakfast? In case your breakfast option is not on the picture, just name it then. There are no right or wrong answers and we would all like to hear what you think.

1. Now, I see that you have selected different foods. Warm-up questions
What are they? Was it your favourite option?
What do you regularly like to have for your breakfast?
Do you have your favourite option often?
2. Are there any foods on the picture that are your favourite?
How often do you have these foods? Favourite foods
3. The foods that you have circled, your favourite ones, do you think they are good for you? Perceptions about their healthiness (application of nutritional knowledge)
4. What do you think makes food good for you? Nutritional knowledge
5. Now let's talk about your parents. What do you parents think makes food good? Perceptions about what their parents think makes food good
6. Do you parents openly say treats are not healthy? A follow-up question
7. Do you parents talk about food with you?
Do you ask your parents about food when you have a question? Do you talk about food with you parents? I mean the instance when you initiate the conversation. Were there any instances when you had a question about food and asked your parents about it? Parent-child communication about food and nutrition
8. What foods do you like as your snacks for you lunchbox for the school? A transition question
9. Let's now talk about television. Are there any food ads that you like?
What was in this ad? Why do you like this ad? Probing for advertising literacy
10. Let's now talk about your friends. When you get together with your friends what food do you eat?
Do you talk about food with your friends?
Do you talk with your friends about food advertisements? Child-peer communication about food and peer influence
11. Moderator showing a card with a food pyramid to children: Do you know what that is?
Where have you seen it? Let's now go
back to the pictures of food that you have. I will show you images and will tell me which food this person eats. A card with a "skinny" person is shown: What food do you think he eats? Moderator: What about this one? A card with a "fat" person is shown. Nutritional knowledge
12. There was something interesting which you have mentioned before. It was "junk" food. What is "junk" food for you? Do your parents talk with you about "junk" food?
Where did you hear about "junk" food?
How do you know which food is "junk"?
Did you try to make your parents explain what "junk" stands for? A follow-up question based on the discussion

Appendix 11: Focus Groups Interview Guide: Older Children (12 to 13 years)

MODERATOR GUIDE FOR FOCUS GROUP (CHILDREN)

Warm-up: Hello, my name is _____. I am here to talk with you about food you eat and food you like. There are no right or wrong answers and we would all like to hear what you think.

1. What did you have today for your lunch? A warm-up question

2. Was it your favourite food?
Why do you like these foods? What foods do you like then in general? Why do you like these foods? Favourite foods
reasons for liking

3. Do you think these foods that you like are good for you? Application of
nutritional knowledge

4. Where did you get the knowledge about labelling?
It is from school, from you parent, or your friends? A follow-up question
based on the discussion

5. What do you think make food good for you?
In overall, would you say that the food that you eat is good for you? Nutritional knowledge

6. What food do you think is popular with teenagers?
Do children have these “popular” foods in their lunchbox or they have them outside the school time when you get together with your friends? Many young people like KFC and McDonalds or other fast foods. Why do you think they like these foods? Probing for foods
popular with children,
food acceptability

7. Do your parents know what you buy from the school canteen? A transition question

8. What was the recent food ad that you remember seeing?
Where have you seen these ads?
Where else have you seen food ads apart from the TV?
Has there been any instance when you have seen the advertisement and then tried the food afterwards?” Do children often talk about foods? Probing for
advertising literacy

9. What foods do your friends like?
What foods do you eat when you get together or go out with your friends? Child-peer
communication about
food and peer influence

10. Do you think it is a good idea when parents talk with their children about foods?
When you have a question about food, do you ask your parents?
When was the last time you talked about food with your parents? I mean the instance when they tried to explain nutrition to you. Parent-child
communication about
food and nutrition

11. What do your parents think makes food good?
Have your parents used any rules? For example, they would say, “You cannot eat this today” or “You can have this tomorrow”? Perceptions of what
their parents think
makes food good

12. Where does your knowledge about food come from? Sources of knowledge

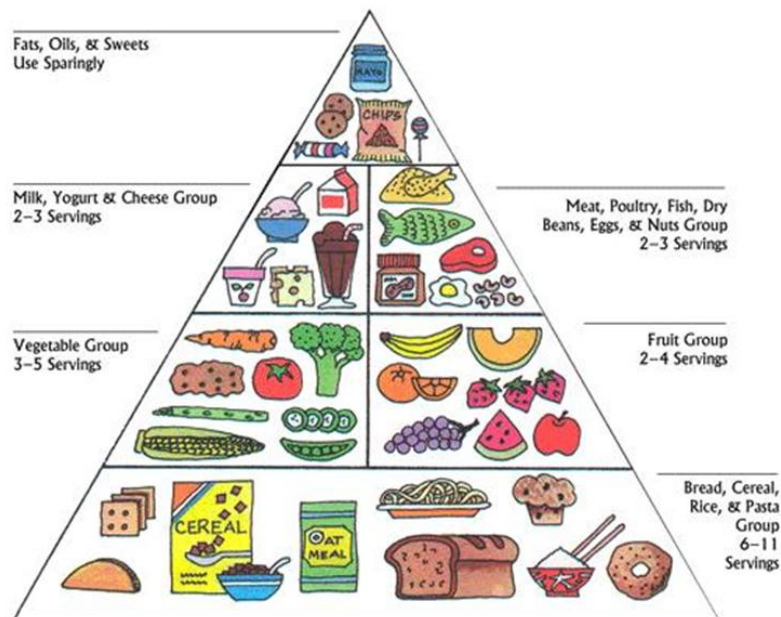
13. When you were smaller did you like other foods? Perceived changes in diet

Appendix 12: Additional Material for Focus Groups with Younger Children

A) Handouts



B) Food Pyramid



C) Silhouette Cards

Lean person



Obese person



Appendix 13: Verbatim Focus Groups' Transcripts

A) Focus Group 1: Younger Children

Participants' identification numbers (N=6):

F1 – female 1
F2 – female 2
F3 – female 3
F4 – female 4
M1 – male 1
M2 – male 2

Moderator: Please have a look at the images of food in front of you and tell us which of this you had for breakfast yesterday. In case your breakfast option is not on the picture, just name it then.

- I had Weet Bix (F1).
- Cornflakes (M2).
- Pancakes with chocolate and lemon (F3).
- Rice Bubbles (F4).
- Weet Bix (M1).
- I had fruit: a banana and an apple (F4).

Moderator: Was it your favourite food?

All responded “no.”

Moderator: Was it your typical breakfast option?

All responded “no.”

Moderator: So, what do you regularly like to have for your breakfast?

- I'd like to have scrambled eggs (M1).
- Bread with butter (F3).
- Eggs... lolly pops...fruit Loops (M2).
- Pancakes (F4).
- Fruit Loops. I love Fruit Loops (F1).
- Pancakes (F2).

Moderator: Do you have your favourite option often?

- Sometimes (F1).
- Most Sundays (M1).
- Saturdays (F3).
- Normally on weekends (F2).

Moderator: Why weekends?

- Because you might go silly during school (F2).
- You've got longer time to cook it (M2).

Moderator: Are there any food on the picture that are your favourite? (Circle them)

- Chocolate chip cookies, chocolate cake, chocolate muffin, and Fruit Loops (F3).
- Subway, KFC, and McDonalds (M1).
- Coke, ice cream, and bacon and eggs (F1).
- Chips, KFC, pancakes, grapes, and chocolate chip cookies (F2).
- Coke, ice cream, lolly pops, and smarties (F4).
- Coke, Subway, and ice cream (M2).

Moderator: How often do you have these foods?

- Not that often (F1).
- Not often (M1).
- Not often (F3).
- Not often (M2).

Moderator: Why so?

- My mum does not like spending that much (F1).
- My mother does not like my brother and I misbehaving (F2) → Moderator: Could you explain that? → We would get sugar rush and go crazy (F2).
- Dad does not like us spending much money. He says it won't last very long (F4).
- Mum does not want me getting to fat (M1).
- My parents don't like me spending too much money (F3).

Moderator: The foods that you have circled, your favourite ones, do you think they are good for you?

Altogether "no."

An additional comment:

- Some of them...the grapes, apples, banana, kiwi, and the vegetables (F2).

Moderator: What do you think makes food good for you?

- Fruit (M2).
- Vegetables, no sugar, no gelatine (F1).
- No sugar...not much fat (F2).
- Low GI (F3).
- Low carbohydrates (M1).

Moderator: Let's now talk about television. Are there any food ads that you like?

- "Ice box" (M2). → Moderator: What is happening in it? Why do you like it? → They just taste nice (M2). Moderator: Have you tried this food after the advertisement? → No (M2) → Moderator: Did you try this food in general? → Yes (M2).
- I like "Corn Chips" (F4) → Moderator: Why do you like it? → They just taste nice (F4).
- "Chocolate ad" (F2) [note: several more agree] → Moderator: What is happening there? → The cows dance...it is funny (F2 and F4).
- I like cheese. Coon's cheese (M1) → Moderator: Why do you like it? → Tastes nice (M1).
- I like the chocolate ad. The chocolate is melting and it is moving around (F3) [note: all start discussing it, how chocolate moves].

Moderator: On the top of your head, how many food ads can you recall?

Altogether, "A lot."

- 10 (F4).
- 10 (M2)
- Mostly McDonalds ads (M1) [note: all agree].
- Sweet ads (F1).

Recalled brands: Cadbury, Subway, Kelloggs, and Weet Bix, Coke.

Moderator: What food do you eat when you get together in your family?

- On Christmas three courses. We have prawns, pasta, ice cream (F1).
- Same like hers, fish...berries (F2).
- Normally have chicken, potatoes, vegetables and grandma makes pudding. I don't like pudding, doesn't taste nice. I just have ice cream...like ice cream (F4).
- M2: same as F4 [children from the same family].
- Rice with vegetables, roasted chicken or roasted fish, and fruit like a banana or apple (F3).

- Chicken and chips or something like that (M1).

Moderator: When you get together do you ask you parents for specific foods or your parents cook for you?

- We normally come from school and there is already something cooked (F4).
- It is already cooked (M1).
- I help cook (F3).
- My dad cooks every night...like noodles...we can't be bother to cook anything else (F1).
- After my swimming my dad cooks pasta or something like that (M1).

Moderator: What happens if you don't like the food?

- Eat it (F1).
- I say I am full (F4).
- I eat a little bit and say I am full (M2).
- Eat the tasty parts only (F2).
- I find an alternative. I go to the pantry and look for chips to eat with the rice (F3).

Moderator: Do you object to the foods you don't like?

All, "No."

Moderator: Let's go back to the food collage. Which food you don't like?

- I don't like Coke (M1) → Moderator: Why? → I don't like the taste....I don't like Brussels sprouts...onion (M1).
- I don't like eggs...it tastes disgusting and weird...don't like kiwi...pumpkin is disgusting... Brussels sprouts...onions...spinach (F4).
- I don't like zucchini. I like it with pasta, but not by itself...tuna (F2).
- I don't like tomato...capsicum... → Moderator: why? → Too crunchy (M1).
- I don't like eggplant...broccoli... → Moderator: why? → It tastes like trees (F1).

Moderator: Now let's talk about your parents. What do you parents think makes food good?

- My parents think that in order to eat healthy you need to eat in small amounts. Eat porridge instead of rice. And more vegetables, using less oil (F3).
- They think it is good to have a fruit in my lunchbox everyday at school...fruit is just healthy because it hasn't got no artificial colours and flavours (M1).
- After school I have a biscuit and a fruit (F1) → Moderator: Having a fruit makes it healthy? → Yes (F1).
- We usually have milk and biscuits after school and then we have a bowl of fruit that we share. And we sometimes have one or two lolly pops (F2).
- My dad doesn't let me have treats much. He fills me up with fruit (F4).

Moderator: Do you parents openly say treats are not good?

- No, they don't really say that (F4).
- Not really...My mum usually makes us eat one piece of fruit, then we have a dessert. My dad is the same, but after we had a dessert, more fruit (M2).
- When I ask mum for chips she is like, "No, you can't have them, you've already had dinner" (F1).
- My parents say lollies are not healthy...My dad says are you full. Then, you can have something for dessert... My dad annoys me – he fills me up on fruit so that I don't have any dessert (F2).
- My parents say if I don't finish my tea, I won't get any dessert (M1).

Moderator: Do you parents talk about food with you?

- No, couple of months ago they started to. They have put me and my brother on a diet when we can't have any sweets. Not a diet, just to see how it works. So, we didn't keep going high and low on sugar crushes. Mum thought it was changing our behaviour. We have stopped. At school we always ate sweets. With less sweet behaviour started getting less annoying (F2).
- My brother did go on a diet with no lollies (F4).
- My parents told me to eat less meat. I eat a lot of meat (F3).
- My parents tell me to eat more meat...My parents say meat makes me strong (M1).
- My mother does not want us to have meat every night. Dad likes us to have it, but mum doesn't (F1).

Moderator: Do you ask your parents about food when you have a question? Do you talk about food with you parents? I mean the instance when you initiate the conversation.

All, "No."

That makes them want to give you more fruit (F4).

Moderator: Were there any instances when you had a question about food and asked your parents about it?

All, "No."

- I only ask, "What's for dinner?" (M1).
- I ask if I can have lollies or, "What's for dinner?" That's all I ask (F2).

Moderator: Why is it like that? It is because you are not interested in food or you just like what your parents prepare for you?

- I like what my dad prepares (F1).

Moderator: What foods do you like as your snacks for you lunchbox for the school?

- Fruit (F2).
- My mum packs a piece of fruit nothing else. My dad packs a piece of fruit and then something sweet... like lollies...and chips (F1).
- I usually have a little chocolate bar and chips and fruit...My dad puts the items in my lunchbox (M2).
- Usually I have fruit and some kind of chocolate, or cookie (F3).
- I usually get more lollies from my than from my dad. I usually get a donut and chips, and then a bar (M1).
- Mum usually packs chips, some fruit (F4).

Moderator: Do you like the foods in your lunch box?

Two children (F), "Yes."

- Sometimes I do, sometimes I don't like my sandwich. I throw it in a bin (F1).
- Sometimes my dad makes my random sandwiches. Like one time he made me a tuna sandwich and it went soggy. The paper went all soggy. So, I threw it away (F4).
- I like the food I make (F2).
- Why does everybody like what their dad puts in the box? (F1).
- Well, my mum is usually at work (M2).
- My mum usually packs it, but on Thursdays my dad packs, because mum takes my other brother to school (F3).

Moderator: When your parents prepare a lunch box for you, do they tell you what they have put inside?

All, "No."

- Unless you wake up at 6 o'clock (F4).
- My mum does, but then dad just throws random stuff, like "Her you go, here you go" (F1).

Moderator: What happens if you do not like the food?

- Throw it in a bin (F4).
- Bin (F1).
- Waste (F3).
- Tuck it in a bin (M2).

Moderator: What do you have for lunch then?

- A sandwich...if I don't like the food, I will just try to bring money (F4).
- Sandwich or Tuck shop (M2).
- Usually in the bin (F2).
- I usually tuck it in the bin and then I buy myself chocolate milk and chips (F3).
- I throw mine in the bin and then my friends give me stuff because they are kind (F1) → Moderator: What do they give you? → They give me some of their sandwich, because they usually have pasta (F1).

Moderator: How often do you throw away food in the bin? Let's say during a regular week.

- Maybe once (F4).
- Five days a week...probably every day (F2).
- Sometimes it is five days a week if it is really bad (F4).
- I don't think I've ever thrown away food in a bin (M2).
- Once a week (M1).
- Once every two weeks (F3).

Moderator: Do you tell your parents you threw food away?

The majority, "No."

- Mum makes me eat more because she thinks I am too thin and she is saying, "You should not be throwing it out" (F1).
- My grandma says I am too thin, eat this chubby piece of chocolate (F4).
- My grandma always gives me chocolates (M1).
- This is nice, except they worry about you too much (F4).
- Mine is not awkward (F1) → mine is (M2).

Moderator: Let's now talk about your friends. When you get together for small parties or just meet them, what food do you eat?

- Basically anything I want (M2) → Moderator: Like? → Like chips, lollies (M2).
- Normally, we have some chips and a cake and a package of Allen's snacks (F4).
- I had a big party this year. We had a bowl of chips, a bowl of smarties, and a bowl of Mentos. And then we had pizza for dinner. And then we had lots of lollies. My mum was asleep. We were awake and went to the kitchen [giggling] (F2).
- Mine story is similar to hers. I had a friend and she could not fall asleep and then one of us was hungry and we went to the kitchen and got some smarties (F1).
- Popcorn and chips, lollies, sweets and ice cream (M1).
- Chocolate cake, a big packet of M&Ms, and chips (F3).

Moderator: When you have a get together with your friends, do you ask your parents for specific foods or they choose them themselves?

All, "Ask."

- Ask (F4).
- I normally go to the supermarket and pick out what I want (F2).
- When I go shopping with my dad he says that is if it not on the list, I won't get it (M1).
- I usually ask because if I don't, they will usually put fruit and a bit of chips (F1).

Moderator: Do you discuss foods with your friends?

All, "No."

- Sometimes I talk with my friends about what my mum and my dad gave me for dinner (F2).
- Yeah, I usually ask, "What did you have for dinner? What did you have for breakfast?" And then we usually talk about pasta (F1).
- We usually talk how we cook stuff. Most my friends are international. So, we talk about food we eat (F3).

Moderator: Do you talk with your friends about food advertisements?

All, "No."

- F4 and F1: No, we don't talk about food.
- I did talk to my friend about this ad called "Easy cheese" (F4) [everyone starts talking about this advertisement].
- We don't talk about food advertising. We talk more about neighbours, TV shows (F1).
- No, but sometimes if someone sees something funny, like a food advertisement, they tell it to us (F2).

Moderator shows a card with a food pyramid to children: Do you know what that is?

Five children, "Yes, it is a food pyramid."

- I've seen it before, but I don't know what that is (M1) [the child was given the card to have a closer look] → It has different types of foods, like fats and dairy, healthy (M1).
- It's called food pyramid and it has got all food categories (F1).
- It is a food pyramid (M2).

Moderator: Where have you seen it?

- We were taught that at school. The teacher drew a triangle, drew the lines and wrote the categories and then we had to tell her what that is (F1).
- I have a subject at school and we had to make a food pyramid (F3).
- I have seen it at school. It was a word pyramid with all sorts of words (F4).

Moderator: Let's now go back to the pictures of food that you have. I will show you images and will tell me which food this person eats. A card with a "skinny" person is shown: What food do you think he eats?

- Probably he is a vegetarian and doesn't eat many sweets (M2).
- He probably eats fruit and vegetables...He is probably a vegetarian, look at his arms, they are so thin! (F4).
- Probably lots of vegetables, fruit (F2).
- Fruit and he doesn't eat much sugar (F1).
- He is a vegan (M1).
- He probably eats more vegetables than meat. He regularly weights himself (F3).

Moderator: What about this one? A card with a "fat" person is shown.

[Everyone is, "wow"]

- Lots of candies, maybe he eats a lot, like few plates of rice or something (F3).
- Probably he eats ice cream and lolly pops...and probably beef and sweets (M1).
- He probably eats a lot and a lot of sugar, also KFC and McDonalds, and Hungry Jacks, not like Subway (F1).
- I think he might eat a couple of vegetables (F2).
- I think he likes take-aways heaps of "junk" food...he looks like a chef, because chefs look big (F4).
- Looks like he sleeps in his car, buys at KFC, buys everything (M2).

Moderator: There was something interesting which you have mentioned before. It was "junk" food. What is "junk" food for you?

- Chips (F2).
- I had this discussion at school...It is normally soft drinks and high fat (at this moment a boy suggested to use “junk” drink instead)...Lolly pops...anything you find in the lolly shop (F4).
- Stuff that has a lot of fat in it and not much vitamins (M2). → Moderator: What type of food would that be? → Chips, cookies, and lollies (M2).
- Lots of McDonalds, and take-away places that don’t have healthy food, because in McDonalds apple pies are full of sugar (F2) → Moderator: How do you know that it is full of sugar? → I can taste the sugar (F2).
- There is no point of selling apples pies because not many people buy it. “Junk” food is like sugary stuff and fatty stuff that’s got lots of sugar and fat in it (F1).
- Fast food and McDonalds and like what others have said, not Subway (M1).
- Probably types of food on the top of the food pyramid (F3).

Moderator: Do your parents talk with you about “junk” food? Where did you hear about “junk” food? How do you know it is “junk” food?

- Because “junk” food is yummy (F1).
- At school (M2).
- You just eat it, you just develop it [the knowledge]...I don’t know...I have never been told what “junk” food is (F4).
- I think I have developed a taste for what is not healthy. My parents try to eat healthy. I mainly eat more fruit and vegetables (F2).
- I say, “Mum, can we get McDonalds?” and she is like, “No, it’s “junk” food, you are not allowed to have it this time of a day” (F1).

Moderator: Did you try to make your parents explain what “junk” stands for?

All, “No.”

All, “It is rubbish...garbage.”

- I’ve seen it on the ad commercial (M1) → Moderator: What was it about? → Some of them are about people keeping fit, like gym ads and scouts (M1).

Moderator: When I asked you about junk food some of you mentioned McDonalds. Would you put Subway in this category as well?

- Subway is fresh (M2).
- Subway has bread, lettuce and cheese, tomato and then you can get fillings, like meatballs and stuff. It is half healthy, half not. They sell cookies as well (F1) → Half healthy (M2).
- Mum didn’t really tell me it was “junk.” She went to this meeting and this woman talked about food and she had one burger from ten years ago and one from now and they looked the same. And it is disgusting and that’s how I kind of figured out it was not good (F2).
- On a show in America a guy showed how they make nuggets. They took the bone, and took all the good bits out and threw all the bone and the stuff in a blender and blended it and made it into a nugget. And he is like, “Who wants to eat it?” and they all put their hands up. They still wanted to eat it (F1).
- Subway probably has healthier options because you can choose what you eat and you see them making it and you know what is inside the sandwich, how they cook it (F3).
- Subway hasn’t got as much grease as McDonalds and KFC and it is supposedly fresh....It tastes fresh and you just feel that there is not grease on it (M1).

Moderator: What do you eat when you dine out with your parents? And who decides what you eat?

- We have a competition in our family. The person who wins decides where we go. It has been a long time ago since we have eaten out (M2).
- We go to Middletown, Blues. It is really nice. We all choose something that we want. I mainly get fish and chips, a milkshake or a drink, or Coke, a cake (F2).
- We went out to this place for mum and dad’s anniversary. We usually go there for celebration. Yes, we get to choose what we want. We usually have a Kid’s Meal, which is a big hamburger, massive, with

chips and a bit of lettuce. And if you finish it you can get some ice cream (F1) → Moderator: Why do you choose the burger? → I don't get to choose it. It is just on the Kid's meal and I don't feel like eating anything else (F1).

- I usually get the chicken nuggets, Sprite. Good place is [...] (M1).
- We don't eat outside often, because we like to eat what we cook, because it is nice. If we go out we go get some sushi (F3).

B) Focus Group 2: Older Children

Participants' identification numbers (N=4):

- M1 – male 1
- M2 – male
- F3 – female 1
- F4 – female 2

Moderator: What did you have today for your lunch?

- I did not have lunch today (M1) → Moderator: Why so? → I could not be bothers packing, like my lunch today, but what I did get was a sandwich from my friends or half a sandwich (M1) → Moderator: What do you have regularly for your lunch? → I am not kidding. I usually do not have lunch (M1) → Moderator: Do you skip the meal? → Yeah, I just get food. Sometimes I go to the tuck shop and get pasta, which is very yummy (M1).
- Most of the time I have a sandwich, with ham and fruit (M2).
- I had pasta (F3).
- I had pizza (F4).

Moderator: Was it your favourite food?

- I love food in general, but I really like burgers. No, chips, definitely, chips from McDonalds (M1). → Moderator: Why do you like them? → Because they are really yummy (M1).
- No, this is not my favourite food (M2). → Moderator: Which one then? → I do not know. I do not really have one. I like most foods (M2).
- I like pasta, but it is one of the many of my favourite foods (F3).
- I like pizza. I like lots of foods. Pasta is one of my favourites too (F4).

Moderator: What foods do you like then in general?

- I like Italian food, hard core Italian food (M1) → Moderator: What are they? → Classic nana's dishes, meatballs with spaghetti and huge meatballs, they are good with tomato souse. And there are really weird Italian names for foods which I cannot remember. But another one is soup, like pasta and meat inside the pasta, and celery, and carrots. And then I like ravioli and I like caramel slice (M1).
- I like a lot of foods, like pizza, pasta, Indian food like curries, Thai food, hips of food, chips and stuff (M2).
- I like chips, burgers and stuff like that (F3).
- I like pretty much every food. I like a lot of foods (F4). → (M1): Do you like gherkins? → (F4): They are alright. I like Asian food, like Chinese and stuff. I like Indian food and Thai.

Moderator: Why do you like these foods?

- It tastes good. I do not now. I like Indian food because it is spicy as well. I like food with spices and stuff (F4).
- I like sweet foods and most general stuff that is warm...that is cooked in warm (F3).
- I like sweet foods like, spicy foods. Most important thing is the taste, pretty much it (M2).
- I like my nana's food, because my nana is a pro cooker (?). Like her pasta is very good. And I mean, it is not so much about the taste, it is sort of is, but I like meat a lot and when my nana makes it, she puts lots of meat in it. It is good, because when I am eating it, it is almost always with her and the family. We have got a big family with like 30 people in a table. And I like burgers, no, chips, chips, because they are really crunchy. I also like sweet foods, because I love sugar so much. Anything with sugar content is really good, like anything (M1).

Moderator: Do you think the foods that you like are good for you?

- Not all of them. Like, I do not mind sugar and stuff, but they are not my favourite. It just depends on how much you eat of it. So, I guess, some are better than others, but it depends on how much you like have hips and hips and hips one sort of food, it is not necessarily good for you (F4).

- Most of the food I like I think is good for me, because I do not like most “junk” foods, because they make my sick sometimes (F3).
- I reckon, most of food I eat is probably good for you, some of it is bad, but with like bad foods, like from fast food places, like McDonalds and all that. If you have it a couple of times often it does not taste as good anyways if you have it too often and you know you do not feel that well (M2).
- I like all fatty foods, because I am really an unhealthy kid. And I also like eating burgers and stuff, because my mum is like, “Oh, it is really unhealthy” (M1) → Moderator: What do you mean by “I am an unhealthy kid”? → Oh, because I like to eat junk food all the time. I like have three tubs of ice cream in my freezer, but I never eat them, because I do not like ice cream (M1) → F4: You have ice cream, but you do not eat ice cream. → M1: Yeah. → M2: It is a bit random → F4: It does not make sense → M1: I also like apple juice. Apple juice has a lot of sugar and it is not healthy. But Italian food is not really bad for you. It is actually pretty good, Soup especially, because it has got celery and celery has negative calories (M1) → Moderator: Do you check food labelling? → M1: I always check the labelling. It is really interesting like, my dad told me that when it says per hundred, it is same as percentage. Like, this is 1.7% protein [takes a bottle of juice on the table] and on the labels you can figure out how much calories that is by dividing the kilojoules by four. So, this is 400...So, like per serving and the quantity of the serving is like...I do not know what is written there, I do not know how much is the serving... It is probably like 200. It is like 101 point...something...like per serving...and like...I love reading this stuff. Is it on burgers? Because it makes you feel guilty (M1) → Moderator: When did you start reading labels? How long have you been doing that? → M1: Oh, for like 8 years? → Moderator: Really? → M1: Ever since I could read, but I never knew how to divide until last year.

Moderator: What about you guys? Do you check labelling when you select foods?

- Last time I checked it, it was for the school project or something. I do not check them very often, because, I do not know; just do not (F4).
- I do sometimes, but not on everything. Only on something (F3) → F4: I guess probably it is a good thing. We probably should be looking at them (F).
- I only check it occasionally, if it is something I have not had before or if I know it is like unhealthy. Just to check them, having too much sugar or too much fat (M2).

Moderator: But where did you get the knowledge about labelling? It is from school, from you parent, or your friends?

- “Biggest Loser” (M1).
- I figured it out myself. I just saw it on the package and started... (F3) → M2: Yeah, same → F4: Yeah it will be like that, but then you also ask your parents and then they sort of explain it a bit...So, I guess parents.

Moderator: What do you think make food good for you?

- Vegetables and fibre (M1).
- It is like a balance of it. If you like. I do not know, what will it be like if you just eat fruit and vegetables? Would you be healthy? (F4) → M1: You will not have any protein. Stuff like protein and salt, you need them → M2: Yeah, you need some → F4: Pretty much you need a balanced diet if you want to be completely chilling out kid stuff → M1: Yeah, but like, saturated fat, you do not need that apparently. You need just like fat, not saturated fat. Saturated fat is like saturated...It is like hard core fat containing fat → M2: It is like fatty fat → M1: And then like, normal fat is fine. Well, not fine, but yeah...protein is pretty good too.

Moderator: In overall, would you say that the food that you eat is healthy for you?

- I think I could be a bit healthier. I could eat more fruit (F4).
- Most of the food I eat is healthy, because I do lots of sports and my couch is helps me with that (F3).
- Most of it healthy, but I do not eat much fruit, like very often. Really I do not like broccoli and I get that every night (M2).
- I actually eat everything and I eat burgers a lot. So, I should stop having so many burgers. Just last week I had four burgers...Well, it is mostly when you like go out in the city with people, like school and stuff. You are always like, “Let’s go to McDonalds and get a burger.” (M1) → M2: Peer pressure → M1:

Because burgers are like easy to eat. I mean when you get a subway, subway is really good but it is really hard to eat → F4: I love Subway. When friends and I go out, I am like, "Let's eat at Subway." I do not go to McDonalds and Hungry Jacks places. I almost never go to them. I was in Hungry Jacks with my class once and that is it → F3: I go to them once or twice a month → M2: I go less than that → M1: I go to McDonalds like tons, but not actually that much, just last week that was one off thing, but I go to the city with friends like tons.

Moderator: What did you mean when you said "it is hard to eat Subway"?

It goes everywhere (F4) → M2: Yeah, when you bite it goes everywhere [demonstrating the gesture] → F4: It is really messy too, you have to eat around it → M2: Yeah, you've got to hold it tight → M1: And if you are in a group of like 11 people and you mess up eating the Subway, it so embarrassing → F4: So embarrassing → M1: And people do not tell you that you have got sauce all over your face. They like seeing you suffer.

Moderator: What food do you think is popular with teenagers?

- Hum, I do not know (F4).
- I do not know (M2).
- People like pizza. I do not know. I find people find it popular (F4).
- Not in my year, no, pizza is not really popular (F3).
- I guess it is like pasta and stuff, maybe, I do not know (F4).
- In my year you would go with ice cream or a piece of cake, but that is just my year at school. I do not know about others (F3).
- A lot of people like pizzas and hot food. I do not know, it is not really like one particular food (M2).
- It might sound a bit weird, but it is season as well. If it is summer, it is usually hot, everyone wants ice cream or cold drinks, but if it winter, everyone would want hot food (F4).
- You know what is really funny? I reckon, it is probably just my school, in a fourth break, like on Friday or Thursday, everyone gets like a craving for Hungry Jacks or Maccas. And it goes through year 10 or 8, year 9 does not count for some reason, just at my school (M1) → F4: I know, our Year 12 has Maccas rounds, so they just go to Maccas in the middle of the day and just go to McDonalds → M1: If we leave the school, we get a suspension.

Moderator: Do children have these "popular" food in their lunchbox or they have them outside the school time when you get together with your friends?

- I get pizza from home. Ice creams will be bought. If you bring it from home it melts by lunchtime (F4) → M3: In a tuck shop (F4).
- Pastries are hard core popular in my school in the tuck shop. Everyone buys pies, But mostly people eat foods outside the school. There are only four people in my year who bring lunches and everyone either goes to the tuck shop or goes out at the end of school, because everyone eats outside school, but it is probably at my school. There is a kid in my school he goes to the tuck shop 3 times in a recess and get a muffin, a huge one, or coke, ice cream or a hot dog. And parents pack his lunch, but they also put lots of money on his card (M1) → F4: We have to pay with our own money → M1: I have a passion to hate my tuck shop ladies → F4: In our school they are so scary → M2: Tuck shop ladies in my school are nice. If you nice to them they sometimes give you an extra snack.

Moderator: Do your parents know what you buy from the school canteen?

- Yes, sometimes (F4).
- Sometimes (M2).
- Sometimes they are like, "You can go buy lunch today, but buy something healthy." And sometimes they will be like, "So what did you get?" (F4).
- With my parents I have to bring my own money or of we do not have any lunch over recess that we do not have at home at the moment, then they will give me money and say "Buy what you want." So, it is really my choice (F3).
- My mum just scold at me if I eat something unhealthy. She does not know, but I tell her every day what I get and when I do not tell her, she just knows (M1).

- I get the same thing every time. The only time when I bring money is when my mum is really tired and she is like, "Here is some money, buy lunch." I buy pizza and iced tea (M2) → F3: Our school has the worst tuck shop. You only have got small packets of chips, ice creams or something for lunch which is only like a pie or something (F). → M2: Our school does not allow coke → F4: Our tuck shop is disgusting. You pretty much do not want to eat from it. The fruit, you find hair in there and it is all oily. Sometimes it is meant to be a pizza thing or bread, but then just pour hips of oil on it. You have your bag and you put it in once you take it out you can see through it because it is oily. It is disgusting. I do not want eat this. And there are cokes and soft drinks. We have bottles of water, but they are expensive → F3: I had pasta for lunch another day and I got a bag and my bag, you could see though because of the oil. I eat it, but it was overcooked. It was soggy. It was not good and my friend got food poisoning just last week from chicken. It tasted fine, but it was not probably properly cooked and she got food poisoning → F4: With gyros you need to take meet out. My friend had food poisoning because they did not cook the chicken properly → M2: We've got good tuck shop. We've got chicken burgers only one day, but no one got food poisoning, but most pies are premade. The only thing they make is pizzas or you can get fried rice or curry. The only bad thing is pizza. If you leave it too long the dough is not good. Our canteen is very good, but they have no coke. They have weird soft drinks → F4: It is meant to be a healthy version → M2: Yeah, it is meant to be like proper fruit → F3: They have only one sort of home-made meals which you do not want eat. It does not look right. And they tell you to go for healthy options, but healthier options are more expensive → M2: That is really annoying → F4: I want to have a healthy thing but it is way more expensive. Either I do not have this money or I want to have a drink as well, but I cannot have both → F3: Our school shop is way overpriced. There is one ice cream that is there and it 60 cents more than the same one I saw in the deli down the road and it is only lemonade ice block and it is way overpriced.

Moderator: Do you eat often from the tuck shop?

- Not often, once in a while when I buy my lunch but not often (F3).
- I only bought my lunch in the canteen only half a dozen times, not that often. In first few terms I even did not go in the canteen to buy anything. The only time I buy something from there is when I find loose change on the ground. I might go and buy a couple of snakes, two or three and that is about it. But it is really annoying how people scrape for money, like, "Have you got 20 cents?" (M2) → M1: I only do that to my friends sometimes.

Moderator: When you select food from the tuck shop what is the most important factor for you?

- I want to try something out which is not too greasy or unhealthy (F4).
- Normal, something you will find somewhere else (F3) → Moderator: What do you mean by normal? → Cooked or does not have something that is different in it or they have tried to make it healthy by putting some vegetables on it. It just does not go with some other stuff (F3).
- I always want chicken tsaziki from the tuck shop, but they are \$5.40 (M1) → M2: Wow, expensive. Our most expensive thing id \$4.

Moderator: Many young people like KFC and McDonalds or other fast foods. Why do you think they like these foods?

- I think it is the ads, the publicity and stuff (F4) → M2: Yeah, yeah → F4: You see the ads and you see like. Personally, I do not like burgers, they look fake to me. I think some KFC and McDonalds have some chicken ads that make them look and they do the whole opening and stuff comes out of it → M2: Ah, emphasising it → F4: And they do the whole biting and oh it is so good, have never tasted anything that good.
- Some of the burgers they have in the ad on the picture are actually not real. They are fake (M2) → M1: They look fake → M1: Some of them look fake → M2: They are fake because when you buy them they are nowhere near that good.
- I think also because of sugar and fried stuff makes them kind of addictive. If you say have few chips and a burger, then you want to finish it all (F3) → M2: Yeah, you've got hooked on it.
- The reason we like fatty foods is when we were evolving fat and salt was scarce. We have developed a taste for it. So, we needed it. And it is also like kid are rebelling (M1) → Moderator: What do you mean by rebelling? → Lots of parents tell their kids, "Eat a banana" (M1) → F4: It is bad. They get told that it is not very healthy and should not have as much → F3: So, they want to go out and see what it is like → M2: Yeah → F4: I think that might influence it a bit. I do not think it like they are meaning to, they are just curious. It is like when your parents tell you do not touch a pan, it is hot. I think it is a bit like that.

You just want to see what it is like → M2: Yeah → F4: And once you have that when you are younger it sort of becomes an addictive thing. It is like you taste it and want to taste it again and then you see some friends eating it or family → M1: Yeah, and it is because kids like rebelling.

Moderator: What was the recent food ad that you remember seeing?

- Bun, lettuce, burger, bun, beef, lettuce... big Macca (M1).
- The latest one is Hungry Jacks one with the motor byke going up (F3) → M2: Ohhhh → F4: But it is not only about this bike. They also had deals. Outside Hungry Jacks \$4.95. You can get like 4 things, drinks, chips → F3: They copy each other, like Hungry Jacks brought this new burger and a month ago McDonalds they brought a new way of bun of going on top. The other one started doing that. They will copy each other because they are trying to get more people.

Moderator: Where have you seen these ads?

- Youtube (M1).
- TV (M2).
- They also put tiny ads if you are watching a program, they will know kids are going to watch it (F4) → M2: Like near dinner time, near meals → F4: And they will try to make you hungry → M2: So, then you go, "I want that" → F4: It is pretty much the timing when you put it.

Moderator: When you see these ads, do you want to buy these foods? Do you want to try them out?

- Not me. I do not like McDonalds because they look fake to me (F4) → M2: I think McDonalds is the worst → F4: But there has been KFC chicken. I was like, "Maybe, I want to taste it, maybe I do not."
- When I was a bit younger I saw ads with new chicken and I was like, "Oh, I like chicken. I could try that." But now I know that there is no point (F3) → F4: It is pretty much normal chicken.
- I reckon the reason for ads is like, not like to want you to buy them. It is more like telling you that it is there. Because you know chicken burger is like \$1.85 or something and you would not know that (M1) → F3/M2: It is more like a reminder → There is this shop called XXX but no one knows about it because it is not on TV (M2) → F3: Or sometimes you might tell your friends or your friends might tell you about these things. They like spread it around → Moderator: And when your friends tell you about these → F3: I go, "Is it good?" and I will say, "Ok." If it is good then it is good. If I do not want it, I will not have it if I do not seem interested by it.

Moderator: Do children often talk about foods?

- Sometimes (F4).
- Depends if you are eating food. If you are hungry then you do (M2).
- Last year in P health we have been watching "Supersize me" (F4) → M2: Oh, yeah → F4: So, that put us on whole talk about food. So, it had a bit of it, but it is not like day to day.
- You know people in my school never say how good the cheeseburger is. They say, "I feel like a double whopper, mate." That is exactly what they say. I am like, "Ok" and then we just end up going to McDonalds after school (M1) → Moderator: You've said you have seen the recent ad on Youtube. How did you find it? → M1: Coz I was watching XXX [37:17] and it said watch the actual ad here.

Moderator: Where else have you seen food ads apart from the TV?

- Billboards (M2).
- In front of the shops, newspaper magazines, not a lot but... (F4).
- On the radio (F3) → M2: Yeah, on the radio.
- Most of it is TV, 95% TV (M2) → F4: Because this is where everyone looks.
- TV or main roads (F3).
- And there is also lots of passing like, "I've got this from this place" and the person will be like, "I'll try that." Then they will try it and it will just go on (F4).

Moderator: Has there been any instance when you have seen the advertisement and then tried the food afterwards?"

- Yeah, for me. It was not recent, it was a few years ago. My cousin told me about this burger at McDonalds and then I saw an ad for it two nights after that on TV. So, I went out and tried it, because I was told it is good and I saw the ad. That was quite a while ago (F3).

Moderator: What foods do your friends like?

- Same as me (M1).
- Mostly similar. Some of my friends like sushi, but I cannot stand them (M2) → F4: I love sushi. My mum knows how to cook lobsters.

[Irrelevant discussion omitted].

Moderator: What foods do you eat when you get together or go out with your friends?

- Subway (M2).
- Me – Subway. They will eat something like KFC. I always eat Subway (F4).
- I cannot stand KFC (M1).
- McDonalds is the worst (M2) → F4: You hear all these stories. They freeze the pancakes and then cook it. I do not know. I have heard all these stories, but I do not know if they are true → M2: They cook them and leave them warm and they are all premade. That is why they bring them in five seconds and quick.
- My friend, older friend, used to work for Maccas and she said it is not true. Once I went to Maccas and have had a look. I do not think most of these stories are true (F3) → F4: What about the pig sauce?.
- I do not really go out to eat with my friends that often. We might go to deli and grab a pack of chips. But I do not really go out to have meals with my friends (M2).
- When I am with my friends we all say something that we want or something that we all like and if it close by, then we will get it. But if we want Maccas but it is not in our area, then we will not bring it, because there is no point (F3) → Moderator: Which food do you usually select? → We get a packet of hot chips and share them around. We go to Subway. We go to the deli sometimes (F3).
- Sometimes when we go to Mitcham, the supermarket, because we go to see a movie and everyone brings \$20 and everyone spends mainly \$10.50 on one certain thing and we share around. So, one guy got 4 packets of chips, another one got bottles of coke (M1) → F4: This is what we do in a camp. It was one guy's birthday. We had a party. So, we have got big packets of chips and some soft drinks → Moderator: Why did you select chips? → They are the easiest thing to get at that time. We had to try do it without her knowing, sort of a surprise (F4).

Moderator: Do you think it is a good idea when parents talk with their children about foods?

- No (M1) → Moderator: Why? → M1: When my parents tell m stuff, I am always like obliged to disobey. They are like, "Do not go to McDonalds" → M2: They are trying to use reverse psychology, but you always know, you can always tell → M1: They should not be telling you not to eat fatty foods, but they should be telling you like giving you information → M2: Not telling you what to do or not to do, but telling you, "This is bad for you and this is good for you" → M1: If your parents tell you to do something, you are less likely to do it. It is like your parents telling you, "You should not jump of the cliff." Instead they should say, "Jumping of the cliff leads to death or severely damaged bones." But if they told me not, I would.
- My parents do not really talk about it, so... I would go, "Why do you change the subject to that?" I mean, it is just an everyday thing we do, we eat..food. So, like we do not talk about it (F3).
- I think it is a good thing that parents speak to their parents about it. I know kids get taught stuff at school almost every year. It is hard to say. Parents are step above it, they reinforce it (F4) → F3: They control your life → F4: They sort of lead you in the right direction. They can sort of say, they do not have a definite answer, this will be away to go, but they give a choice whether or not you want to go this way. They try to lead you in the right direction (F). → Moderator: Is this what your parents are doing? → F4: She tries to make me healthy, but in the end if I do not, it is my choice → F3: Yeah, I think it is kids' choice whether they want to do it. They have either been told, or they know, or have seen. So, it is their choice. When they keep reminding, it just gets annoying.
- I think it is good that parents talk about food, like what not to eat, but I do not think they should say specifically you cannot eat this or you have to eat this. They should tell you, "It is bad to eat this" and what happens if you eat too much of that or it is good to eat this or if you lots of this you will become big and strong. But I hate, "Eat your vegetables if you want to be strong" (M2) → F4: Or when they

say, "Eat your vegetables and you will become like this person" → M2: Yeah → F4: Why do you have to be that person?! → M1: My parents are such liars. They say eat your broccoli and you will get taller. I eat broccoli a lot → F4: I will be eating it all the time then if it makes you taller → M1: But it does not! I eat it so much and this is the end result, 130 cm.

Moderator: When you have a question about food, do you ask your parents?

- Yeah, if I have a question like, "How much sugar is in it?" I will ask them. Yeah, I will ask them if I want to (F4).
- You know what is the best person to ask? Google (M1).

Moderator: So, do you use other sources of information apart from parents?

- When I ask my friends or something, you sometimes get mixed information, told different things. It is not always necessarily true. So, I will be like, "Know what? I will google it!" Just to get the right answer (F4).
- I always ask so many questions in class. And I have been taught that you can actually figure out more than you think. Say you have got a question just about the random thing, you can go and look for it yourself and it does not take hips of effort (F3).

Moderator: What do your parents think about healthy foods? What makes food healthy for them? Have they shared their ideas with you?

- They say, it is pretty obvious the more junk food you will eat, the more unhealthy you will get, or the more sick, or more stuff is going to happen to you. But healthy stuff is not really just about the food. It is about what you do around the food. The food helps but you also have got to do exercise or go to bed earlier or wash your face at night. You have got like a test going on. It depends on you. No matter how much you are told or you know, it is what you do with it (F3) → M1: That is an intense metaphor.
- Having a balanced diet, not with the food, but in life, exercising (F4).
- My dad cooks for us and he is like, "Guys, this is healthy." So, like, "Eat it." When makes us nachos for dinner. He says, "I am feeding you this, but you should not be eating this." He warns us. He is just telling us how unhealthy it is (M1).
- They think like vegetables and stuff. If it has not got lots of fat or sugar and got proteins and fibre. So, what it is made of, whether it is real food or not (M2) → F4: I do not like premade stuff. We cook more with mum now. It is nicer and it is better for you.

Moderator: When was the last time you talked about food with your parents? I mean the instance when they tried to explain nutrition to you.

- Not that often (M2).
- Yes, it happens, I just cannot remember exactly (F4).
- My parents told me good and bads about food when I was younger, but now they are just focusing on my younger sibling (M1).
- I had swimming just last night and I asked my mum would be a good thing to have after my swimming because I am always tired and hungry. And the first thing that comes up in my mind was like, "Can I have that?" and she was like, "No, no, there are particular things that can help you" (F3) → Moderator: Which were these things? → F3: Pasta or chicken, proteins, and carbohydrates → Moderator: Why carbohydrates? → M1: Because they have got tons of good stuff → M2: Energy, that is what they have → F4: Actually, recently mum and I talked about it. I got really sick of having the same food for breakfast. I was like, "What can I have something different?" And we talked about it → M1: I have not had breakfast in 3 months.

Moderator: Have your parents used any rules? For example, they would say, "You cannot eat this today" or "You can have this tomorrow"?

- I do not think I ever had any rules. They just try...if you have a choice between healthy and unhealthy, try to take a healthy option. And if I am hungry, they will be like, "Take a banana." So, they will encourage us eat healthy (F4) → F3: The only annoying this is that healthy stuff does not fill you up.

- The only rule I can think of is like, “Oh, you have to finish your dinner. Otherwise, you cannot have dessert.” Or you cannot have snacks after dinner (M2) → F4: You know what my parents did when I was younger? They told me that would give me the salad that I do not want to have for dinner to me for my breakfast or lunch. So, I eat it.

Moderator: Where does your knowledge about food come from?

- School. A lot of it comes from school, because you do theory and stuff and my parents (F4).
- School a bit, not much, but some. They keep reminding us, sport and health. My parents, but now I know it all (F3).
- I do not know where it comes from. We did not do much at school and we have not done any P theory. I do not know, I am not actually sure, it just comes to me from different places, like school or home (M2).
- Mine comes from the “Biggest Loser.” I do not watch it anymore, but I used to eat really unhealthy food, because Julie (?) will be like, “Burgers are bad and broccoli is good” (M1).

Moderator: When you were smaller did you like other foods?

- When you are little, you are always like, “Can I have some lollies, mum? Please!” (M2).
- I think you do not want to your salad as much (F4) → M2: Yeah → F4: But now it is like, I have to eat salad. I do not mind it now → M2: You get used to different fruit, when you are little you eat small amounts of different foods, but as you get older you eat more and more different foods → F4: I know a four-year old. All he eats is bread and butter, milk, and bananas. Nothing else.
- When I was young I could not eat hard foods. My mum would chop up vegetables or make mashed potatoes. I always liked vegetables, but not all of them (F3).
- I eat anything. I never had problem eating food. My dad would have a jar of lollies just chilling somewhere. I would always take lollies from them. My dad would come home and it will be empty and I would answer truthfully (M1).

Appendix 14: Coding Scheme for Qualitative Data

Coding scheme			
<i>Favourite foods</i>	<i>Application of nutritional knowledge</i>	<i>Food ads liking and recent food ad seen</i>	<i>Perceived parental nutritional competency</i>
1. Type 1.1. Healthy: 1.1.1. Fruit 1.1.2. Vegetables 1.1.3. Other foods (e.g., Subway, home-cooked meals) 1.2. Less healthy: 1.2.1. Fast foods 1.2.2. Sugary snacks (e.g., lollies and cakes) 1.2.3. Soft drinks 2. Specificity 2.1. Specific food (e.g., KFC) 2.2. General categories (e.g., lots of foods)	3.1. Type of food 3.1.1. Fruit 3.1.2. Vegetables 3.2. Food composition 3.2.1. Absence of specific components in a diet 3.2.2. Absence of specific foods in a diet 3.2.3. Proportions 3.3. Food diversity 3.4. Balanced diet	4.1. Ad-related: 4.1.1. Humour 4.1.2. Animation 4.1.3. Promotion 4.2. Not ad-related: 4.2.1. Taste of the food	5.1. Food-related: 5.1.1. Type of food: 5.1.1.1. Fruit 5.1.1.2. Vegetables 5.1.2. Food composition: 5.1.2.1. Absence of treats 5.1.2.2. Absence of “junk” foods 5.1.2.3. Absence of sugar 5.1.2.4. Food substitute 5.1.2.5. Proportions 5.1.2.6. Specific qualities 5.2. Non-food-related features 5.2.1. Exercise (“balance in life”)

Appendix 15: Invitation Letter to Principals of Private Schools (Pilot Tests 1 and 2)



COVER LETTER

Dear _____,

I am writing to ask for a permission to conduct a pilot test of a questionnaire at your school. I am doing a PhD at the University of Adelaide about the impact of food advertising, children's nutritional knowledge, advertising literacy, and perceptions about peer's food choice on children's food-related behaviours. Given the hardships and costs associated with childhood obesity, research of this kind is essential to provide insight into the effects of food advertising on children's food preferences and choices.

We kindly ask to pre-test a questionnaire with children aged between 8 and 13 in your school (Year 3 to 7). This pilot test represents a vital step before we administer the full project in South Australia and your help in its pilot test is highly appreciated.

The full description of the PhD project is attached to the email. The project received ethical clearance from the Human Research Ethics Committee at the University of Adelaide (Project No. H-076-2011). I have also attached the Information Sheet for parents. Please let us know whether you allow the pilot test in your school and we will then send the questionnaires and discuss the administration of the pilot test. Feel free to contact me or my supervisor, Prof. Pascale Quester (execdean.professions@adelaide.edu.au), in case you need certification and more detail about the project. We are looking forward to your reply.

Best Regards,
Liudmila Tarabashkina



Project description attachment

PROJECT DESCRIPTION

PHD PROJECT TITLE: Children's Food Consumer Socialisation: An Evaluation of the Impact of Marketing Communication, Parents, Peers, and Social Norms on Children's Food Choice and Obesity in Australia.

PURPOSE OF THE PHD PROJECT

The purpose of the PhD project is to examine the effects of food advertising, parental influence, peers, and children's nutritional knowledge and advertising literacy on children's food choice and, in turn, examine their relation to childhood obesity.

The project aims to contribute to the theoretical and empirical knowledge on children's food consumer socialisation, which represents a new emerging area in the childhood obesity research. Taking into the account the increasing rates of childhood obesity in Australia, the project offers valuable insights for the Australian policy-makers, parents, and medical practitioners about the impact of the socialisation agents.

STUDY PLAN AND DESIGN

The project consist of three stages: 1) focus groups with children and parents, which were already carried out in 2010; 2) the pilot test of Children's Questionnaire (the current stage); and 3) a survey of children and their parents (the mid-2011 and beginning of 2012).

THE PILOT TEST:

Administration

The pilot test consists of two stages. During the first stage seven face-to-face interviews were carried out with children from seven to eleven years aiming to examine whether all questions are clear to children. Based on the received feedback the researcher has edited the questionnaire, which is now ready for the second stage of the pilot test to be administered to more children. The questionnaires which will be administered to smaller and older children are identical except for the use of smiley scale, which will be used only for smaller children.

Source

Children's questionnaire is planned to be pre-tested in two private schools in Adelaide.

Number and the age range:

- 1) Face-to-face interviews: 10 children (five 8 eight to 10 years and five 11 to 13 years)
- 2) Survey: the desired number is 100 children:
Fifty 8 eight to 10 years children and
Fifty 11 to 13 years children.

The questionnaire aims to pre-test the questions about children's nutritional knowledge, advertising literacy, and perceptions of peer's impact (social norms).

No personally identifiable information will be collected. Children will be asked to specify only their age and gender. Children's weight and height will not be measured. No audio or video taping will be used. The signed consent forms will be kept in the locked drawer in the researcher's office and only the research will have access to them.

FUNDING

The research is funded by the International Postgraduate Research Scholarship and the PhD research fund at the University of Adelaide to Liudmila Tarabashkina (PhD candidate).

ETHICS CLEARANCE

The project received ethical clearance from the Human Research Ethics Committee at the University of Adelaide (Project No. H-076-2011).

CONTACT PERSONS:

PHD SUPERVISORS:

Prof. Pascale Quester
Principal supervisor
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Email: pascale.quester@adelaide.edu.au

Dr. Cullen Habel
Associate supervisor
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The PhD candidate:

Ms Liudmila Tarabashkina
The University of Adelaide Business School
Telephone: **08 831 30736**
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Appendix 16: Information Letter to Parents (Pilot Test 1)



INFORMATION SHEET FOR PARENTS

Dear Madam/Sir,

We kindly ask you to give a permission to let your child take part in our study to pre-test a questionnaire about children's nutritional knowledge, advertising literacy, and perceptions about the influence of peers. We are looking for children between 8 and 13 years. The project is titled "Children's Food Consumer Socialisation: An Evaluation of the Impact of Marketing Communication, Parents, Peers, and Social Norms on Children's Food Choice and Obesity in Australia" and represents a PhD thesis of Ms Liudmila Tarabashkina at the University of Adelaide.

During this pilot test we would like to conduct a face-to-face interview with your child while she/he is filling in our questionnaire to assess whether all questions are clear to him/her. Once we confirm that none of the questions are ambiguous, we will administer this questionnaire for further test to more children. You and your child are free to decide at which stage (an interview or a survey) your child would like to participate. This project aims to contribute to the theoretical and empirical knowledge on children's food consumer socialisation and your help in the pilot test of the questionnaire is highly appreciated.

Below, you can find more information about the current stage of the project, funding, and contact persons in case you have any questions.

STUDY PLAN AND DESIGN

The project consist of three stages: 1) focus groups with children and parents, which were already carried out in 2010; 2) a pilot test of Children's Questionnaire (**the current stage**); and 3) a survey with children and parents (the mid-2011 and beginning of 2012).

FUNDING

The research is funded by the International Postgraduate Research Scholarship and the PhD research fund at the University of Adelaide to Liudmila Tarabashkina (PhD candidate).

ETHICS CLEARANCE

The project received ethical clearance from the Human Research Ethics Committee at the University of Adelaide (Project No. H-076-2011).

If you consent to your child participating in the study, we would kindly ask you to sign two copies of the consent form (attached to the letter) and return one of it through your child to the researcher. No personally identifiable information will be collected. Children will be asked to specify only their age and gender in the questionnaire. Children's weight and height will not be measured. No audio or video taping will be used. The signed consent forms will be kept in the locked drawer in the researcher's office and only the research will have access to them.

We thank you for your time and help!

Best Wishes,
Liudmila Tarabashkina

CONTACT PERSONS:

PHD SUPERVISORS:

Prof. Pascale Quester

Principal supervisor

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Dr. Cullen Habel

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PhD candidate:

Ms Liudmila Tarabashkina

The University of Adelaide Business School

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Appendix 17: Parental/Guardian Consent Form for Children's Participation in Pilot Test 1

THE UNIVERSITY OF ADELAIDE HUMAN RESEARCH ETHICS COMMITTEE

STANDARD CONSENT FORM For Research to be Undertaken on a Child To be Completed by Parent or Guardian

1.	I, <i>(please print name)</i> consent for my child.....to take part in the research project entitled: Children's Food Consumer Socialisation: An Evaluation of the Impact of Marketing Communication on Children's Food Choice, Purchase Requests, and Obesity.
2.	I acknowledge that I have read the "Information Sheet" sent to me by the research team.
3.	I acknowledge that my child will participate in a face-to-face interview with the researcher about the questionnaire about children's attitudes towards advertising, food, and nutrition.
4.	My consent for my child to participate in the face-to-face interview is given freely.
5.	Although I understand that the purpose of this research project is to examine the determinants of food preferences in children, it has also been explained to me that the involvement of my child in the project may not be of any benefit to him/her.
6.	I have been informed that, while information gained during the study may be published, my child will not be identified and that none of the personal data will be divulged.
7.	I understand that my child is free to withdraw from the face-to-face interview at any time.
8.	I am aware that I should retain a copy of the Consent Form and the "Information Sheet." <i>(signature)</i> <i>(date)</i>







WITNESS I have described to <i>(name of subject)</i> the nature of the research to be carried out. In my opinion she/he understood the explanation. Status in Project: ...Pilot test participant..... Name: <i>(signature) (date)</i>
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Appendix 18: Children's Questionnaire (Pilot Test 1)







Introduction

Thank you for answering our questions 😊
 Remember, there are no right or wrong answer.
 We just want to know what you think about these questions.







Let's imagine you can choose what to eat tomorrow. Would you select the following food?

					
	Not at all!	No	Not sure	Yes	Definitely!
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What about this one?






					
	Not at all!	No	Not sure	Yes	Definitely!
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

And this one?






					
	Not at all!	No	Not sure	Yes	Definitely!
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Now, what foods would your friends choose tomorrow? Tick the answer.








				
Not at all!	No	Not sure	Yes	Definitely!
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



				
Not at all!	No	Not sure	Yes	Definitely!
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>








Mashed potatoes

				
Not at all!	No	Not sure	Yes	Definitely!
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What foods would your friends choose tomorrow? Tick the answer.








French fries

				
Not at all!	No	Not sure	Yes	Definitely!
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>








Bread, vegetables and fruit

				
Not at all!	No	Not sure	Yes	Definitely!
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What foods would your friends choose tomorrow? Tick the answer.





Burger, French fries, and soft drink



				
Not at all!	No	Not sure	Yes	Definitely!
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please read each question and tick your choice. If you do not know, select “Don’t know.”



1. Which one has higher content of fat?

 Traditional yogurt	<input type="radio"/>
 An apple	<input type="radio"/>
	<input type="radio"/> Don't know



2. Which one has higher content of fat? (please tick the answer)

 Cucumber	<input type="radio"/>
 Cheese	<input type="radio"/>
	<input type="radio"/> Don't know



3.

 <p>Medium fat cheese</p>	<input type="radio"/>
 <p>Low fat cheese</p>	<input type="radio"/>
<input type="radio"/> Don't know	



4.

 <p>A burger</p>	<input type="radio"/>
 <p>Broccoli</p>	<input type="radio"/>
<input type="radio"/> Don't know	



5. Which one has higher content of fat?

 <p>M&M cookies</p>	<input type="radio"/>
 <p>Banana</p>	<input type="radio"/>
<input type="radio"/> Don't know	



6. Which one has higher content of salt?

 Pizza	<input type="radio"/>
 Bread and vegetables	<input type="radio"/>
	<input type="radio"/> on't know



7. Which one has higher content of salt?

 Mashed potatoes	<input type="radio"/>
 French fries	<input type="radio"/>
	<input type="radio"/> Don't know



8. Which one has higher content of salt?

 <p>Bread and vegetables</p>	<input type="radio"/>
 <p>Bread and sausage</p>	<input type="radio"/>
	<input type="radio"/> Don't know



9. Which one has higher content of fat?

 <p>Potato chips</p>	<input type="radio"/>
 <p>An apple</p>	<input type="radio"/>
	<input type="radio"/> Don't know



10. Which one has more sugar?

 <p>Coca-Cola</p>	<input type="radio"/>
 <p>A glass of water</p>	<input type="radio"/>
	<input type="radio"/> Don't know

11.

 <p>Fruit juice</p>	<input type="radio"/>
 <p>A glass of water</p>	<input type="radio"/>
	<input type="radio"/> Don't know






12. Which one has more sugar?

 <p>Chocolate muffin</p>	<input type="radio"/>
 <p>An apple</p>	<input type="radio"/>
	<input type="radio"/> Don't know

13. Please have a look at the picture and tell us what you think about this food:
(tick your answer)








Burger, French fries, and soft drink






	 Not at all!	 No	 Not sure	 Yes	 A lot!
Do you think this food is funny?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is tasty?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is healthy?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is popular among children?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. What about this one?



	 Not at all!	 No	 Not sure	 Yes	 A lot!
Do you think this food is funny?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is tasty?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is healthy?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is popular among children?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. How often do people think it is OK to eat these foods? (tick your answer)

Food:	Never	Rarely	Weekly	Twice a week	Daily
 An Apple	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 Bread, vegetables, and fruit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 Broccoli	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 Cookies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 A burger, French fries, and soft drink	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. Imagine you are surfing the Internet and see this picture.



What does this picture try to do? If you don't know, select "Don't know."

	Not at all!	A little bit	Quite a bit	A lot	Totally!
It wants people to buy this food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It tries to make you to like the food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants you to think that having this food will make you feel good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants to grab your attention with a special offer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17. Imagine you have seen this on a street.



What does this picture try to do? If you don't know, select "Don't know."

	Not at all!	A little bit	Quite a bit	A lot	Totally!
It wants people to buy this food because it is new	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants people to buy this food because teddy likes it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants you to think that having this food will make you feel good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants to grab your attention with a new offer and a teddy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. Imagine you have seen this picture on a street.



What does this picture try to do? If you don't know, select "Don't know."

	Not at all!	A little bit	Quite a bit	A lot	Totally!
It wants people to buy toys	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It tries to make you like the toys	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants you to think that having these toys will make you feel good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants to grab your attention with a sale	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Finally, please tell us:

19. How old you are _____

20. Are you:

- A girl
- A boy

THANK YOU FOR ANSWERING OUR QUESTIONS! 😊

Appendix 19: Complaint Form (Pilot Test 1)

THE UNIVERSITY OF ADELAIDE
HUMAN RESEARCH ETHICS COMMITTEE

Document for people who are participants in a research project

CONTACTS FOR INFORMATION ON PROJECT AND INDEPENDENT COMPLAINTS PROCEDURE

The Human Research Ethics Committee is obliged to monitor approved research projects. In conjunction with other forms of monitoring it is necessary to provide an independent and confidential reporting mechanism to assure quality assurance of the institutional ethics committee system. This is done by providing research participants with an additional avenue for raising concerns regarding the conduct of any research in which they are involved.

The following study has been reviewed and approved by the University of Adelaide Human Research Ethics Committee:

Project title: Children's Food Consumer Socialisation: An Evaluation of the Impact of Marketing Communication, Parents, Peers, and Social Norms on Children's Food Choice and Obesity

1. If you have questions or problems associated with the practical aspects of your participation in the project, or wish to raise a concern or complaint about the project, then you should consult the project co-ordinator:

Name: Prof. Pascale Quester
Telephone: 830 33986
Email: execdean.professions@adelaide.edu.au

Name: Dr. Cullen Habel
Associate supervisor
Telephone: 08 830 34763
Email: cullen.habel@adelaide.edu.au

2. If you wish to discuss with an independent person matters related to
 - making a complaint, or
 - raising concerns on the conduct of the project, or
 - the University policy on research involving human participants, or
 - your rights as a participant









contact the Human Research Ethics Committee's Secretary on phone (08) 8303 6028.

Appendix 20: Demographic Characteristics of Participants (Pilot Test 1)


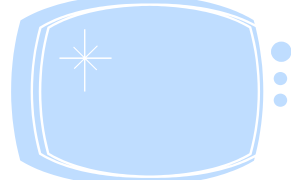
	Age	Females	Males
Year 3	7	1	-
	8	-	1
	9	1	1
Year 6	11	1	1
	12	-	1
Total	7	3	4

Appendix 21: Scale Explanation for Year Three Students (Pilot Test 1)




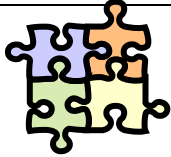
1. What do you want to do tomorrow? Tick your answer.

					
	Not at all!	No	Not sure	Yes	Definitely!
 Play on a computer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 Read a book	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 Watch TV	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

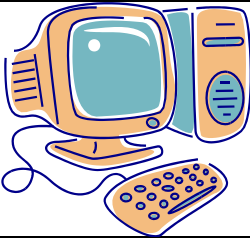
2. Which one is more interesting? Choose one, tick your answer. If you do not know, select "Don't know."

 Playing on a computer	<input type="radio"/>
 Watching TV	<input type="radio"/>
Don't know	<input type="radio"/>


3. Do you think this game is good for you? Tick your answer.

	 No	 Not sure	 Yes
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. How often do you play on a computer? Tick your answer.



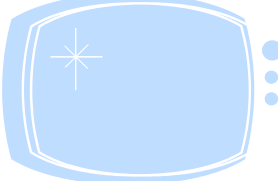
	Never	Rarely	Monthly	Weekly	Daily
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. What can computer do?


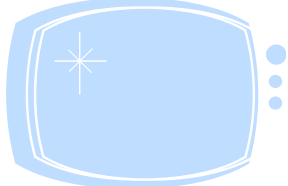
	Not at all!	A little bit	Quite a bit	A lot	Totally!
 It tries to make you learn new things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix 22: Scale Explanation for Year Six Students (Pilot Test 1)


1. What do you want to do tomorrow? Tick your answer.

	Not at all!	No	Not sure	Yes	Definitely!
 Play on a computer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 Read a book	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 Watch TV	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>


2. Which one is more interesting? Choose one, tick your answer. If you do not know, select “Don’t know.”

 Playing on a computer	<input type="radio"/>
 Watching TV	<input type="radio"/>
Don't know	<input type="radio"/>

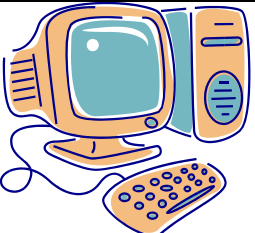
3. Do you think reading books is good for you? Tick your answer.

	No	Not sure	Yes
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. How often do you play on a computer? Tick your answer.

	Never	Rarely	Monthly	Weekly	Daily
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. What can computer do?

	Not at all!	A little bit	Quite a bit	A lot	Totally!
 It tries to make you learn new things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix 23: Information Letter for Parents (Pilot Test 2)



INFORMATION SHEET FOR PARENTS

Dear Madam/Sir,

We kindly ask you to give a permission to let your child take part in our study to pre-test a questionnaire about children's nutritional knowledge, attitudes about advertising, and peers' food choice. We are looking for children between 8 and 13 years. The project is titled "Children's Food Consumer Socialisation: An Evaluation of the Impact of Marketing Communication, Parents, Peers, and Social Norms on Children's Food Choice and Obesity in Australia" and represents a part of the PhD thesis of Ms Liudmila Tarabashkina at the University of Adelaide. This project aims to contribute to the theoretical and empirical knowledge about children's food consumer socialisation and your help in the pilot test of the questionnaire is highly appreciated!

During this pilot test we would like to administer a questionnaire to children which has questions about knowledge of nutrition, attitudes toward advertising, and peer's food choice. The questionnaire will take from 15 to 20 minutes to complete. It is presented in a form of a booklet so it is exciting for a child to fill in.

If you consent to your child participating in the study, we would kindly ask you to sign two copies of the consent form (attached to the letter) and return one of it through your child to the researcher. No personally identifiable information will be collected. Children will be asked to specify only their age and gender in the questionnaire. Children's weight and height will not be measured. No audio or video taping will be used. The signed consent forms will be kept in the locked drawer in the researcher's office and only the research will have access to them.

Below, you can find more information about the current stage of the project, funding, and contact persons in case you have any questions.

STUDY PLAN AND DESIGN

The project consist of three stages: 1) focus groups with children and parents, which were already carried out in 2010; 2) a pilot test of Children's Questionnaire (**the current stage**); and 3) a survey with children and parents (the mid-2011 and beginning of 2012).

FUNDING

The research is funded by the International Postgraduate Research Scholarship and the PhD research fund at the University of Adelaide to Liudmila Tarabashkina (PhD candidate).

ETHICS CLEARANCE

The project received ethical clearance from the Human Research Ethics Committee at the University of Adelaide (Project No. H-076-2011).

We thank you for your time and help!
Best Wishes,
Liudmila Tarabashkina

CONTACT PERSONS:

PHD SUPERVISORS: Prof. Pascale Quester

Principal supervisor

Telephone: 08 830 35901

Email: pascale.quester@adelaide.edu.au

Dr. Cullen Habel

Associate supervisor

Telephone: 08 830 34763

Email: cullen.habel@adelaide.edu.au

PhD candidate:

Ms Liudmila Tarabashkina

The University of Adelaide Business School

Telephone: **08 831 30736**

Email: liudmila.tarabashkina@adelaide.edu.au

Appendix 24: Parental/Guardian Consent Form for Children's Participation (Pilot Test 2)

THE UNIVERSITY OF ADELAIDE HUMAN RESEARCH ETHICS COMMITTEE

STANDARD CONSENT FORM

**For Research to be Undertaken on a Child, the Mentally Ill, and those
in Dependant Relationships or Comparable Situations**

To be Completed by Parent or Guardian

1.	I, <i>(please print name)</i> consent for my child.....to take part in a pilot test of a questionnaire, which forms a part of the research project entitled: Children's Food Consumer Socialisation: An Evaluation of the Impact of Marketing Communication, Parent, Peers, and Social Norms on Children's Food Choice and Obesity in Australia.
2.	I acknowledge that I have read the "Information Sheet" sent to me by the research team.
3.	I understand that my child will be asked to fill in a questionnaire about children's attitudes towards advertising, food, and nutritional knowledge.
4.	My consent for my child to participate in the study is given freely.
5.	Although I understand that the purpose of this research project is to examine children's attitudes about food and advertising, it has also been explained to me that the involvement of my child in the project may not be of any benefit to him/her.
6.	I have been informed that, while information gained during the study may be published, my child will not be identified and that none of the personal data will be divulged.
7.	I understand that my child is free to withdraw from the project at any time
8.	I understand that I should retain a copy of this Consent Form and the "Information Sheet." <i>(signature)</i> <i>(date)</i>

WITNESS

I have described to <i>(name of subject)</i> the nature of the research to be carried out. In my opinion she/he understood the explanation. Status in Project: ...Pilot test of a questionnaire, participant..... Name: <i>(signature) (date)</i>
--

Appendix 25: Demographic Characteristics of Participants (Pilot Test 2)

A) Children's age		
	Frequency	Valid percent
7 years	4	6.5%
8 years	16	25.8%
9 years	7	11.3%
10 years	7	11.3%
11 years	19	30.6%
12 years	8	12.9%
14 years	1	1.6%
Total valid	62	100%
Missing	3	
Total	65	
B) Gender		
Females	32	51.6%
Males	30	48.4%
Total valid	62	100%
Missing	3	
Total	65	
C) School Year		
Year 3	36	55.4%
Year 6	29	44.6%
Total	65	100%

Appendix 26: Invitation Letter to Take Part in the Pilot Test of Parents' Questionnaire

Dear Madam/Sir,

You are kindly invited to take part in the pilot test of the Parental Questionnaire about parents' nutritional knowledge and your communication patterns about advertising and food consumption with your child(ren). This questionnaire forms a part of PhD thesis titled "Children's Food Consumer Socialisation: An Evaluation of the Impact of Marketing Communication, Parents, Peers, and Social Norms on Children's Food Choice and Obesity in Australia" carried out by Ms Liudmila Tarabashkina at the University of Adelaide.

Please, remember that you can part in the study only if you have at least one child between 8 and 13 years. Only you need to fill in the questionnaire, no participation on the child's behalf is required. It will take only 15-20 minutes of your time and we highly appreciate your help! There are no right or wrong answers, we just want to know your opinion.

Below, you can find more information about the current stage of the project, funding, and contact persons in case you have any questions.

STUDY PLAN AND DESIGN

The project consist of three stages: 1) focus groups with children and parents, which were already carried out in 2010; 2) a pilot test of Parental Questionnaire (**the current stage**); and 3) a survey with children and parents (the mid-2011 and beginning of 2012).

FUNDING

The research is funded by the International Postgraduate Research Scholarship and the PhD research fund at the University of Adelaide to Liudmila Tarabashkina (PhD candidate).

ETHICS CLEARANCE

The project received ethical clearance from the Human Research Ethics Committee at the University of Adelaide (Project No. H-076-2011).

If you like to take part in the study, please get in touch with the PhD candidate for further details (liudmila.tarabashkina@adelaide.edu.au).

We thank you for your time and help!

Best Wishes,
Liudmila Tarabashkina

Appendix 27: Consent Form (Pilot Test of Parents' Questionnaire)

THE UNIVERSITY OF ADELAIDE HUMAN RESEARCH ETHICS COMMITTEE

STANDARD CONSENT FORM FOR PEOPLE WHO ARE PARTICIPANTS IN A RESEARCH PROJECT (PARENTS)

1.	I,	(please print name)
	consent to take part in a pilot test of Parental Questionnaire about parent's nutritional knowledge, attitudes about food, and communication patterns with children about food consumption and advertising.	
2.	My consent is given freely.	
3.	Although I understand that the purpose of this research project is to examine adults' attitudes about food and nutritional knowledge, it has also been explained that my involvement may not be of any benefit to me.	
4.	I have been informed that, while information gained during the study may be published, I will not be identified and my personal data will not be divulged.	
5.	I understand that I am free to withdraw from the project at any time.	
6.	I acknowledge that the complain procedures have been fully explained to me by the researcher.	
7.	I am aware that I should retain a copy of this Consent Form when completed.	
8.	I acknowledge that I have received the "Information sheet" about the study.	

	(signature)	(date)







WITNESS	
I have described to	(name of subject)
the nature of the research to be carried out. In my opinion she/he understood the explanation.	
Status in Project:	
Name:	
.....	
(signature) (date)	

Appendix 28: Children's Questionnaire (Pilot Test 2)







Introduction

Thank you for answering our questions 😊
 Remember, there are no right or wrong answer.
 We just want to know what you think about these questions.







1. Let's imagine you can choose what to eat tomorrow. Would you select the following food? Tick the answer.

					
	Not at all!	No	Not sure	Yes	Definitely!
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What about this one?






					
	Not at all!	No	Not sure	Yes	Definitely!
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

And this one?






					
	Not at all!	No	Not sure	Yes	Definitely!
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Now, what foods would your friends choose tomorrow? Tick the answer.




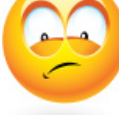



				
Not at all!	No	Not sure	Yes	Definitely!
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



				
Not at all!	No	Not sure	Yes	Definitely!
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>








French fries

				
Not at all!	No	Not sure	Yes	Definitely!
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What foods would your friends choose tomorrow? Tick the answer.








3. Bread, vegetables and fruit

				
Not at all!	No	Not sure	Yes	Definitely!
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What foods would your friends choose tomorrow? Tick the answer.





Burger, French fries, and soft drink

				
Not at all!	No	Not sure	Yes	Definitely!
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Please read each question and tick your choice. If you do not know, select “Don’t know.”



Which one has higher content of fat? (please tick the answer)

1

 <p>Traditional yogurt</p>	<input type="radio"/>
 <p>An apple</p>	<input type="radio"/>
<p>Don't know</p>	<input type="radio"/>

Which one has higher content of fat? (please tick the answer)

2

 <p>Cucumber</p>	<input type="radio"/>
 <p>Cheese</p>	<input type="radio"/>
<p>Don't know</p>	<input type="radio"/>



Which one has higher content of fat? (please tick the answer)

3

 3.5% fat cheese	<input type="radio"/>
 1% fat cheese	<input type="radio"/>
Don't know	<input type="radio"/>



Which one has higher content of fat? (please tick the answer)

4

 A burger	<input type="radio"/>
 Broccoli	<input type="radio"/>
Don't know	<input type="radio"/>



Which one has higher content of fat? (please tick the answer)

5



 Cookies	<input type="radio"/>
 Banana	<input type="radio"/>
Don't know	<input type="radio"/>

Which one has higher content of fat? (please tick the answer)



6

 Mashed potatoes	<input type="radio"/>
 French fries	<input type="radio"/>
Don't know	<input type="radio"/>

Which one has higher content of salt? please tick the answer)



7	 Pizza	<input type="radio"/>
	 Bread and vegetables	<input type="radio"/>
	Don't know	<input type="radio"/>

Which one has higher content of salt? please tick the answer)

8	 Bread and vegetables	<input type="radio"/>
	 Bread and sausage	<input type="radio"/>
	Don't know	<input type="radio"/>



Which one has higher content of fat? please tick the answer)

9

 <p>Potato chips</p>	<input type="radio"/>
 <p>An apple</p>	<input type="radio"/>
Don't know	<input type="radio"/>



Which one has more sugar? please tick the answer)

10

 <p>Soft drink</p>	<input type="radio"/>
 <p>A glass of water</p>	<input type="radio"/>
Don't know	<input type="radio"/>



Which one has more sugar? please tick the answer)

11

 Fruit juice	<input type="radio"/>
 A glass of water	<input type="radio"/>
Don't know	<input type="radio"/>

Which one has more sugar? (please tick the answer)






12

 Chocolate muffin	<input type="radio"/>
 An apple	<input type="radio"/>
Don't know	<input type="radio"/>

5. Please have a look at the picture and tell us what you think about this food:
(tick your answer)








Burger, French fries, and soft drink






	 Not at all!	 No	 Not sure	 Yes	 A lot!
Do you think this food is funny?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is tasty?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is healthy?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is popular among children?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. What about this one?





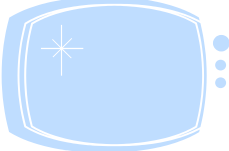

	 Not at all!	 No	 Not sure	 Yes	 A lot!
Do you think this food is funny?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is tasty?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is healthy?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is popular among children?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. How often do people think it is OK to eat these foods? (tick your answer)

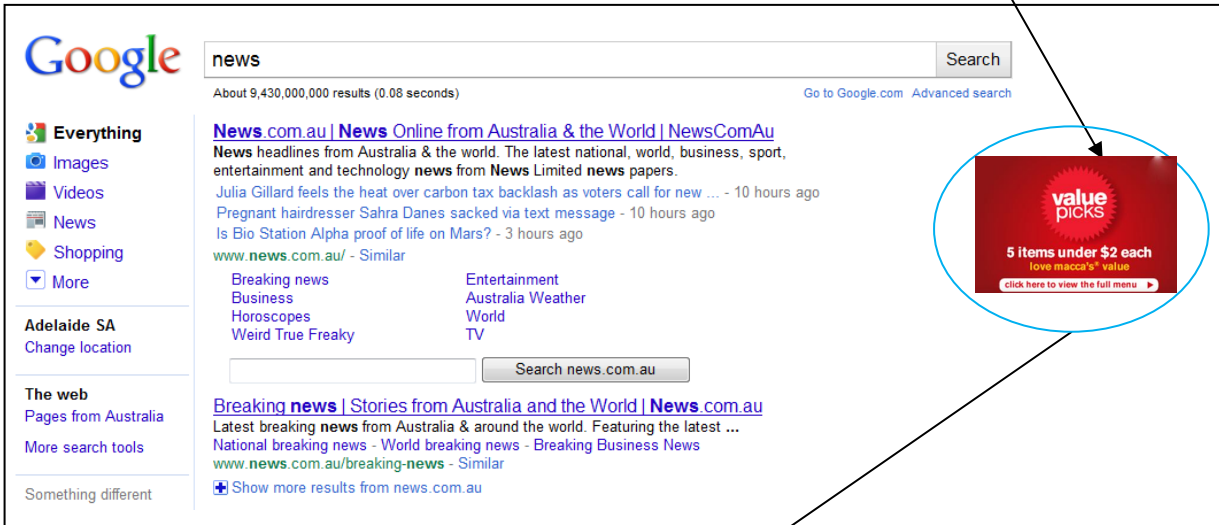
Food:	Never	Monthly	Weekly	Twice a week	Daily
 An Apple	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 Bread, vegetables, and fruit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 Broccoli	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 Cookies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 A burger, French fries, and soft drink	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. How did you learn about food?

(Select those which apply to you, you can select more than one)

 from your mum or dad	<input type="radio"/>
 from your school	<input type="radio"/>
 from TV	<input type="radio"/>
 from the Internet	<input type="radio"/>
from other people	<input type="radio"/>

Imagine you are surfing the Internet and see this picture.



9. What does this picture try to do? If you don't know, select "Don't know."

	Not at all!	A little bit	Quite a bit	A lot	Totally!	Don't know
It wants people to buy this food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It tries to make you to like the food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants you to think that having this food will make you feel good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants to grab your attention with a special offer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Imagine you have seen this on a street.



10. What does this picture try to do? If you don't know, select "Don't know."

	Not at all!	A little bit	Quite a bit	A lot	Totally!	Don't know
It wants people to buy this food because it is new	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants people to buy this food because teddy likes it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants you to think that having this food will make you feel good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants to grab your attention with a new offer and a teddy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Imagine you have seen this picture on a street.



11. What does the poster want to do? Circle the best answer. If you are not sure, circle "Don't know."

	Not at all!	A little bit	Quite a bit	A lot	Totally!	Don't know
It wants people to buy toys	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It tries to make you like the toys	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants you to think that having these toys will make you feel good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants to grab your attention with a sale	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Finally, please tell us:

12. How old you are _____

13. Are you:

- A girl
- A boy

THANK YOU FOR ANSWERING OUR QUESTIONS! 😊

Appendix 29: Pilot Test 2 (CQ)

A) Missing Value Analysis

Variables:	Missing cases	
	N	Percent
Would you select the following food? A burger	1	1.5%
Do you think this food is funny? Burger, French fries, and soft drink	2	3.1%
Do you think this food is tasty? Burger, French fries, and soft drink	2	3.1%
Do you think this food is healthy? Burger, French fries, and soft drink	2	3.1%
Do you think this food is popular with children? Burger, French fries, and soft drink	1	1.5%
Do you think this food is funny? An apple	4	6.2%
Do you think this food is tasty? An apple	2	3.1%
Do you think this food is healthy? An apple	4	6.2%
Do you think this food is popular with children? An apple	3	4.6%
How did you learn about food? parents selected	3	4.6%
How did you learn about food? school selected	3	4.6%
How did you learn about food? TV selected	3	4.6%
How did you learn about food? Internet selected	3	4.6%
How did you learn about food? Other people selected	3	4.6%
How did you learn about food? Number of sources	3	4.6%
It wants people to buy this food (special deal)	4	6.2%
It tries to make you like the food (special deal)	4	6.2%
It wants you think that having this food will make you feel good (special deal)	1	1.5%
It wants to grab your attention with a special offer (special deal)	1	1.5%
It wants people to buy this food because it is new (new product and a character)	3	4.6%
It wants people to buy this food because teddy likes it (new product and a character)	4	6.2%
It wants you think that having this food will make you feel good (new product and a character)	2	3.1%
It wants to grab your attention with a new offer and a teddy (new product and a character)	3	4.6%
It wants people to buy toys (toy sale)	4	6.2%
It tries to make you like the toys (toy sale)	5	7.7%
It wants you think that having these toys will make you feel good (toy sale)	3	4.6%
It wants to grab your attention with a sale (toy sale)	3	4.6%
Age	3	4.6%
Gender	3	4.6%

B) Exploratory Factor Analysis for Food-Related Items

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.610
Bartlett's Test of Sphericity	Approx. Chi-Square	339.591
	df	153
	Sig.	.000

Communalities		
Items:	Initial	Extraction
What foods would your friends choose tomorrow? A sausage and bread	1.000	.712
What foods would your friends choose tomorrow? An apple	1.000	.677
What foods would your friends choose tomorrow? French fries	1.000	.784
What foods would your friends choose tomorrow? Bread, vegetables, and fruit	1.000	.619
What foods would your friends choose tomorrow? Burger, French fries, and soft drink	1.000	.871
How often do people think it is OK to eat these foods? An apple	1.000	.718
How often do people think it is OK to eat these foods? Bread, vegetables, and fruit	1.000	.535
How often do people think it is OK to eat these foods? Broccoli	1.000	.737
How often do people think it is OK to eat these foods? Chocolate muffin and cookies	1.000	.772
How often do people think it is OK to eat these foods? A burger, French fries, and soft drink	1.000	.611
Do you think this food is funny? Burger, French fries, and soft drink	1.000	.814
Do you think this food is tasty? Burger, French fries, and soft drink	1.000	.672
Do you think this food is healthy? Burger, French fries, and soft drink	1.000	.628
Do you think this food is popular with children? Burger, French fries, and soft drink	1.000	.606
Do you think this food is funny? An apple	1.000	.788
Do you think this food is tasty? An apple	1.000	.300
Do you think this food is healthy? An apple	1.000	.577
Do you think this food is popular with children? An apple	1.000	.654

Notes:

Extraction Method: Principal Component Analysis.

C) Exploratory Factor Analysis for Advertising Literacy Items

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.716
Bartlett's Test of Sphericity	Approx. Chi-Square	260.680
	df	66
	Sig.	.000

Communalities		
Items:	Initial	Extraction
It wants people to buy this food (special deal)	1.000	.586
It tries to make you like the food (special deal)	1.000	.776
It wants you think that having this food will make you feel good (special deal)	1.000	.560
It wants to grab your attention with a special offer (special deal)	1.000	.753
It wants people to buy this food because it is (new product/character)	1.000	.833
It wants people to buy this food because teddy likes it (new product/character)	1.000	.489
It wants you think that having this food will make you feel good (new product/character)	1.000	.758
It wants to grab your attention with a new offer and a teddy (new product/character)	1.000	.472
It wants people to buy toys (toy sale)	1.000	.705
It tries to make you like the toys (toy sale)	1.000	.786
It wants you think that having these toys will make you feel good (toy sale)	1.000	.896
It wants to grab your attention with a sale (toy sale)	1.000	.785

Notes:

Extraction Method: Principal Component Analysis.

D) CTT and IRT Analysis of the Nutritional Knowledge Test

CTT Item Statistics

Codebook					
Items:	N of Items	ID	Answer Options:	Correct answer:	Assigned scores:
Higher fat	1	NKT1	Traditional yogurt vs. an apple vs. don't know	Yogurt	"Don't know" 0
	2	NKT2	Cucumber vs. cheese vs. don't know	Cheese	
	3	NKT3	3.5% fat cheese vs. 1% cheese vs. don't know	3.5% fat cheese	
	4	NKT4	A burger vs. broccoli vs. don't know	A hamburger	
	5	NKT5	Cookies vs. banana vs. don't know	Cookies	
	6	NKT6	Mashed potatoes vs. French fries vs. don't know	French fries	
Higher salt	7	NKT9	Potato chips vs. an apple vs. don't know	Potato chips	Incorrect answer 0
	8	NKT7	Pizza vs. bread and vegetables vs. don't know	Pizza	
	9	NKT8	Bread and vegetables vs. Bread and sausage vs. don't know	Bread and sausage	
More sugar	1	NKT10	Soft drink vs. a glass of water vs. don't know	Soft drink	Correct answer 1
	2	NKT11	Fruit juice vs. a glass of water vs. don't know	Fruit juice	
	3	NKT12	Chocolate muffin vs. an apple vs. don't know	Chocolate muffin	

CTT Item Analysis												
NKT item	NKT1	NKT2	NKT3	NKT4	NKT5	NKT6	NKT7	NKT8	NKT9	NKT10	NKT11	NKT12
<i>Correct answer</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>
Option 1 ¹	62 (95%)	0	60 (92%)	63 (97%)	62 (95%)	1 (2%)	59 (91%)	4 (6%)	64 (98%)	65 (100%)	62 (95%)	64 (98%)
Option 2 ¹	2 (3%)	60 (92%)	3 (5%)	2 (3%)	2 (3%)	61 (94%)	2 (3%)	59 (91%)	1 (2%)	0	1 (2%)	1 (2%)
Option 3 ¹	1 (2%)	5 (8%)	2 (3%)	0	1 (2%)	3 (5%)	4 (6%)	2 (3%)	0	0	2 (3%)	0
IF total ²	95%	92%	92%	97%	95%	94%	91%	91%	98%	100%	95%	98%
IF upper ³	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
IF lower ⁴	90%	81%	76%	90%	86%	81%	71%	76%	95%	100%	86%	95%
Item discrimination ⁵	10%	19%	24%	10%	14%	19%	29%	24%	5%	0%	14%	5%

Notes:

¹ – Frequencies reported with percentages in parentheses.

² – Item facility or difficulty, proportion of students who answered question correctly.

³ – Proportion of top third of test takers who answered question correctly.

⁴ – Proportion of bottom third of test takers who answered question correctly.

⁵ – The difference between the top third and the bottom third of test takers.

Correct answers are marked in bold.

Summary:

N	65
Mean	11.40
Standard Deviation	0.98
Variance	0.96
Skewness	-1.87
Kurtosis	3.14
Standard error of mean	0.1
Standard error of measurement	0.73

IRT Item Statistics

Notes: NK10 was excluded from the analysis because all children answered it correctly.

SUMMARY OF THE ESTIMATION

```

=====
Estimation method was: Gauss-Hermite Quadrature with 15 nodes
Assumed population distribution was: Gaussian
Constraint was: DEFAULT
The Data File: dataNNT.dat
The format: id 1-2 gender 3 yearcat 4 responses 5-16
The regression model:
Grouping Variables:
The item model: item
Sample size: 65
Final Deviance:          281.90394
Total number of estimated parameters: 12
The number of iterations: 80
Termination criteria:  Max iterations=1000, Parameter Change= 0.00010
                      Deviance Change= 0.00010
Iterations terminated because the deviance convergence criteria was reached
Random number generation seed:  1.00000
Number of nodes used when drawing PVs: 2000
Number of nodes used when computing fit: 1000
Number of plausible values to draw: 5
Maximum number of iterations without a deviance improvement: 100
Maximum number of Newton steps in M-step: 10
Value for obtaining finite MLEs for zero/perfects:  0.30000
  
```

key 1 scored as 1: 121112121111

TABLES OF RESPONSE MODEL PARAMETER ESTIMATES

VARIABLES		UNWEIGHTED FIT				WEIGHTED FIT		
Item	ESTIMATE	ERROR [^]	MNSQ	CI	T	MNSQ	CI	T
1 NKT1	-0.030	0.525	1.39	(0.66, 1.34)	2.0	1.08	(0.04, 1.96)	0.3
2 NKT2	0.563	0.442	0.47	(0.66, 1.34)	-3.7	0.88	(0.31, 1.69)	-0.2
3 NKT3	0.563	0.442	0.36	(0.66, 1.34)	-4.8	0.75	(0.31, 1.69)	-0.7
4 NKT4	-0.478	0.597	0.61	(0.66, 1.34)	-2.6	0.99	(0.00, 2.22)	0.2
5 NKT5	-0.030	0.525	0.59	(0.66, 1.34)	-2.7	0.88	(0.04, 1.96)	-0.1
6 NKT6	0.299	0.477	1.43	(0.66, 1.34)	2.2	1.12	(0.20, 1.80)	0.4
7 NKT7	0.785	0.415	0.57	(0.66, 1.34)	-2.9	0.84	(0.40, 1.60)	-0.4
8 NKT8	0.785	0.415	0.74	(0.66, 1.34)	-1.6	0.96	(0.40, 1.60)	-0.0
9 NKT9	-1.214	0.722	0.45	(0.66, 1.34)	-3.9	0.97	(0.00, 2.82)	0.3
11 NKT11	-0.030	0.525	0.39	(0.66, 1.34)	-4.5	0.82	(0.04, 1.96)	-0.2
12 NKT12	-1.214*	1.633	0.78	(0.66, 1.34)	-1.3	1.00	(0.00, 2.82)	0.3

* An asterisk next to a parameter estimate indicates that it is constrained

Separation Reliability=0.316

Chi-square test of parameter equality=14.27, df=10, Sig Level=0.161

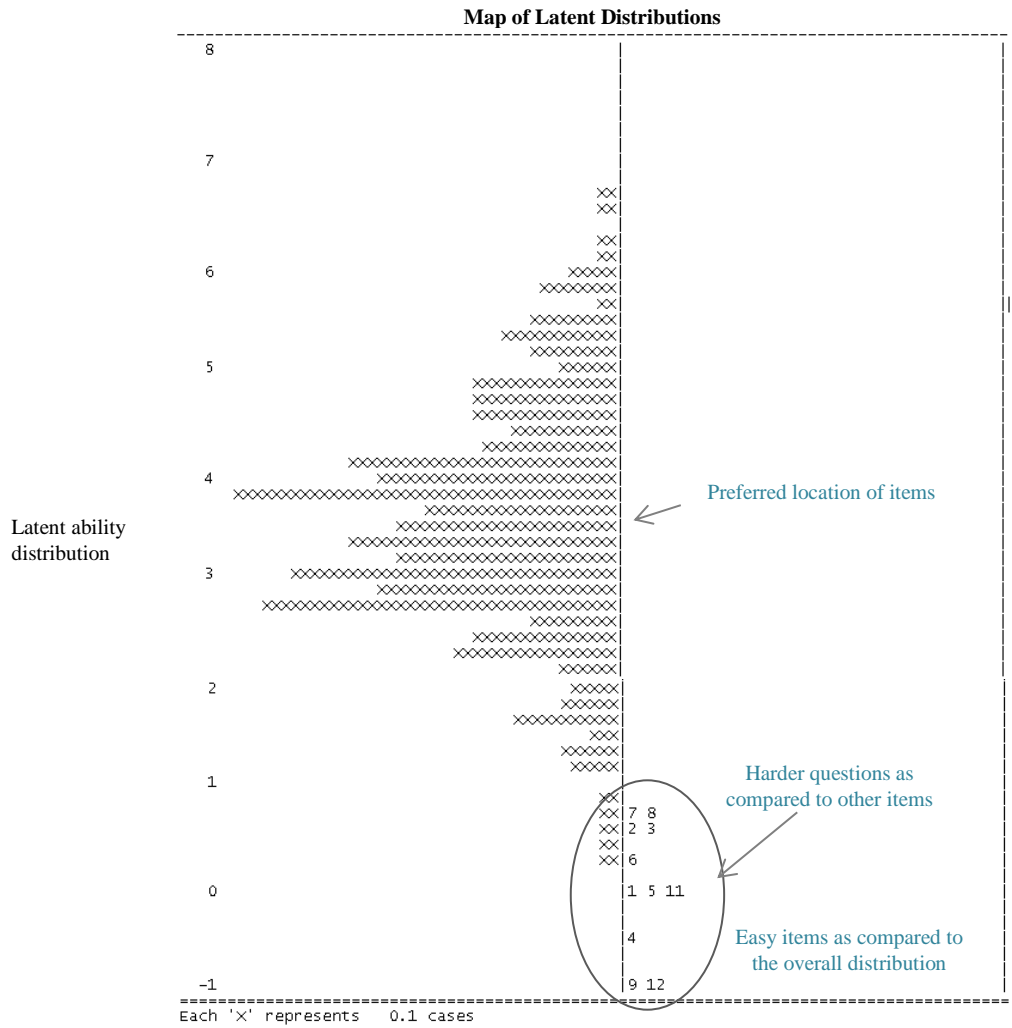
[^] Quick standard errors have been used

RELIABILITY COEFFICIENTS

Dimension: (Dimension 1)

```

-----
MLE Person separation RELIABILITY:  Unavailable
WLE Person separation RELIABILITY:  Unavailable
EAP/PV RELIABILITY:                 0.358
-----
  
```




















E) Collinearity Diagnostics for Regressions

	Collinearity Statistics	
	Tolerance	VIF
A) Preference for an apple		
Nutritional knowledge	.765	1.307
Friends' less healthy food preferences	.629	1.589
Friends' healthy food preferences	.812	1.231
Social acceptability for healthy foods	.778	1.285
Social acceptability for less healthy foods	.868	1.152
Evaluation of apple (healthy and tasty)	.792	1.262
Evaluation of apple (popular and funny)	.628	1.593
Advertising literacy: toys sale	.816	1.226
Advertising literacy: special deal	.734	1.362
Advertising literacy: new product/character	.804	1.244
Age	.562	1.780
Gender	.848	1.179
B) Preference for a burger		
Nutritional knowledge	.766	1.305
Friends' less healthy food preferences	.651	1.537
Friends' healthy food preferences	.762	1.312
Social acceptability for healthy foods	.741	1.349
Social acceptability for less healthy foods	.847	1.181
Evaluation of burger (tasty and popular)	.648	1.544
Evaluation of burger (funny and healthy)	.794	1.259
Advertising literacy: toys sale	.798	1.253
Advertising literacy: special deal	.679	1.472
Advertising literacy: new product/character	.797	1.254
Age	.628	1.593
Gender	.816	1.226










Appendix 30: Modified NKT

A) Description of Changes












Which one has the highest content of fat?

Old Items	Modified Item	Old Items	Modified Item
 Traditional yogurt	 Traditional yogurt	 3.5% fat cheese	 3.5% fat cheese (100 gram)
 2 Oreo biscuits	 2 Oreo biscuits	 1% fat cheese	 A burger
 Gouda cheese (100 gram)	 An apple	 A burger	 1% fat cheese (100 gram)
 Cucumber	 Gouda cheese (100 gram)	 Broccoli	 Broccoli
	 Cucumber		Don't know
	Don't know		













Which one has the highest content of salt?

Old Items	Modified Item
 Pizza	 Pizza
 Bread and vegetables	 Bread and vegetables
 Bread and vegetables	 Bread and sausage
 Bread and sausage	 An apple
	 Don't know






Which one has the highest content of sugar?

Old Items	Modified Item
 Water	 Fruit juice
 Soft drink	 Water
 Fruit juice	 Soft drink
 Water	 Chocolate muffin
 Chocolate muffin	 An apple
 An apple	Don't know






Which one has the lowest content of fat?

Old Item	Modified Item	Old Item	Modified Item
 Bread, vegetables and fruit	 Burger, French fries, and soft drink	 Cookies	 Cookies
 Burger, French fries, and soft drink	 Bread, vegetables and fruit	 Bananas	 Bananas
	 Bread and sausage		 French fries
	 Traditional yogurt		 Gouda cheese (100 gram)
	Don't know		Don't know

Which one has the lowest content of salt?

New Item
 Potato chips
 Bread
 Cucumber
 2 Oreo biscuits
 French fries
Don't know

Which one has the lowest content of sugar?

New Item
 Chocolate muffin
 Banana
 Broccoli
 Soft drink
 Traditional yogurt
Don't know

B) Correct Answers

Which one has the highest content of fat?

	Estimated content of fat	Correct answer	Assigned score
<i>NKT1</i>			
Traditional yogurt	3.2g		0
2 Oreo biscuits	10g		0
An apple	0.3g		0
Gouda cheese (100 gram)	30.8g	✓	1
Cucumber	0.2g		0
Don't know			0
<i>NKT2</i>			
3.5% fat cheese (100 gram)	30.8g		0
A burger	60.5g	✓	1
1% fat cheese (100 gram)	around 20g		0
Broccoli	1.1g		0
Bread and sausage	354 mg		0
Don't know			0

Which one has the highest content of salt?

	Estimated content of salt	Correct answer	Assigned score
<i>NKT3</i>			
Pizza	845mg	✓	1
Bread and vegetables	136mg		0
Bread and sausage	354mg		0
An apple	2 mg		0
Don't know			0

Which one has the highest content of sugar?

	Estimated content of sugar	Correct answer	Assigned score
<i>NKT4</i>			
Fruit juice	20.8g		0
A glass of water	0g		0
Soft drink	27g	✓	1
Chocolate muffin	23.6g		0
An apple	18.9g		0
Don't know			0

Which one has the lowest content of fat?

	Estimated content of fat	Correct answer	Assigned score
<i>NKT5</i>			
Burger, French fries, and soft drink	76g		0
Bread and vegetables	4g		0
Bread and a sausage	21.5g		0
Traditional yogurt	3.2g	✓	1
Don't know			0
<i>NKT8</i>			
Cookie	10g		0
Banana	0g	✓	1
French fries	14.5 g		0
Bread and vegetables	4g		0
Gouda cheese (100 gram)	30.8g		0
Don't know			0

Which one has the lowest content of salt?

	Estimated content of salt	Correct answer	Assigned score
<i>NKT6</i>			
Potato chips	1192 mg		0
Bread	130mg		0
Cucumber	3mg	✓	1
2 Oreo biscuits	340mg		0
French fries	165 mg		0
Don't know			0

Which one has the highest content of sugar?

	Estimated content of sugar	Correct answer	Assigned score
<i>NKT7</i>			
Chocolate muffin	23.6g		0
A banana	21g		0
Broccoli	3.9g	✓	1
Soft drink	27g		0
Traditional yogurt	6.6g		0
Don't know			0

Fat, Sugar, and Salt in Foods:

Foods:	Sodium	Sugar	Total fat	
Yogurt fruit (low fat) ² Serving size = 227 g	132 mg	6.6 g	3.2 g	
Apple ² Serving size = 1, 182 g	2 mg	18.9 g	0.3 g	
Potato chips ² A bag = 227 g	1192 mg	0.8 g	85.1 g	
Banana ² Serving size 1 medium banana, 126 g	0 g	21 g	0 g	
French fries ² per 85 g	165 mg	0.6 g	14.5 g	
Cookie ² Serving size = 1 cookie, 45 g	100 g	18 g	10 g	
Bread roll, white ¹ Serving size = 100 g	3.9 g	120 g	114 g	
Muffin mix, chocolate, dry ¹	149 mg	23.6 g	22.2 g	
Cucumber ² Serving size = 1 cup, chopped, 133. g	3mg	1.8g	0.2g	
Gouda cheese ¹ Serving Size = 100 g	75 mg	0 g	30.8 g	
Pizza ¹ Family sized pizza (per 100 g)	169 mg (for 500g=845 mg)	2.6 g	9.6 g (for 500g=48 g)	
Fruit (orange) juice ² Serving size = 1 cup, 248 g	2mg	20.8 g	0.5 g	
Soft drink (Pepsi) ² Serving size = 240 g	25 mg	27 g	0 g	
A glass of water ² Serving size = 1 cup	7mg	0 g	0 g	
Bread and a sausage	Bread roll, white ¹	130 mg	4.0 g	3.8 g
	Sausage, beef, fried ¹	224 mg	0.9 g	17.7 g
	<i>Total</i>	<i>354 mg</i>		<i>21.5 g</i>
Bread and vegetables	Bread roll, white ¹	130 mg	4.0 g	3.8 g
	Tomato ² Serving size = 123 g	6 mg	3.2 g	0.2 g
	<i>Total</i>	<i>136 g</i>	<i>7.2 g</i>	<i>4 g</i>
Burger, French fries, and soft drink	A burger ³ (ultimate double whopper), per 435 g	2189 mg	11.5 g	76.9 g
	French fries ² per 85 g	165 mg	0.6 g	14.5 g
	Soft drink (Pepsi) ² Serving size= 240 g	25 mg	27 g	0 g
	<i>Total</i>	<i>2397 mg</i>	<i>39.1 g</i>	<i>91.4 g</i>
Broccoli (cooked) ² Serving size = 1 stalk, large, 280 g	734 mg	3.9 g	1.1 g	
A burger ³ (ultimate double whopper), per 435 g	2.1 g (2189 mg)	11.5 g	76.9 g	
Oreo biscuits ²	1 serving	170 mg	10 g	5 g
	2 biscuits	340 mg	20 g	10 g

Notes:

¹ <http://www.alfitness.com.au>





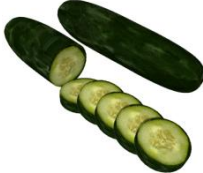
² <http://caloriecount.about.com/calories-cucumber-peeled-i11206>

³ Hungry Jack's Nutrition Guide (December, 2011) Ultimate Double Whopper:
<http://www.hungryjacks.com.au/images/pdf/NutriGuide.pdf>





C) NKT Questionnaire for Pilot Test 3

Thank you for answering our questions 😊
 Remember, there are no right or wrong answer.
 We just want to know what you think about these questions.
 Please answer all questions.





1. Which one has the highest content of fat?
 (please tick the answer)

 <p>Traditional yogurt</p>	<input type="radio"/>
 <p>2 Oreo biscuits</p>	<input type="radio"/>
 <p>An apple</p>	<input type="radio"/>
 <p>Gouda cheese (100 gram)</p>	<input type="radio"/>
 <p>Cucumber</p>	<input type="radio"/>
<p>Don't know</p>	<input type="radio"/>



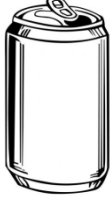


2. Which one has the highest content of fat?
(please tick the answer)

 3.5% fat cheese (100 gram)	<input type="radio"/>
 A burger	<input type="radio"/>
 1% fat cheese (100 gram)	<input type="radio"/>
 Broccoli	<input type="radio"/>
Don't know	<input type="radio"/>




3. Which one has the highest content of salt?
(please tick the answer)

 <p>Pizza</p>	<input type="radio"/>
 <p>Bread and vegetables</p>	<input type="radio"/>
 <p>Bread and sausage</p>	<input type="radio"/>
 <p>An apple</p>	<input type="radio"/>
<p>Don't know</p>	<input type="radio"/>






4. Which one has the highest content of sugar?
(please tick the answer)

 <p>Fruit juice</p>	<input type="radio"/>
 <p>A glass of water</p>	<input type="radio"/>
 <p>Soft drink</p>	<input type="radio"/>
 <p>Chocolate muffin</p>	<input type="radio"/>
 <p>An apple</p>	<input type="radio"/>
<p>Don't know</p>	<input type="radio"/>






5. Which one has the lowest content of fat?
(please tick the answer)

 <p>Burger, French fries, and soft drink</p>	<input type="radio"/>
 <p>Bread and vegetables</p>	<input type="radio"/>
 <p>Bread and sausage</p>	<input type="radio"/>
 <p>Traditional yogurt</p>	<input type="radio"/>
<p>Don't know</p>	<input type="radio"/>






6. Which one has the lowest content of salt?
(please tick the answer)

 <p>Potato chips</p>	<input type="radio"/>
 <p>Bread</p>	<input type="radio"/>
 <p>Cucumber</p>	<input type="radio"/>
 <p>2 Oreo biscuits</p>	<input type="radio"/>
 <p>French fries</p>	<input type="radio"/>
<p>Don't know</p>	<input type="radio"/>

7. Which one has the lowest content of sugar?
(please tick the answer)

 <p>Chocolate muffin</p>	<input type="radio"/>
 <p>Banana</p>	<input type="radio"/>
 <p>Broccoli</p>	<input type="radio"/>
 <p>Soft drink</p>	<input type="radio"/>
 <p>Traditional yogurt</p>	<input type="radio"/>
<p>Don't know</p>	<input type="radio"/>

8. Which one has the lowest content of fat
(please tick the answer)

 Cookie	<input type="radio"/>
 Banana	<input type="radio"/>
 French fries	<input type="radio"/>
 Bread and vegetables	<input type="radio"/>
 Gouda cheese (100 gram)	<input type="radio"/>
Don't know	<input type="radio"/>

Finally, please tell us:

How old you are _____

Are you:

- A girl
- A boy

THANK YOU FOR ANSWERING OUR QUESTIONS! 😊

D) Respondents' Demographic Characteristics

A) Children's age		
	Frequency	Valid percent
8 years	3	30%
10 years	3	30%
11 years	3	30%
13 years	1	10%
B) Gender		
Females	5	50%
Males	5	50%
C) School Year		
Year 3	5	50%
Year 6	5	50%
Total	10	100%

E) CTT Item Statistics

CTT Item Analysis								
NKT item	NKT1 (Q1)	NKT2 (Q2)	NKT3 (Q3)	NKT4 (Q4)	NKT5 (Q5)	NKT6 (Q6)	NKT7 (Q7)	NKT8 (Q8)
<i>Correct answer</i>	4	2	3	3	2	3	3	2
Option 1	1 (10%)	0	7 (70%)	0	0	0	0	0
Option 2	7 (70%)	10 (100%)	0	0	5 (50%)	1 (10%)	0	4 (40%)
Option 3	0	0	2 (20%)	7 (70%)	0	9 (90%)	10 (100%)	1 (10%)
Option 4	2 (20%)	0	0	3 (30%)	5 (50%)	0	0	3 (30%)
Option 5	0	0	1 (10%)	0	0	0	0	1 (10%)
Option 6	0	--	--	0	--	0	0	1 (10%)
IF total ¹	20%	100%	20%	70%	50%	90%	100%	40%
IF upper ²	33%	100%	67%	100%	33%	100%	100%	100%
IF lower ³	0%	100%	0%	67%	67%	67%	100%	0%
Item discrimination ⁴	33%	0%	67%	33%	-33%	33%	0%	100%

Notes:

¹ – Item difficulty, proportion of students who answered question correctly.

² – Proportion of top third of test takers who answered question correctly.

³ – Proportion of bottom third of test takers who answered question correctly.

⁴ – The difference between the top third and the bottom third of test takers.

Correct answers are marked in bold.

Summary:

N	10
Mean	4.90
Standard Deviation	1.10
Variance	1.21
Skewness	0.73
Kurtosis	-0.84
Standard error of mean	0.35
Standard error of measurement	1.11

No differentiation among children; items were answered correctly by all children

Negative differentiation because the item was answered correctly by students with lower nutritional knowledge

F) IRT Item Statistics

SUMMARY OF THE ESTIMATION

```

=====
Estimation method was: Gauss-Hermite Quadrature with 15 nodes
Assumed population distribution was: Gaussian
Constraint was: DEFAULT
The Data File: NKTmodified.dat
The format: id 1-2 age 3-4 gender 5 year 6 yearcat 7 school 8 responses 9-16
The regression model:
Grouping Variables:
The item model: item
Sample size: 16
Final Deviance:          66.07938
Total number of estimated parameters: 7
The number of iterations: 195
Termination criteria:  Max iterations=1000, Parameter Change= 0.00010
                      Deviance Change= 0.00010
Iterations terminated because the deviance convergence criteria was reached
Random number generation seed:  1.00000
Number of nodes used when drawing PVs: 2000
Number of nodes used when computing fit: 1000
Number of plausible values to draw: 5
Maximum number of iterations without a deviance improvement: 100
Maximum number of Newton steps in M-step: 10
Value for obtaining finite MLEs for zero/perfects:  0.30000
key 1 scored as 1: 42332332
=====

```

item analysis

TABLES OF RESPONSE MODEL PARAMETER ESTIMATES

TERM 1: item

VARIABLES		UNWEIGHTED FIT				WEIGHTED FIT		
Item ¹	ESTIMATE	ERROR [^]	MNSQ	CI	T	MNSQ	CI	T
NKT1	Harder items 1.378	0.503	0.95 (0.12, 1.88)	0.0	0.97	(0.11, 1.89)	0.1	0.1
NKT3	1.378	0.503	1.01 (0.12, 1.88)	0.2	0.99	(0.11, 1.89)	0.1	0.1
NKT4	-0.880	0.474	1.00 (0.12, 1.88)	0.1	1.01	(0.41, 1.59)	0.1	0.1
NKT5	-0.023	0.454	0.98 (0.12, 1.88)	0.1	0.98	(0.93, 1.07)	-0.5	-0.5
NKT6	Easier item -2.240	0.553	1.07 (0.12, 1.88)	0.3	1.06	(0.00, 2.73)	0.4	0.4
NKT8	0.387*	1.115	0.99 (0.12, 1.88)	0.1	0.99	(0.77, 1.23)	-0.1	-0.1

Notes: An asterisk next to a parameter estimate indicates that it is constrained.

¹ - NKT2 and NKT7 were automatically excluded from the analysis by ConQuest because there was no variance in the data.

Separation Reliability=0.896

Chi-square test of parameter equality=34.89, df=5, Sig Level=0.000

[^] Quick standard errors have been used

RELIABILITY COEFFICIENTS

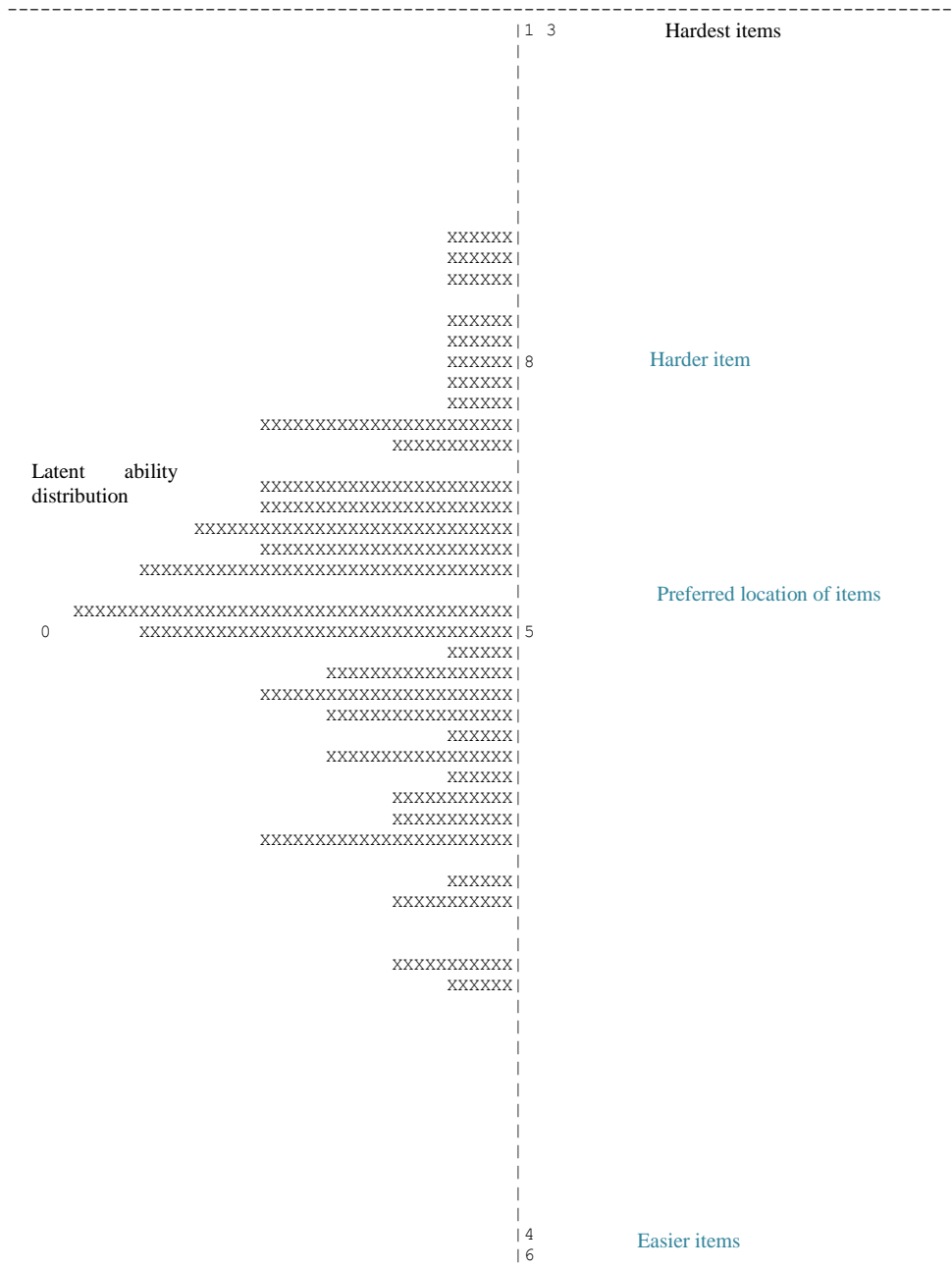
Dimension: (Dimension 1)

MLE Person separation RELIABILITY: Unavailable

WLE Person separation RELIABILITY: Unavailable

EAP/PV RELIABILITY: 0.029

Map of Latent Distributions



Each 'X' represents 0.0 cases

G) Final Modifications to NKT

Which one has the highest content of salt?

	Estimated content of salt	Correct answer	Assigned score
<i>NKT3</i>			
Pizza	845mg	✓	1
Bread and vegetables	136mg		0
Bread and sausage	354mg		0
An apple	2 mg		0
Soft drink ¹	25 mg		0
Don't know			0

Notes:

¹ – Additional answer category

Which one has the lowest content of fat?

	Estimated content of fat	Correct answer	Assigned score
<i>NKT5</i>			
Burger, French fries, and soft drink	76g		0
Bread and vegetables	4g		0
Bread and a sausage	21.5g		0
Traditional yogurt	3.2g	✓	1
Gouda cheese (100 gram) ¹	around 20g		0
Don't know			0

Notes:

¹ – Additional answer category

Appendix 31: Parents' Questionnaire for Pilot Test

PARENTS' QUESTIONNAIRE

Thank you for taking part in our survey. It will take around 25-30 minutes. All answers will be kept confidential and only the researcher will have access to answers. We want to ask you about your attitudes concerning food consumption and some questions about your child. You can withdraw at any time if you do not wish to participate, but we would appreciate if you could answer all questions

The first few items are about what advice you think experts are giving us:

1. Do you think health experts recommend that people should be eating more, the same amount, or less of these foods? (tick one box per food):

	More	Same	Less	Not sure
Vegetables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sugary foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Starchy foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fatty foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High fibre foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Salty foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. How many servings of fruit a day do you think experts are advising people to eat? (One serving could be, for example, an apple)

.....

3. How many servings of vegetables a day do you think experts are advising people to eat? (One serving could be, for example, a handful of chopped carrots)

.....

4. Which fat do experts say is most important for people to cut down on? (tick one):

(a) monounsaturated fat	<input type="checkbox"/>
(b) polyunsaturated fat	<input type="checkbox"/>
(c) saturated fat	<input type="checkbox"/>
(d) not sure	<input type="checkbox"/>

5. What version of dairy foods do experts say people should eat? (tick one):

(a) full fat	<input type="checkbox"/>
(b) lower fat	<input type="checkbox"/>
(c) both full fat and lower fat	<input type="checkbox"/>
(d) neither, dairy foods should be avoided	<input type="checkbox"/>
(e) not sure	<input type="checkbox"/>

Experts classify foods into groups. We are interested to see whether people are aware of what foods are in these groups:

6. Do you think these are high or low in added sugar? (tick one box per food)

	High	Low	Not sure
Bananas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unflavoured yoghurt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ice-cream	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Orange 35% juice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tomato ketchup	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tinned fruit in natural juice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. Do you think these are high or low in fat? (tick one box per food):

	High	Low	Not sure
Pasta (without sauce)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mayonnaise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baked beans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lunch/sandwich meat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Honey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nuts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
White bread	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cottage cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Polyunsaturated margarine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Do you think experts put these in the carbohydrates foods group? (tick one box per food):

	Yes	No	Not sure
Cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pasta	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Butter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nuts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Porridge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. Do you think these are high or low in salt? (tick one box per food):

	High	Low	Not sure
Sausages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pasta	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Red meat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen vegetables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. Do you think these are high or low in protein? (tick one box per food)

	High	Low	Not sure
Chicken	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baked beans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Butter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cream	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. Do you think these fatty foods are high or low in saturated fat? (tick one box per food):

	High	Low	Not sure
Tuna	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Whole milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Olive oil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Red meat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sunflower margarine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chocolate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. Some foods contain a lot of fat but no cholesterol (tick one):

- (a) agree
- (b) disagree
- (c) not sure

13. Saturated fats are mainly found in (tick one):

- (a) vegetable oils
- (b) dairy products
- (c) both (a) and (b)
- (d) not sure

14. Which of these breads contain the most vitamins and minerals? (tick one):

-
- (a) white bread
- (b) wholemeal bread
- (b) wholegrain bread
- (c) not sure

16. Which do you think is higher in kilojoules: butter or regular margarine? (tick one):

- (a) butter
- (b) regular margarine
- (c) both the same
- (d) not sure

17. Harder fats contain more: (tick one):

(a) monounsaturated fat

(b) polyunsaturated fat

(c) saturated fat

(d) not sure

18. Polyunsaturated fats are mainly found in (tick one):

(a) vegetable oils

(b) dairy products

(c) both (a) and (b)

(d) not sure

19. Please tell us your opinion about the following statements:

	Never or only rarely true of me	Sometimes true of me	Half the time true of me	Frequently true of me	Always or almost always true of me
I try to explain to my child the difference between good foods and bad foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When my child sees a food advertisement I try to explain the motives behind the advertisement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I try to help my child understand what s/he sees on TV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I try to help my child understand the difference between advertisements and programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please tell us your opinion about the following statements:

20. Members of my family/extended family often eat fast food:

1 Disagree	2	3	4	5 Agree
------------	---	---	---	---------

21. My friends often eat fast food:

1 Disagree	2	3	4	5 Agree
------------	---	---	---	---------

22. The people who live in our area often eat fast food:

1 Disagree	2	3	4	5 Agree
------------	---	---	---	---------

23. We can easily walk to a fast food restaurant from our house:

1 Disagree	2	3	4	5 Agree
------------	---	---	---	---------

24. We can easily drive to a fast food restaurant from our house:

1 Disagree	2	3	4	5 Agree
------------	---	---	---	---------

25. How often do you eat fast food?

Never	Less than once a week	One or two times a week	Three or four times a week	More than four times a week

Please tell us your opinion about the following statements:

26. Fast food is not enjoyable/enjoyable:

1 Not enjoyable	2	3	4	5 Enjoyable
--------------------	---	---	---	-------------

27. Fast food is bad/good:

1 Bad	2	3	4	5 Good
-------	---	---	---	--------

28. Fast food is inconvenient/convenient:

1 Inconvenient	2	3	4	5 Convenient
----------------	---	---	---	--------------

29. Fast food is a waste of money/value for money:

1 Waste of money	2	3	4	5 Value for money
---------------------	---	---	---	----------------------

30. What is your child's weight: _____

31. What is your child's height: _____

32. How many hours does your child spend surfing the Internet on weekday:

- Less than one
- Up to one
- Up to two
- Up to three
- Up to four
- Up to five
- Up to six
- More Please specify _____

33. How many hours does your child spend surfing the Internet on the weekend:

- Less than one
- Up to one
- Up to two
- Up to three
- Up to four
- Up to five
- Up to six
- More Please specify _____

34. How many hours of TV does your child watch on a weekday:

- | | |
|---------------|--------------------------|
| Less than one | <input type="checkbox"/> |
| Up to one | <input type="checkbox"/> |
| Up to two | <input type="checkbox"/> |
| Up to three | <input type="checkbox"/> |
| Up to four | <input type="checkbox"/> |
| Up to five | <input type="checkbox"/> |
| Up to six | <input type="checkbox"/> |
| More | Please specify _____ |

35. How many hours of TV does your child watch on the weekend:

- | | |
|---------------|--------------------------|
| Less than one | <input type="checkbox"/> |
| Up to one | <input type="checkbox"/> |
| Up to two | <input type="checkbox"/> |
| Up to three | <input type="checkbox"/> |
| Up to four | <input type="checkbox"/> |
| Up to five | <input type="checkbox"/> |
| Up to six | <input type="checkbox"/> |
| More | Please specify _____ |

36. How often does your child eat at fast foods (including take-away and fast food restaurants)?

- | | |
|-------------------------------|--------------------------|
| Never | <input type="checkbox"/> |
| Less than once a week | <input type="checkbox"/> |
| One to two times per week | <input type="checkbox"/> |
| Three to four times per week | <input type="checkbox"/> |
| More than four times per week | <input type="checkbox"/> |

37. Are you:

- | | |
|--------|--------------------------|
| Female | <input type="checkbox"/> |
| Male | <input type="checkbox"/> |

38. How old are you: _____

39. What is your residential postcode: _____

40. What is your highest level of education:

- | | |
|--|--------------------------|
| Some primary school | <input type="checkbox"/> |
| Finished primary school | <input type="checkbox"/> |
| Some secondary school | <input type="checkbox"/> |
| Finished secondary school | <input type="checkbox"/> |
| Some tertiary education (university, TAFE or college) | <input type="checkbox"/> |
| Finished tertiary education | <input type="checkbox"/> |
| Higher degree or higher diploma (e.g., PhD, Masters, Graduate Diploma) | <input type="checkbox"/> |

41. Are you:

Single	<input type="checkbox"/>
Married	<input type="checkbox"/>
De facto	<input type="checkbox"/>
Separated	<input type="checkbox"/>
Divorced	<input type="checkbox"/>
Widowed	<input type="checkbox"/>
	<input type="checkbox"/>

Thank you very much for your time and participation in the study! 😊

If you would like to leave any comments about this questionnaire,
please use the space below:

.....
.....
.....
.....
.....
.....
.....

Appendix 32: GNKQ Modules Used in the PQ

Variable names are marked in grey and displayed next to each question.
Source: Personal communication with Gillian A. Hendrie (June, 2011).

Section I: Dietary Recommendations

Each item carries one point for a correct answer with a maximum score of 13.

The first few items are about what advice you think experts are giving us.

1. Do you think the *Dietary Guidelines for Australians* recommends that people should be eating more, the same amount, or less of these foods?
(tick one box per food)

		More	Same	Less	Not sure	
EXPREC1	Vegetables	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
EXPREC2	Sugary foods	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
EXPREC3	Meat	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
EXPREC4	Starchy foods	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
EXPREC5	Fatty foods	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
EXPREC6	High fibre foods	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
EXPREC7	Fruit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
EXPREC8	Salty foods	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
EXPREC9	Dairy products	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Not included in pilot test

2. How many servings of fruit and vegetables a day do you think experts recommend people eat? (Examples of one serve are a piece of fruit or 1 cup of salad vegetables)

Fruit..... 2 serves
Vegetables..... 5 serves

3. Which fat do experts say is most important for people to cut down on?
(tick one)

CUT

- (a) monounsaturated fat
 (b) polyunsaturated fat
 (c) saturated fat
 (d) not sure

4. What version of dairy foods do experts say people should eat? (tick one)

DAIRY

- (a) full fat
 (b) low fat
 (c) both full fat and lower fat
 (d) none, dairy foods should be cut out
 (e) not sure

Section II: Sources of Foods/Nutrients

Each item carries one point for a correct answer with a maximum score of 69.

Experts classify foods into groups. We are interested to see whether people are aware of what foods are in these groups.

Changes to correct answers for based on results of pilot test with parents

1. Do you think these are high or low in added sugar? (tick one box per food)

		High	Low	Not sure		None	High	Low	Not sure	
EXPSUGAR1	Bananas	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	→	Bananas	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EXPSUGAR2	Unflavoured yoghurt	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Unflavoured yoghurt	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
EXPSUGAR3	Ice-cream	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ice-cream	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EXPSUGAR4	Orange 35% Juice	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Orange 35% juice	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EXPSUGAR5	Tomato Ketchup	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Tomato sauce	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EXPSUGAR6	Tinned fruit in natural juice	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Tinned fruit in natural juice	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

2. Do you think these are high or low in fat? (tick one box per food)

		High	Low	Not sure	
EXPFAT1	Pasta (without sauce)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
EXPFAT2	Mayonnaise	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
EXPFAT3	Baked beans	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
EXPFAT4	Lunch/sandwich meat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
EXPFAT5	Honey	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
EXPFAT6	Vegetarian pastry	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Not included in pilot test</i>
EXPFAT7	Nuts	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
EXPFAT8	White bread	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
EXPFAT9	Cottage cheese	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
EXPFAT10	Polyunsaturated margarine	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

3. Do you think these are starchy/high carbohydrate foods group? (tick one box per food)

		Yes	No	Not sure
CARB1	Cheese	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CARB2	Pasta	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CARB3	Butter	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CARB4	Nuts	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CARB5	Rice	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CARB6	Porridge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Do you think these are high or low in salt? (tick one box per food)

		High	Low	Not sure	
EXPSALT1	Sausages	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
EXPSALT2	Pasta	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
EXPSALT3	Anchovies	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Not included in pilot test</i>
EXPSALT4	Red meat	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
EXPSALT5	Frozen vegetables	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
EXPSALT6	Cheese	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

5. Do you think these are high or low in protein? (tick one box per food)

		High	Low	Not Sure
EXPPRO1	Chicken	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EXPPRO2	Cheese	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EXPPRO3	Fruit	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
EXPPRO4	Baked beans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EXPPRO5	Butter	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
EXPPRO6	Cream	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

6. Do you think these are high or low in fibre/roughage? (tick one box per food)

Not included in pilot test

		High	Low	Not sure
EXPFIBRE1	Cornflakes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
EXPFIBRE2	Bananas	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EXPFIBRE3	Eggs	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
EXPFIBRE4	Red meat	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
EXPFIBRE5	Broccoli	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EXPFIBRE6	Nuts	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EXPFIBRE7	Fish	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
EXPFIBRE8	Baked potatoes with skins	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EXPFIBRE9	Chicken	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
EXPFIBRE10	Baked beans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. Do you think these fatty foods are high or low in saturated fat? (tick one per box)

		High	Low	Not sure
EXPSATF1	Tuna	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
EXPSATF2	Whole milk	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EXPSATF3	Olive oil	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
EXPSATF4	Red meat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EXPSATF5	Sunflower margarine	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
EXPSATF6	Chocolate	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Some foods contain a lot of fat but no cholesterol. (tick one)

CHOL	(a) agree	<input checked="" type="checkbox"/>
	(b) disagree	<input type="checkbox"/>
	(c) not sure	<input type="checkbox"/>

9. Do you think experts call these a healthy alternative to red meat? (tick one box per food)

Not included in pilot test

		Yes	No	Not sure
REDMEAT1	Liver pate	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
REDMEAT2	Lunch meats	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
REDMEAT3	Baked beans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
REDMEAT4	Nuts	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
REDMEAT5	Low fat cheese	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
REDMEAT6	Mushrooms	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

JUICEFRUIT	10.A glass of unsweetened (100%) fruit juice counts as one serve of fruit. <i>(tick one)</i>	(a) agree <input checked="" type="checkbox"/>	(b) disagree <input type="checkbox"/>	(c) not sure <input type="checkbox"/>
SATFAT	11.Saturated fats are mainly found in: <i>(tick one)</i>	(a) vegetable oil <input type="checkbox"/>	(b) dairy products <input checked="" type="checkbox"/>	(c) both (a) and (b) <input type="checkbox"/>
BROWNSUGAR	12.Brown sugar is a healthy alternative to white sugar. <i>(tick one)</i>	(a) agree <input type="checkbox"/>	(b) disagree <input checked="" type="checkbox"/>	(c) not sure <input type="checkbox"/>
SKIMMILK	13.There is more protein in a glass of whole milk than in a glass of skim milk. <i>(tick one)</i>	(a) agree <input type="checkbox"/>	(b) disagree <input checked="" type="checkbox"/>	(c) not sure <input type="checkbox"/>
BUTTER	14. Polyunsaturated margarine contains less fat than butter. <i>(tick one)</i>	(a) agree <input type="checkbox"/>	(b) disagree <input checked="" type="checkbox"/>	(c) not sure <input type="checkbox"/>
BREAD	15.Which of these bread contain the most vitamins and minerals? <i>(tick one)</i>	(a) white bread <input type="checkbox"/>	(b) wholemeal bread <input type="checkbox"/>	(c) wholegrain bread <input checked="" type="checkbox"/>
BROWNSUGAR	16.Which do you think is higher in kilojoules: butter or regular margarine? <i>(tick one)</i>	(a) butter <input type="checkbox"/>	(b) regular margarine <input type="checkbox"/>	(c) both the same <input checked="" type="checkbox"/>
BUTTERORM SKIMMILK		(d) not sure <input type="checkbox"/>		

Not included in pilot test

MONOFATS

17. A type of oil which contains mostly *Not included in pilot test* monounsaturated fat is: *(tick one)*

- (a) coconut oil
- (b) sunflower oil
- (c) olive oil
- (d) palm oil
- (e) not sure

CALCIUM MILK

18. There is more calcium in a glass of whole milk than a glass of skim milk. *(tick one)*

- (a) agree
- (b) disagree
- (c) not sure

SAME WEIGHT

19. Which one of the following has the most kilojoules for the same weight? *(tick one)*

- (a) sugar
- (b) carbohydrate
- (c) fibre/roughage
- (d) fat
- (e) not sure

HARDER FAT

20. Harder fats contain more: *(tick one)*

- (a) monounsaturated fat
- (b) polyunsaturated fat
- (c) saturated fat
- (d) not sure

POLYSAT

21. Polyunsaturated fats are mainly found in: *(tick one)*

- (a) vegetable oils
- (b) dairy products
- (c) both (a) and (b)
- (d) not sure

Appendix 33: Pilot Test (PQ)

A) Respondents' Demographic Characteristics

A) Age				
	Mean	Minimum	Maximum	Standard deviation
Age	10	8	13	1.63
Total	10			
B) Gender				
	Frequency	Valid percent		
Females	15	51.7%		
Males	14	48.3%		
Total valid	29			
Missing	1			
Total	30	100%		
C) Educational attainment				
Some primary school	1	3.4%		
Some secondary school	1	3.4%		
Some tertiary education (university/TAFE/college)	3	10.3%		
Finished tertiary education	6	20.7%		
Higher degree or higher diploma	18	62.1%		
Total valid	29			
Missing	1			
Total	30	100%		

B) Parents' Qualitative Feedback about PQ

Respondents' feedback about ambiguous questions and words is highlighted below in yellow colour. A table after the survey demonstrates how these issues were addressed.

PARENTS' QUESTIONNAIRE

Adult diet or child diet?

That's confusing, should read "adults" instead as children are supposed to drink milk

The first few items are about what advice you think experts are giving us:

1. Do you think the *Dietary Guidelines for Australians* recommends that recommend that **people** should be eating more, the same amount, or less of these foods? (tick one box per food):

	More	Same	Less	Not sure
Vegetables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sugary foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Starchy foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fatty foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High fibre foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Salty foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dairy Products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Who are they?

2. Which fat do **experts** say is most important for people to cut down on? (tick one):

(a) monounsaturated fat	<input type="checkbox"/>
(b) polyunsaturated fat	<input type="checkbox"/>
(c) saturated fat	<input type="checkbox"/>
(d) not sure	<input type="checkbox"/>

Examples are needed

3. What version of dairy foods do **experts** say people should eat? (tick one):

(a) full fat	<input type="checkbox"/>
(b) lower fat	<input type="checkbox"/>
(c) both full fat and lower fat	<input type="checkbox"/>
(d) neither, dairy foods should be avoided	<input type="checkbox"/>
(e) not sure	<input type="checkbox"/>

Experts classify foods into groups. We are interested to see whether people are aware of what foods are in these groups:

Bananas do not have added sugar

4. Do you think these are high or low in added sugar? (tick one box per food)

	High	Low	Not sure
Bananas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unflavoured yoghurt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ice-cream	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Orange 35% juice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tomato ketchup	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tinned fruit in natural juice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Who are they?

It is too American, tomato sauce instead

5. Do you think **experts** put **hydrate** foods group? (tick one box per food):

	Yes	No	Not sure
Cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pasta	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Varies according to brand

Butter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nuts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Porridge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Rice porridge?

6. Do you think these are high or low in protein? (tick one box per food)

	High	Low	Not sure
Chicken	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baked beans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Butter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cream	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Relative to other vegetables or meat/dairy?

7. Do you think these fatty foods are high or low in saturated fat? (tick one box per food):

	High	Low	Not sure
Tuna	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Whole milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Olive oil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Red meat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sunflower margarine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chocolate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Depends on type and cut

Is it LDC (good) or HDC (bad) or any kind?"

8. Some foods contain a lot of fat but no cholesterol (tick one):

- (a) agree
- (b) disagree
- (c) not sure

Is this "right or wrong"?

9. Saturated fats are mainly found in (tick one):

- (a) vegetable oils
- (b) dairy products
- (c) both (a) and (b)
- (d) not sure

Not clear

10. Harder fats contain more: (tick one):

- (a) monounsaturated fat
- (b) polyunsaturated fat
- (c) saturated fat
- (d) not sure

Knowing the difference between these is quite a special knowledge

11. Please tell us your opinion about the following statements:

	Never or only rarely true of me	Sometimes true of me	Half the time true of me	Frequently true of me	Always or almost always true of me
I try to explain to my child the difference between good foods and bad foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When my child sees a food advertisement I try to explain the motives behind the advertisement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	<input type="checkbox"/>	<input type="checkbox"/>	NA category is required		<input type="checkbox"/>
I try to help my child understand what s/he sees on TV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please tell us your opinion about the following statements:

Might vary depending on people

12. Members of my family/extended family **often** eat fast food:

1 Disagree	2	3	4	5 Agree
------------	---	---	---	---------

13. My friends **often** eat fast food:

Not clear

1 Disagree	2	3	5 Agree
------------	---	---	---------

14. The people who live **in our area** **often** eat fast food:

1 Disagree	2	3		
------------	---	---	--	--

“Don’t know,” “NA“ or “not sure” category should be included
+ mention to circle the answers

15. We can easily walk to a fast food restaurant from our house:

1 Disagree	2	3		
------------	---	---	--	--

16. We can easily drive to a fast food restaurant from our house:

1 Disagree	2	3	4	5 Agree
------------	---	---	---	---------

17. How often do **you** eat fast food?

1 Never	2 Less than once a week	3 One or two times a week	4 Three or four times a week	5 More than four times a week
---------	-------------------------	---------------------------	------------------------------	-------------------------------

Refers to the respondent family?

18. How many hours does your child spend surfing the Internet **on weekday**:

- Less than one
- Up to one
- Up to two
- Up to three
- Up to four
- Up to five
- Up to six
- More Please specify _____

For week or for 5 days? More clarity is needed

19. How many hours does your child spend surfing the Internet on the weekend:

Less than one	<input type="checkbox"/>
Up to one	<input type="checkbox"/>
Up to two	<input type="checkbox"/>
Up to three	<input type="checkbox"/>
Up to four	<input type="checkbox"/>
Up to five	<input type="checkbox"/>
Up to six	<input type="checkbox"/>
More	Please specify _____

20. How many hours of TV does your child watch on a weekday:

Less than one	<input type="checkbox"/>
Up to one	<input type="checkbox"/>
Up to two	<input type="checkbox"/>
Up to three	<input type="checkbox"/>
Up to four	<input type="checkbox"/>
Up to five	<input type="checkbox"/>
Up to six	<input type="checkbox"/>
More	Please specify _____

More clarity
is needed

21. How many hours of TV does your child watch on the weekend:

Less than one	<input type="checkbox"/>
Up to one	<input type="checkbox"/>
Up to two	<input type="checkbox"/>
Up to three	<input type="checkbox"/>
Up to four	<input type="checkbox"/>
Up to five	<input type="checkbox"/>
Up to six	<input type="checkbox"/>
More	Please specify _____

The table below summarizes parents' qualitative feedback and describes changes made to improve the instrument.

Questions:	Parents' comments:	N	Corresponding changes:
Q1	"are giving us" and "people"	"That is confusing, should read adults instead, as children are supposed to drink milk"	1 Changed to "adults"
Q4	answer options	"Examples would be nice"	1 Examples were provided for each answer option
	"experts"	"Who are they?"	1 Changed to "nutritionists"
Q5	"experts"	"Who are they?"	1
Q6	"bananas"	"Bananas do not have added sugar"	1 Additional answer option ("none") was added to
	"unflavoured yogurt"	"Varies according to brand"	1 Was not changed, general knowledge was expected, not the brand knowledge
	"tomato ketchup"	"Too American, tomato sauce instead"	1 Changed to "sauce"
	"health experts"	"Who are they?"	1 Changed to "nutritionists"
Q8	"porridge"	"Rice porridge?"	1 Was not changed → answer option is straightforward
	"experts"	"Who are they?"	1 Changed to "nutritionists"
Q10	"baked beans"	"Relative to other vegetables or meat/dairy?"	1 Was not changed → answer option is straightforward
Q11	"red meat"	"Depending on type and cut"	1 Was not changed → answer option is straightforward
Q12	"cholesterol"	"LDC (good) or HDC (bad) or any kind?"	1 Was not changed → additional specifications would make the question too technical
	"agree/disagree"	"Is this 'right or wrong'? Because of it is 'agree/disagree,' there should be 'undecided'"	1 Changed to "right/wrong"
Q13 and Q18	"mainly"	"Confusing"	1 Changed to "typically"
Q17		"Knowing the difference between these is quite a special knowledge"	1 Was not changed because this knowledge was specifically looked for
Q19		"Add NA category"	3 "NA" category was added to answer options
Q20-25		"Don't know, NA, or not sure category should be included"	5 The following note was added to the instructions: "if you are not sure select '3'"
		"Mention to circle the answer"	3 Answer option added: "(circle the answer)"
Q20 and Q21	"often"	"Might vary depending on people"	2 Changed to "at least once per week"
Q22	"our area"	"Not clear?"	3 Changed to "neighbourhood"
Q25		"Asking about me or my family?"	1 Changed to "you eat fast food as a family"
Q44-47		"For week, for 5 days?" "For two days? More clarity"	1 Several modifications were made: "on an average weekday" for Q33 and Q35 and "on an average weekend" for Q34 and Q36

C) Exploratory Factor Analysis for Likert-Type Items

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.657
Bartlett's Test of Sphericity	Approx. Chi-Square	71.753
	df	28
	Sig.	.000

Communalities		
	Initial	Extraction
I try to explain to my child the difference between good foods and bad foods	1.000	.762
When my child sees a food advertisement I try to explain the motives behind the advertisement	1.000	.776
I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	1.000	.873
I try to help my child understand what s/he sees on TV	1.000	.742
I try to help my child understand the difference between advertisements and programs	1.000	.636
Members of my family/extended family often eat fast food	1.000	.862
My friends often eat fast food	1.000	.906
The people who live in our area often eat fast food	1.000	.850

Notes:

Extraction Method: Principal Component Analysis.

D) Cronbach Alpha Item-Total Statistics

Item-Total Statistics				
	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Scale mean if item deleted
Social acceptability of fast foods				
Members of my family/extended family often eat fast food	6.13	4.66	.757	.836
My friends often eat fast food	5.69	5.04	.848	.744
The people who live in our area often eat fast food	5.39	5.98	.694	.881
Parent-child communication about food and advertising				
I try to explain to my child the difference between good foods and bad foods	10.61	16.006	.483	.541
When my child sees a food advertisement I try to explain the motives behind the advertisement	11.85	13.97	.700	.438
I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	11.69	17.10	.035	.823
I try to help my child understand what s/he sees on TV	11.04	15.48	.501	.529
I try to help my child understand the difference between advertisements and programs	11.42	14.81	.514	.516

E) GNKQ Data Analysis

1. CTT Item Statistics

Item	EXPREC1	EXPREC2	EXPREC3	EXPREC4	EXPREC5	EXPREC6	EXPREC7	EXPREC8	CUT	DAIRY	EXPSUGAR1
<i>Correct answer</i>	<i>1</i>	<i>3</i>	<i>3</i>	<i>1</i>	<i>3</i>	<i>1</i>	<i>1</i>	<i>3</i>	<i>3</i>	<i>2</i>	<i>2</i>
Option 1	28 (93%)	0	3 (10%)	0	2 (7%)	25 (86%)	29 (97%)	0	1 (3%)	5 (17%)	6 (21%)
Option 2	1 (3%)	1 (3%)	14 (47%)	9 (31%)	1 (3%)	3 (10%)	0	3 (10%)	1 (3%)	20 (69%)	21 (72%)
Option 3	0	28 (93%)	9 (30%)	12 (41%)	24 (83%)	0	0	26 (87%)	23 (77%)	2 (7%)	2 (7%)
Option4	1 (3%)	1 (3%)	4 (13%)	8 (28%)	2 (6%)	1 (3%)	1 (3%)	1 (3%)	5 (17%)	0	--
Option 5	--	--	--	--	--	--	--	0	-	2 (7%)	--
IF total ¹	93%	93%	30%	0%	80%	83%	97%	87%	77%	67%	70%
IF upper ²	90%	90%	40%	0%	90%	100%	100%	100%	90%	90%	80%
IF lower ³	90%	90%	20%	0%	60%	60%	90%	70%	50%	40%	50%
Item discrimination ⁴	0%	0%	20%	0%	30%	40%	10%	30%	40%	50%	30%

Item	EXPSUGAR2	EXSUGAR3	EXPSUGAR4	EXPSUGAR5	EXPSUGAR6	EXPFAT1	EXPFAT2	EXPFAT3	EXPFAT4	EXPFAT5
<i>Correct answer</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>2</i>
Option 1	4 (13%)	27 (90%)	19 (68%)	18 (60%)	15 (50%)	8 (27%)	6 (21%)	6 (20%)	20 (69%)	4 (13%)
Option 2	23 (77%)	2 (7%)	7 (25%)	10 (33%)	12 (40%)	20 (67%)	21 (72%)	22 (73%)	4 (14%)	24 (80%)
Option 3	3 (10%)	1 (3%)	2 (7%)	2 (7%)	3 (10%)	2 (7%)	2 (7%)	2 (7%)	5 (17%)	2 (7%)
IF total ¹	77%	90%	63%	60%	40%	67%	20%	73%	67%	80%
IF upper ²	80%	100%	70%	80%	00%	80%	40%	100%	70%	100%
IF lower ³	70%	00%	30%	50%	30%	40%	10%	50%	60%	50%
Item discrimination ⁴	10%	00%	40%	30%	30%	40%	30%	50%	10%	50%

Item	EXPFAT6	EXPFAT7	EXPFAT8	EXPFAT9	CARB1	CARB2	CARB3	CARB4	CARB5	CARB6	EXPSALT1	EXPSALT2
<i>Correct answer</i>	<i>1</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>2</i>
Option 1	19 (63%)	4 (13%)	16 (53%)	16 (55%)	4 (14%)	27 (90%)	6 (20%)	7 (24%)	29 (97%)	25 (86%)	23 (77%)	5 (17%)
Option 2	7 (23%)	23 (77%)	12 (40%)	7 (24%)	22 (76%)	2 (7%)	23 (77%)	17 (59%)	1 (3%)	3 (10%)	4 (13%)	20 (67%)
Option 3	4 (13%)	3 (10%)	2 (7%)	6 (21%)	3 (10%)	1 (3%)	1 (3%)	5 (17%)	0	1 (3%)	3 (10%)	5 (17%)
IF total ¹	63%	77%	40%	53%	73%	90%	77%	57%	97%	83%	77%	67%
IF upper ²	90%	80%	50%	90%	70%	100%	80%	50%	90%	80%	90%	100%
IF lower ³	30%	60%	40%	10%	70%	70%	70%	50%	100%	80%	60%	00%
Item discrimination ⁴	60%	20%	10%	80%	0%	30%	10%	0%	-10%	0%	30%	70%

Notes:

For variable names refer to Appendix 33. Valid percentages reported in tables below due to missing data for some variables.

¹ – Item facility or difficulty, proportion of students who answered question correctly.

² – Proportion of top third of test takers who answered question correctly.

³ – Proportion of bottom third of test takers who answered question correctly.

⁴ – The difference between the top third and the bottom third of test takers.

Correct answers are marked in bold.

Item	EXPSALT3	EXPSALT4	EXPSALT5	EXPPRO1	EXPPRO2	EXPPRO3	EXPPRO4	EXPPRO5	EXPPRO6	EXPSATF1
<i>Correct answer</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>2</i>	<i>2</i>
Option 1	6 (20%)	3 (10%)	19 (63%)	27 (90%)	24 (80%)	4 (13%)	25 (83%)	13 (43%)	9 (30%)	4 (14%)
Option 2	18 (60%)	24 (80%)	8 (27%)	2 (7%)	6 (20%)	23 (77%)	4 (13%)	15 (50%)	17 (57%)	17 (59%)
Option 3	6 (20%)	3 (10%)	3 (10%)	1 (3%)	0	3 (10%)	1 (3%)	2 (7%)	4 (13%)	8 (28%)
IF total ¹	60%	80%	60%	63%	90%	80%	77%	83%	50%	57%
IF upper ²	90%	90%	80%	80%	100%	90%	90%	90%	70%	70%
IF lower ³	20%	60%	50%	50%	70%	90%	70%	60%	20%	40%
Item discrimination ⁴	70%	30%	30%	30%	30%	0%	20%	30%	50%	30%

Item	EXPSATF2	EXPSATF3	EXPSATF4	EXPSATF5	EXPSATF6	CHOL	SATFAT	BREAD	BUTTEROR	HARDFAT	POLSAT
<i>Correct answer</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>3</i>	<i>3</i>	<i>1</i>
Option 1	24 (80%)	5 (17%)	17 (57%)	9 (30%)	23 (77%)	13 (43%)	3 (10%)	1 (3%)	15 (50%)	5 (17%)	9 (30%)
Option 2	3 (10%)	21 (72%)	10 (33%)	17 (57%)	1 (3%)	7 (23%)	15 (52%)	3 (10%)	5 (17%)	5 (17%)	5 (17%)
Option 3	3 (10%)	3 (10%)	3 (10%)	4 (13%)	5 (17%)	10 (33%)	5 (17%)	23 (77%)	4 (13%)	18 (62%)	3 (10%)
Option 4	--	--	--	--	--	--	6 (21%)	3 (10%)	6 (20%)	1 (3%)	13 (43%)
IF total ¹	80%	70%	57%	57%	77%	43%	50%	77%	13%	60%	30%
IF upper ²	90%	90%	80%	60%	100%	40%	80%	90%	30%	80%	70%
IF lower ³	90%	50%	50%	60%	80%	40%	30%	60%	0%	50%	10%
Item discrimination ⁴	0%	40%	30%	0%	20%	0%	50%	30%	30%	30%	60%

Notes:

¹ – Item facility or difficulty, proportion of students who answered question correctly.

² – Proportion of top third of test takers who answered question correctly.

³ – Proportion of bottom third of test takers who answered question correctly.

⁴ – The difference between the top third and the bottom third of test takers.

Correct answers are marked in bold.

Summary:

N	30
Mean	33.11
Standard Deviation	6.02
Variance	36.22
Skewness	-0.79
Kurtosis	0.32
Standard error of mean	1.10
Standard error of measurement	3.06

2. IRT Item Statistics

SUMMARY OF THE ESTIMATION

```

=====
Estimation method was: Gauss-Hermite Quadrature with 15 nodes
Assumed population distribution was: Gaussian
Constraint was: DEFAULT
The Data File: NKT_pilot_test.dat
The format: id 1-2 responses 3-56
The regression model:
Grouping Variables:
The item model: item
Sample size: 30
Final Deviance:      1631.02421
Total number of estimated parameters: 54
The number of iterations: 313
Termination criteria: Max iterations=1000, Parameter Change= 0.00010
                      Deviance Change= 0.00010
Iterations terminated because the deviance convergence criteria was reached
Random number generation seed: 1.00000
Number of nodes used when drawing PVs: 2000
Number of nodes used when computing fit: 1000
Number of plausible values to draw: 5
Maximum number of iterations without a deviance improvement: 100
Maximum number of Newton steps in M-step: 10
Value for obtaining finite MLEs for zero/perfects: 0.30000
key 1 scored as 1: 13313113322211122121212212122111222112122212121123331
=====

```

item analysis

TABLES OF RESPONSE MODEL PARAMETER ESTIMATES

TERM 1: item

VARIABLES	Easier items in the test		UNWEIGHTED FIT			WEIGHTED FIT			
	item	ESTIMATE	ERROR [^]	MNSQ	CI	T	MNSQ	CI	T
1	EXPREC1	-1.820	0.361	1.27	(0.49, 1.51)	1.1	0.93	(0.00, 2.23)	0.1
2	EXPREC2	-1.817	0.361	0.99	(0.49, 1.51)	0.1	0.92	(0.00, 2.23)	0.1
3	EXPREC3	1.921	0.293	0.93	(0.49, 1.51)	-0.2	0.96	(0.69, 1.31)	-0.2
5	EXPREC5	-0.687	0.321	1.00	(0.49, 1.51)	0.1	0.98	(0.35, 1.65)	0.0
6	EXPREC6	-0.972	0.331	0.76	(0.49, 1.51)	-0.9	0.89	(0.23, 1.77)	-0.2
7	EXPREC7	-2.545	0.383	0.21	(0.49, 1.51)	-4.7	0.81	(0.00, 2.83)	0.1
8	EXPREC8	-1.022	0.331	0.69	(0.49, 1.51)	-1.3	0.87	(0.22, 1.78)	-0.2
9	cut	-0.298	0.304	0.88	(0.49, 1.51)	-0.4	0.91	(0.50, 1.50)	-0.3
10	dairy	0.156	0.294	0.75	(0.49, 1.51)	-1.0	0.79	(0.62, 1.38)	-1.1
11	EXPSUGAR1	-0.078	0.299	1.15	(0.49, 1.51)	0.6	1.14	(0.57, 1.43)	0.7
12	EXPSUGAR2	-0.298	0.304	0.98	(0.49, 1.51)	-0.0	0.99	(0.50, 1.50)	0.1
13	EXPSUGAR3	-1.819	0.361	0.56	(0.49, 1.51)	-2.0	0.88	(0.00, 2.23)	0.0
14	EXPSUGAR4	0.173	0.296	1.03	(0.48, 1.52)	0.2	1.03	(0.63, 1.37)	0.2
15	EXPSUGAR5	0.552	0.284	1.08	(0.49, 1.51)	0.4	1.05	(0.72, 1.28)	0.4
16	EXPSUGAR6	1.440	0.283	0.94	(0.49, 1.51)	-0.1	0.99	(0.78, 1.22)	-0.1
17	EXPFAT1	0.238	0.289	0.93	(0.49, 1.51)	-0.2	0.95	(0.65, 1.35)	-0.2
18	EXPFAT2	2.468	0.311	1.59	(0.49, 1.51)	2.0	0.94	(0.53, 1.47)	-0.2
19	EXPFAT3	-0.109	0.298	0.88	(0.49, 1.51)	-0.4	0.99	(0.56, 1.44)	0.0
20	EXPFAT4	0.132	0.294	1.27	(0.49, 1.51)	1.0	1.10	(0.62, 1.38)	0.5
21	EXPFAT5	-0.514	0.311	0.84	(0.49, 1.51)	-0.6	0.97	(0.42, 1.58)	-0.0
22	EXPFAT6	0.396	0.286	1.06	(0.49, 1.51)	0.3	1.07	(0.69, 1.31)	0.5
23	EXPFAT7	-0.303	0.304	1.37	(0.49, 1.51)	1.4	1.27	(0.50, 1.50)	1.1
24	EXPFAT8	1.437	0.283	1.33	(0.49, 1.51)	1.2	1.17	(0.78, 1.22)	1.4
25	EXPFAT9	0.777	0.284	0.69	(0.49, 1.51)	-1.2	0.73	(0.75, 1.25)	-2.3
26	CARB1	-0.248	0.305	1.26	(0.49, 1.51)	1.0	1.13	(0.50, 1.50)	0.6
27	CARB2	-1.377	0.345	0.89	(0.49, 1.51)	-0.4	1.12	(0.04, 1.96)	0.4
28	CARB3	-0.306	0.304	1.19	(0.49, 1.51)	0.8	1.13	(0.49, 1.51)	0.6
29	CARB4	0.621	0.286	1.17	(0.49, 1.51)	0.7	1.17	(0.73, 1.27)	1.2
30	CARB5	-2.598	0.384	1.88	(0.49, 1.51)	2.8	1.16	(0.00, 2.88)	0.5
31	CARB6	-0.985	0.332	1.57	(0.49, 1.51)	1.9	1.29	(0.22, 1.78)	0.8
32	EXPSALT1	-0.308	0.304	1.17	(0.49, 1.51)	0.7	1.05	(0.49, 1.51)	0.3
33	EXPSALT2	0.232	0.289	0.88	(0.49, 1.51)	-0.4	0.96	(0.65, 1.35)	-0.2
34	EXPSALT3	0.546	0.284	0.99	(0.49, 1.51)	0.0	0.99	(0.72, 1.28)	-0.0
35	EXPSALT4	-0.519	0.311	1.20	(0.49, 1.51)	0.8	1.00	(0.42, 1.58)	0.1
36	EXPSALT5	0.392	0.286	0.96	(0.49, 1.51)	-0.1	0.99	(0.69, 1.31)	-0.0
37	EXPPRO1	-1.380	0.345	0.53	(0.49, 1.51)	-2.1	0.84	(0.04, 1.96)	-0.2
38	EXPPRO2	-0.519	0.311	1.37	(0.49, 1.51)	1.4	1.20	(0.42, 1.58)	0.7
39	EXPPRO3	-0.307	0.304	1.14	(0.49, 1.51)	0.6	1.18	(0.49, 1.51)	0.7
40	EXPPRO4	-0.757	0.320	0.98	(0.49, 1.51)	0.0	0.96	(0.33, 1.67)	-0.0

T value is out of range

41	EXPPRO5	0.992	0.281	0.99	(0.49, 1.51)	0.0	1.00	(0.79, 1.21)	0.1
42	EXPPRO6	0.698	0.282	1.00	(0.49, 1.51)	0.1	1.03	(0.75, 1.25)	0.3
43	EXPSATF1	0.594	0.286	1.00	(0.49, 1.51)	0.1	1.00	(0.73, 1.27)	0.1
44	EXPSATF2	-0.517	0.311	1.60	(0.49, 1.51)	2.1	1.30	(0.42, 1.58)	1.0
45	EXPSATF3	-0.059	0.299	1.00	(0.49, 1.51)	0.1	0.97	(0.56, 1.44)	-0.0
46	EXPSATF4	0.699	0.282	1.03	(0.49, 1.51)	0.2	1.01	(0.75, 1.25)	0.1
47	EXPSATF5	0.699	0.282	1.36	(0.49, 1.51)	1.3	1.28	(0.75, 1.25)	2.1
48	EXPSATF6	-0.304	0.304	1.04	(0.49, 1.51)	0.2	1.04	(0.50, 1.50)	0.2
49	CHOL	1.287	0.282	1.31	(0.49, 1.51)	1.2	1.15	(0.79, 1.21)	1.4
50	SATFAT	0.930	0.284	1.22	(0.49, 1.51)	0.9	1.12	(0.77, 1.23)	1.1
51	BREAD	-0.302	0.304	0.94	(0.49, 1.51)	-0.2	1.02	(0.50, 1.50)	0.2
52	BUTTEROR	Harder item	3.006	0.71	(0.49, 1.51)	-1.2	0.89	(0.31, 1.69)	-0.2
53	HARDFAT	0.467	0.288	1.15	(0.49, 1.51)	0.6	1.14	(0.70, 1.30)	0.9
54	POLSAT	1.918*	2.226	1.22	(0.49, 1.51)	0.9	0.91	(0.70, 1.30)	-0.6

Notes: An asterisk next to a parameter estimate indicates that it is constrained
 EXPREC4 was not included in the analysis by ConQuest because it was not answered correctly by
 any of respondents.

Easier items are marked in grey, harder items in blue.

Lower MNSQ fit and poorer t values are marked in grey in table.

Separation Reliability=0.923

Chi-square test of parameter equality=590.30, df=52, Sig Level=0.000

^ Quick standard errors have been used

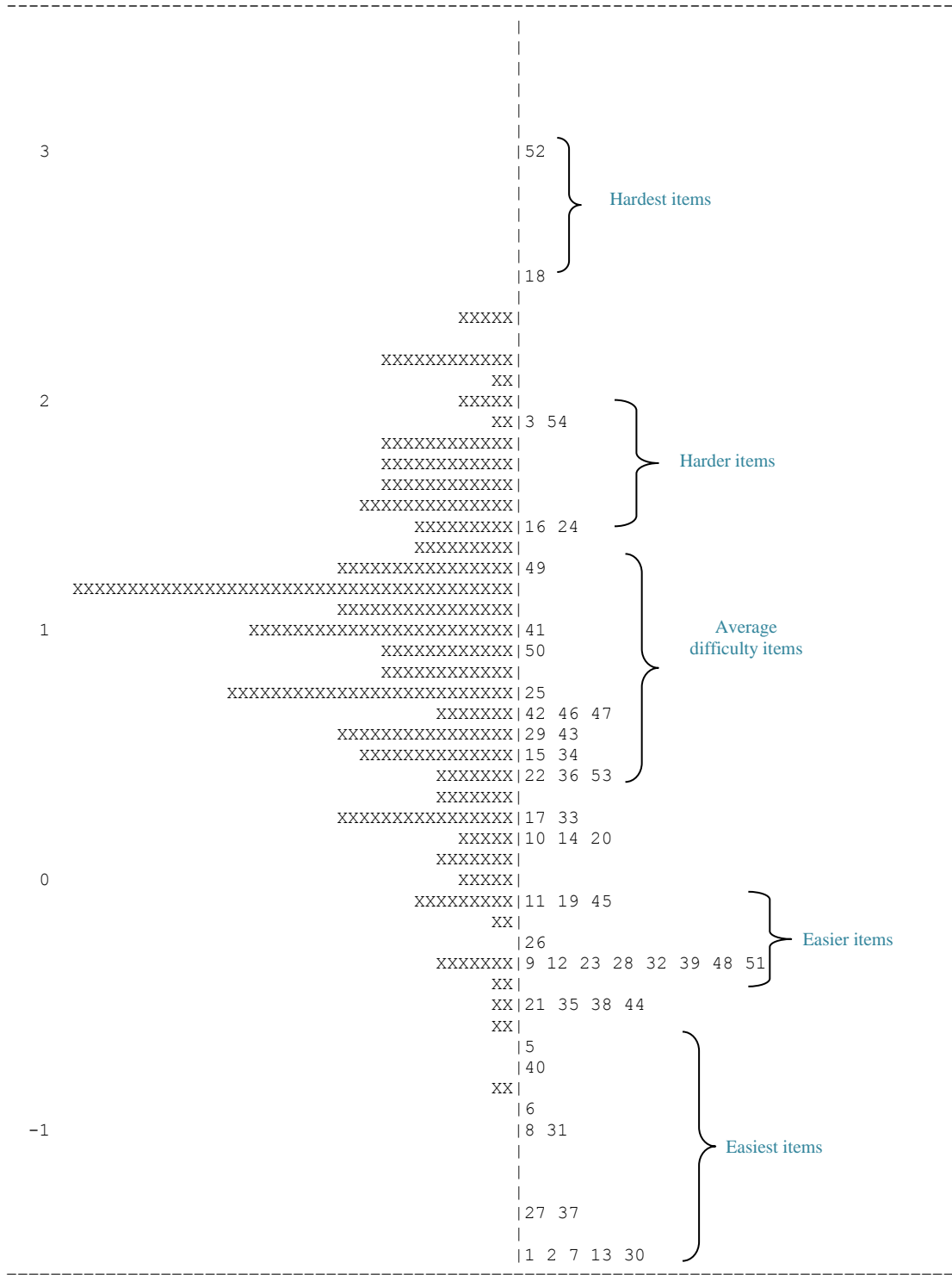
T value is out of
 range, MNSQ is
 acceptable
 though; the item
 was retained

RELIABILITY COEFFICIENTS

Dimension: (Dimension 1)

MLE Person separation RELIABILITY: Unavailable
 WLE Person separation RELIABILITY: Unavailable
 EAP/PV RELIABILITY: 0.625

Map of Latent Distributions



Each 'X' represents 0.1 cases

Appendix 34: Finalised Paper-Based CQ

Hi 😊

Thank you for answering our questions.

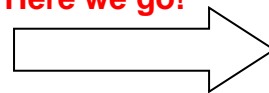
Remember, there are no right or wrong answer.

We just want to know what you think about these questions.

Please answer all questions.

Please enter your participant number:

Here we go!



9. What foods will your **friends** choose tomorrow for lunch?
Tick the answer



Not at all!	No	Not sure	Yes	Definitely!
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. What about this one?



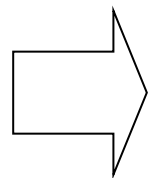
Biscuits

Not at all!	No	Not sure	Yes	Definitely!
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. And this one?








Not at all!	No	Not sure	Yes	Definitely!
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



12. What foods will your **friends** choose tomorrow for lunch?








Mashed potatoes

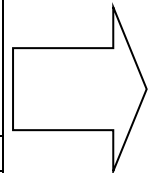
				
Not at all!	No	Not sure	Yes	Definitely!
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. Would your **friends** choose this food tomorrow for lunch?



French fries






				
Not at all!	No	Not sure	Yes	Definitely!
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



14. Would your **friends** choose this food tomorrow for lunch?








Bread, vegetables and fruit

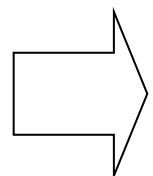
				
Not at all!	No	Not sure	Yes	Definitely!
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. What about this one? Tick your answer





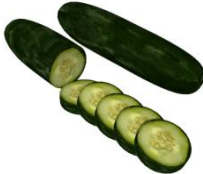


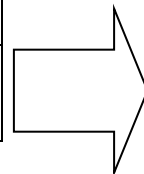
Burger, French fries, and soft drink

				
Not at all!	No	Not sure	Yes	Definitely!
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>








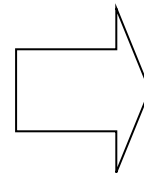
16. Which one has the **highest** content of **fat**?
(tick one)

 Traditional yogurt	<input type="radio"/>
 2 Oreo biscuits	<input type="radio"/>
 An apple	<input type="radio"/>
 Gouda cheese (100 gram)	<input type="radio"/>
 Cucumber	<input type="radio"/>
Don't know	<input type="radio"/>








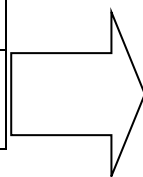
17. Which one has the **highest** content of **fat**?
(tick one)

 3.5% fat cheese (100 gram)	<input type="radio"/>
 A burger	<input type="radio"/>
 1% fat cheese (100 gram)	<input type="radio"/>
 Broccoli	<input type="radio"/>
 Bread and sausage	<input type="radio"/>
Don't know	<input type="radio"/>








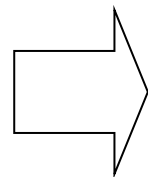
18. Which one has the **highest** content of **salt**?
(tick one)

 Pizza	<input type="radio"/>
 Bread and vegetables	<input type="radio"/>
 Bread and sausage	<input type="radio"/>
 An apple	<input type="radio"/>
 Soft drink	<input type="radio"/>
Don't know	<input type="radio"/>








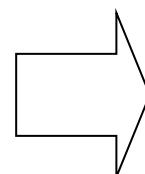
19. Which one has the **highest** content of **sugar**?
(tick one)

 Fruit juice	<input type="radio"/>
 A glass of water	<input type="radio"/>
 Soft drink	<input type="radio"/>
 Chocolate muffin	<input type="radio"/>
 An apple	<input type="radio"/>
Don't know	<input type="radio"/>








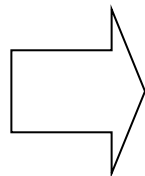
20. Which one has the **lowest** content of **fat**?
(tick one)

 <p>Burger, French fries, and soft drink</p>	<input type="radio"/>
 <p>Bread and vegetables</p>	<input type="radio"/>
 <p>Bread and sausage</p>	<input type="radio"/>
 <p>Traditional yogurt</p>	<input type="radio"/>
 <p>Gouda cheese (100 gram)</p>	<input type="radio"/>
<p>Don't know</p>	<input type="radio"/>








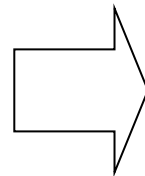
21. Which one has the **lowest** content of **salt**?
(tick one)

 Potato chips	<input type="radio"/>
 Bread	<input type="radio"/>
 Cucumber	<input type="radio"/>
 2 Oreo biscuits	<input type="radio"/>
 French fries	<input type="radio"/>
Don't know	<input type="radio"/>








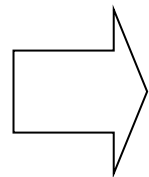
22. Which one has the **lowest** content of **sugar**?
(tick one)

 Chocolate muffin	<input type="radio"/>
 Banana	<input type="radio"/>
 Broccoli	<input type="radio"/>
 Soft drink	<input type="radio"/>
 Traditional yogurt	<input type="radio"/>
Don't know	<input type="radio"/>



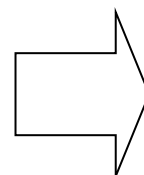
23. Which one has the **lowest** content of **fat**?
(tick one)

 Cookie	<input type="radio"/>
 Banana	<input type="radio"/>
 French fries	<input type="radio"/>
 Bread and vegetables	<input type="radio"/>
 Gouda cheese (100 gram)	<input type="radio"/>
Don't know	<input type="radio"/>



24. Do you think this food is good for you? Please tick your answer.






	 No	 Not sure	 Yes
 Fruit juice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 An apple	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 Chocolate muffin	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 2 Oreo biscuits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 Bread and sausage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



25. Please have a look at the picture and tell us what you think about this food:








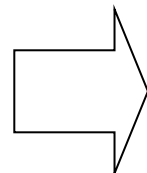
Burger, French fries, and soft drink

	 Not at all!	 No	 Not sure	 Yes	 Definitely!
Do you think this food is funny?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is tasty?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is healthy?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food could make you popular with other children?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

26. What about this one?








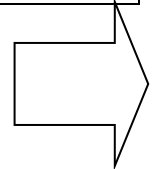
	 Not at all!	 No	 Not sure	 Yes	 Definitely!
Do you think this food is funny?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is tasty?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is healthy?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food could make you popular with other children?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>




27. Please have a look at the picture and tell us what you think about this food:

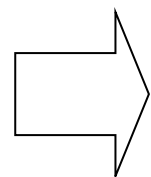


	 Not at all!	 No	 Not sure	 Yes	 Definitely!
Do you think this food is funny?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is tasty?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is healthy?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food could make you popular with other children?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



28. How often do people think it is OK to eat these foods? (tick your answer)

	Never	Monthly	Weekly	Twice a week	Daily
 An Apple	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 Bread and vegetables	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 Oreo biscuits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 Broccoli	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 Pizza	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 A burger, French fries, and soft drink	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



29. Imagine you are surfing the Internet and see this picture.



30. What does this picture try to do? If you don't know, select "Don't know."

	Not at all!	A little bit	Quite a bit	A lot	Definitely!	Don't know
It wants people to buy this food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It tries to make you to like this food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants you to think that having this food will make you feel good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants to grab your attention with a special offer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It tries to make you want this product	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

31. Imagine you have seen this on a street.



32. What does this picture try to do?

	Not at all!	A little bit	Quite a bit	A lot	Definitely!	Don't know
It wants people to buy this food because it is new	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It tries to make you like the food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants people to buy this food because of teddy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants you to think that having this food will make you feel good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants to grab your attention with a new offer and a teddy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It tries to make you want this product	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

33. Imagine you have seen this picture on a street.



34. What does this picture try to do?

	Not at all!	A little bit	Quite a bit	A lot	Definitely!	Don't know
It wants people to like toys	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It tries to make you like toys	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants you to think that having these toys will make you feel good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants to grab your attention with a sale	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It tries to make you want this product	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

35. Imagine you have seen this picture.



36. What does this picture try to do?

	Not at all!	A little bit	Quite a bit	A lot	Definitely!	Don't know
It wants people to buy this food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It tries to make you like this food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants you to think that having this food will make you feel good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants to grab your attention	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It tries to make you want this product	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

37. Please tell us how often these things happen to you:

	Never	Once a month	Once a week	Twice a week	Once a day	Twice a day
I see advertising for treats, lollies, soft drink or fast food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I ask my family to buy me treats, lollies, soft drink or fast food that I have seen advertised	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I ask my family to buy me fast food, snacks or cereals that have a free toy, gift or competition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I buy treats, lollies, soft drink or fast food with my own money	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Our local fast food restaurants have special deals, like family packs and meal deals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

38. How often these things happen to you:

	Never	Once a month	Once a week	Twice a week	Once a day	Twice a day
How often do you eat fast food from restaurants such as McDonald's, KFC or Pizza Hut?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you eat treats and lollies?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you have soft drink?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Finally, please tell us:

39. How old are you _____

40. Are you:

- A girl
- A boy

THANK YOU FOR ANSWERING OUR QUESTIONS! 😊

Appendix 35: Finalised Online CQ

Page 1

The University of Adelaide

Business School

Please enter your number

>>

Page 2

The University of Adelaide

Business School

Hi :)

Thank you for visiting our page! It is really important for us to understand what children think about food and your participation is very helpful!!!

You will see several questions about food soon.

Remember, there are no right or wrong answers. We just want to know what you think about food :)







>>

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The University of Adelaide

Business School







Would your **friends** choose this food tomorrow for lunch?

	 Not at all!	 No	 Not sure	 Yes	 Definitely!
 Sausage and bread	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

>>

Page 4

Would your **friends** choose this food tomorrow for lunch?

	 Not at all!	 No	 Not sure	 Yes	 Definitely!
 Cookies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

>>

Page 5

Would your **friends** choose this food tomorrow for lunch?

	 Not at all!	 No	 Not sure	 Yes	 Definitely!
 An apple	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

>>

Would your **friends** choose this food tomorrow for lunch?



French fries



Not at all!



No



Not sure



Yes



Definitely!



Would your **friends** choose this food tomorrow for lunch?



Bread, vegetables and fruit



Not at all!



No



Not sure









Yes



Definitely!



Would your **friends** choose this food tomorrow for lunch?

	 Not at all!	 No	 Not sure	 Yes	 Definitely!
 Burger, French fries and soft drink	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

>>

Please read each question and tick your choice. If you do not know, select "Don't know."

>>

Which one has **the highest** content of **FAT**? (tick one)



Traditional yogurt



2 Oreo cookies



An apple



Gouda cheese (100 gram)



Cucumber

Don't know



Which one has **the highest** content of **FAT**? (tick one)



3.5% fat cheese (100 gram)



Burger



1% fat cheese (100 gram)



Broccoli



Bread and sausage

Don't know



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Business School

Which one has **the highest** content of **SALT**? (tick one)



Pizza



Bread and vegetables



Bread and sausage



An apple



Soft drink

Don't know



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Which one has **the highest** content of **SUGAR**? (tick one)



Fruit juice



Glass of water



Soft drink



Chocolate muffin



An apple

Don't know



Which one has **the lowest** content of **FAT**?



Burger, French fries and soft drink



Bread and vegetables



Bread and sausage



Traditional yogurt



Gouda cheese (100 gram)

Don't know

>>

Which one has **the lowest** content of **SALT**?



Potato chips



Bread



Cucumber



2 Oreo cookies



French fries

Don't know

>>

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Which one has **the lowest** content of **SUGAR**?



Chocolate muffin



Banana



Broccoli



Soft drink



Traditional yogurt

Don't know

>>

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Which one has **the lowest** content of **FAT**?



Cookie



Banana



French fries



Bread and vegetables



Gouda cheese (100 gram)





Don't know

>>

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Business School

Do you think this food is **good for you**?





	No!	Not sure	Yes
			
Fruit juice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

>>

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Business School

Do you think this food is **good for you**?

	No!	Not sure	Yes
			
An apple	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>





>>

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Do you think this food is **good for you**?

	No!	Not sure	Yes
 Chocolate muffin	 <input type="radio"/>	 <input type="radio"/>	 <input type="radio"/>





>>

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Business School

Do you think this food is **good for you**?

	No!	Not sure	Yes
 Oreo cookies	 <input type="radio"/>	 <input type="radio"/>	 <input type="radio"/>

>>





Do you think this food is **good for you**?

	No!	Not sure	Yes
 Bread and sausage	 <input type="radio"/>	 <input type="radio"/>	 <input type="radio"/>

[>>](#)

Please have a look at the picture and tell us what you think about this food:








	 Not at all!	 No	 Not sure	 Yes	 Definitely!
Do you think this food is funny?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is tasty?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is healthy?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food could make you popular with other children?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

>>

Please have a look at the picture and tell us what you think about this food:








	 Not at all!	 No	 Not sure	 Yes	 Definitely!
Do you think this food is funny?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is tasty?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is healthy?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food could make you popular with other children?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

>>

Please have a look at the picture and tell us what you think about this food:



	 Not at all!	 No	 Not sure	 Yes	 Definitely!
Do you think this food is funny?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is tasty?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food is healthy?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think this food could make you popular with other children?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

>>


Business School

How often do **people** think it is OK to eat these foods?

	Never	Monthly	Weekly	Twice a week	Every day
 An apple	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 Bread and vegetables	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



>>

How often do people think it is OK to eat these foods?

	Never	Monthly	Weekly	Twice a week	Every day
 Oreo cookies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>


>>

How often do people think it is OK to eat these foods?

	Never	Monthly	Weekly	Twice a week	Every day
 Broccoli	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
 Pizza	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

>>

How often do **people** think it is OK to eat these foods?






	Never	Monthly	Weekly	Twice a week	Every day
 <p>Burger, French fries and soft drink</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

>>

Imagine you are surfing the Internet and see this picture:



What does **this picture** try to do?
 If you don't know, select "Don't know."

						Don't know
	Not at all	A little bit	Quite a bit	A lot	Definitely!	
It wants people to buy this food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It tries to make you like this food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants you to think that having this food will make you feel good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants to grab your attention with a special offer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It tries to make you want this product	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>


>>

Imagine you have seen this on a street:



What does **this picture** try to do?

If you don't know, select "Don't know."

						Don't know
	Not at all	A little bit	Quite a bit	A lot	Definitely!	
It wants people to buy this food because it is new	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It tries to make you like the food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants people to buy this food because of teddy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants you to think that having this food will make you feel good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants to grab your attention with a new offer and a teddy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It tries to make you want this product	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>








Imagine you have seen this on a street:



What does **this picture** try to do?

If you don't know, select "Don't know."






						Don't know
	Not at all!	A little bit	Quite a bit	A lot	Definitely!	
It wants people to like toys	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It tries to make you like toys	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants you to think that having these toys will make you feel good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants to grab your attention with a sale	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It tries to make you want this product	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

>>



What does **this picture** try to do?

If you don't know, select "Don't know."

						Don't know
	Not at all!	A little bit	Quite a bit	A lot	Definitely!	
It wants people to buy this food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It tries to make you like this food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants you to think that having this food will make you feel good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It wants to grab your attention	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It tries to make you want this product	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

>>

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Please tell us how often these things happen to **you**:

	Never	Once a month	Once a week	Twice a week	Once a day	Twice a day
I see advertising for treats, lollies, soft drink or fast food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I ask my family to buy me treats, lollies, soft drink or fast food that I have seen advertised	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I ask my family to buy me fast food, snacks or cereals that have a free toy, gift or competition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Please tell us how often these things happen to **you**:

	Never	Once a month	Once a week	Twice a week	Once a day	Twice a day
I buy treats, lollies, soft drink or fast food with my own money	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Our local fast-food restaurants have special deals, like family packs and meal deals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Please tell us how often these things happen to **you**:

	Never	Once a month	Once a week	Twice a week	Once a day	Twice a day
How often do you eat fast-food from restaurants such as McDonald's, KFC or Pizza Hut?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you eat treats and lollies?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do you have soft drink?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Finally, please tell us:

How old are you?

Are you?

- A girl
 A boy



THANK YOU FOR ANSWERING OUR QUESTIONS!



Appendix 36: Summary of Changes in the PQ

Notes:

- Changes made based on experts' suggestions.
- Changes made after the pilot test with parents.
- Changes made after additional review of empirical literature.

PARENTS' QUESTIONNAIRE

Thank you for taking part in our survey. It will take around 25-30 minutes. All answers will be kept confidential and only the researcher will have access to answers. We want to ask you about your attitudes concerning food consumption and some questions about your child. You can withdraw at any time if you do not wish to participate, but we would appreciate if you could answer all questions.

The first few items are about what advice you think experts are giving to adults:

1. Do you think the *Dietary Guidelines for Australians* recommends that **adults** should be eating more, the same amount, or less of these foods? (tick one box per food):

	More	Same	Less	Not sure
Vegetables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sugary foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Starchy foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fatty foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High fibre foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Salty foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dairy products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. How many servings of fruit a day do you think experts are advising people to eat? (One serving could be, for example, an apple)

3. How many servings of vegetables a day do you think experts are advising people to eat? (One serving could be, for example, a handful of chopped carrots)

4. Which fat do **nutritionists** say is most important for people to cut down on? (tick one):

(a) monounsaturated fat (e.g. red meat or whole milk)	<input type="checkbox"/>
(b) polyunsaturated fat (e.g. sunflower seeds or walnuts)	<input type="checkbox"/>
(c) saturated fat (e.g. butter, cheese, or ice cream)	<input type="checkbox"/>
(d) not sure	<input type="checkbox"/>

5. What version of dairy foods do **nutritionists** say people should eat? (tick one):

(a) full fat	<input type="checkbox"/>
(b) lower fat	<input type="checkbox"/>
(c) both full fat and lower fat	<input type="checkbox"/>
(d) none, dairy foods should be avoided	<input type="checkbox"/>
(e) not sure	<input type="checkbox"/>

Nutritionists classify foods into groups. We are interested to see whether people are aware of what foods are in these groups:

1. Do you think these are high or low in added sugar? (tick one box per food):

	None	High	Low	Not sure
Bananas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unflavoured yoghurt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ice-cream	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Orange 35% juice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tomato sauce	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tinned fruit in natural juice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Do you think these are high or low in fat? (tick one box per food):

	High	Low	Not sure
Pasta (without sauce)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mayonnaise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baked beans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lunch/sandwich meat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Honey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vegetarian pastry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nuts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
White bread	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cottage cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Polyunsaturated margarine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Do you think **nutritionists** put these in the starchy/high carbohydrate foods group? (tick one box per food):

	Yes	No	Not sure
Cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pasta	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Butter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nuts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Porridge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Do you think these are high or low in salt? (tick one box per food):

	High	Low	Not sure
Sausages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pasta	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anchovies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Red meat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen vegetables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Do you think these are high or low in protein? (tick one box per food)

	High	Low	Not sure
Chicken	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baked beans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Butter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cream	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Do you think these fatty foods are high or low in fibre/roughage? (tick one box per food):

	High	Low	Not sure
Cornflakes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bananas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eggs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Red meat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Broccoli	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nuts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baked potatoes with skins	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chicken	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baked beans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. Do you think these fatty foods are high or low in saturated fat? (tick one box per food):

	High	Low	Not sure
Tuna	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Whole milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Olive oil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Red meat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sunflower margarine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chocolate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Some foods contain a lot of fat but no cholesterol (tick one):

- (a) **right**
- (b) **wrong**
- (c) not sure

9. Do you think nutritionists call these a healthy alternative to red meat? (tick one box per food):

	Yes	No	Not sure
Liver pate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lunch meats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baked beans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nuts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low fat cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mushrooms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. A glass of unsweetened (100%) fruit juice counts as one serve of fruit? (tick one):

- (a) agree
- (b) disagree
- (c) not sure

11. Saturated fats are typically found in (tick one):

- (a) vegetable oils
- (b) dairy products
- (c) both (a) and (b)
- (d) not sure

12. Brown sugar is a healthy alternative to white sugar (tick one box per food):

- (a) agree
- (b) disagree
- (c) not sure

13. There is more protein in a glass of whole milk than in a glass of skim milk (tick one):

- (a) agree
- (b) disagree
- (c) not sure

14. Polysaturated margarine contains less fat than butter (tick one):

- (a) agree
- (b) disagree
- (c) not sure

15. Which of these breads contain the most vitamins and minerals? (tick one):

- (a) white
- (b) wholemeal bread
- (b) wholegrain bread
- (c) not sure

16. Which do you think is higher in kilojoules: butter or regular margarine? (tick one):

- (a) butter
- (b) regular margarine
- (c) both the same
- (d) not sure

17. Which type of oil contains mostly monosaturated fat? (tick one):

- (a) coconut oil
- (b) sunflower oil
- (c) olive oil
- (d) palm oil
- (e) not sure

18. There is more calcium in a glass of whole milk than in a glass of skim milk (tick one):

- (a) agree
- (b) disagree
- (c) not sure

19. Which one of the following has the most kilojoules for the same weight? (tick one):

- (a) sugar
- (b) carbohydrate
- (c) fibre/roughage
- (d) fat
- (e) not sure

20. Harder fats contain more: (tick one):

- (a) monounsaturated fat
- (b) polyunsaturated fat
- (c) saturated fat
- (d) not sure

21. Polyunsaturated fats are mainly found in (tick one):

- (a) vegetable oils
- (b) dairy products
- (c) both (a) and (b)
- (d) not sure

The next section is about your communication with your child. If you have several children, please answer the questions in relation to the older child.

19. Please tell us your opinion about the following statements:

	Never or only rarely true of me	Sometimes true of me	Half the time true of me	Frequently true of me	Always or almost always true of me	NA
I try to explain to my child the difference between good foods and bad foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When my child sees a food advertisement I try to explain the motives behind the advertisement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I try to help my child understand what s/he sees on TV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I try to help my child understand the difference between advertisements and programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please tell us your opinion about the following statements:
(circle the answer, if you are not sure select "3")

22. Members of my family/extended family eat fast food **at least once per week:**

1 Disagree	2	3	4	5 Agree
------------	---	---	---	---------

23. My friends eat fast food **at least once per week:**

1 Disagree	2	3	4	5 Agree
------------	---	---	---	---------

24. The people who live in my **neighbourhood** eat fast food **at least once per week:**

1 Disagree	2	3	4	5 Agree
------------	---	---	---	---------

25. We can easily walk to a fast food restaurant from our house:

1 Disagree	2	3	4	5 Agree
------------	---	---	---	---------

26. We can easily drive to a fast food restaurant from our house:

1 Disagree	2	3	4	5 Agree
------------	---	---	---	---------

27. How often do you eat fast food **as a family?**

1 Never	2 Less than once a week	3 One or two times a week	4 Three or four times a week	5 More than four times a week
---------	-------------------------	---------------------------	------------------------------	-------------------------------

Please tell us your opinion about the following statements:

28. Fast food is not enjoyable/enjoyable:

1 Not enjoyable	2	3	4	5 Enjoyable
-----------------	---	---	---	-------------

29. Fast food is bad/good:

1 Bad	2	3	4	5 Good
-------	---	---	---	--------

30. Fast food is inconvenient/convenient:

1 Inconvenient	2	3	4	5 Convenient
----------------	---	---	---	--------------

31. Fast food is a waste of money/value for money:

1 Waste of money	2	3	4	5 Value for money
------------------	---	---	---	-------------------

32. What is your child's weight in kilograms? If you have several children participating in our study, please mention the weight for each child starting from the oldest one (e.g., 1 - 50 kg, 2 - 30 kg, etc.):

Oldest child (1) _____
 Second oldest child (2) _____
 Youngest child (3) _____
 Last youngest child (4) _____

33. What is your child's height (cm)? If you have several children participating in our study, please mention the height for each child starting from the oldest one (e.g., 1 - 110 cm, 2 - 50 cm, etc.):

Oldest child (1) _____
 Second oldest child (2) _____
 Youngest child (3) _____
 Last youngest child (4) _____

34. How many hours does your child/do your children who take part in our study spend surfing the Internet on an **average** weekday (please specify only for children who take part in our study):

	Oldest child (1)	Second oldest child (2)	Youngest child (3)	Last youngest child (4)
Up to one	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to two	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to three	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to four	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to five	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to six	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
More than six	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

35. How many hours does your child/do your children who take part in our study spend surfing the Internet on an **average** weekend day:

	Oldest child (1)	Second oldest child (2)	Youngest child (3)	Last youngest child (4)
Up to one	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to two	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to three	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to four	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to five	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to six	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
More than six	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

36. How many hours of TV does your/do your children who take part in our study child watch on an **average** weekday:

	Oldest child (1)	Second oldest child (2)	Youngest child (3)	Last youngest child (4)
Up to one	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to two	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to three	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to four	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to five	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to six	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
More than six	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

37. How many hours of **TV** does your child/do your children who take part in our study watch on the an **average** weekend day:

	Oldest child (1)	Second oldest child (2)	Youngest child (3)	Last youngest child (4)
Up to one	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to two	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to three	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to four	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to five	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to six	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
More than six	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

38. How often does your child eat at fast foods (including take-away and fast food restaurants)?

Never	<input type="checkbox"/>
Less than once a week	<input type="checkbox"/>
One to two times per week	<input type="checkbox"/>
Three to four times per week	<input type="checkbox"/>
More than four times per week	<input type="checkbox"/>

39. On average, how often do you think you see snacks and fast food advertised? (including TV, magazines, Internet or billboards) (my item)

Never	Rarely	Sometimes	Often	Very often
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

40. On average, how often do you think you see healthy food advertised? (including TV, magazines, Internet or billboards) (my item)

Never	Rarely	Sometimes	Often	Very often
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

41. Are you:

Female	<input type="checkbox"/>
Male	<input type="checkbox"/>

42. How old are you: _____

43. What is your residential postcode: _____

44. What is your highest level of education:

- Some primary school
- Finished primary school
- Some secondary school
- Finished secondary school
- Some tertiary education (university, TAFE or college)
- Finished tertiary education
- Higher degree or higher diploma (e.g., PhD, Masters, Graduate Diploma)

45. Are you:

- Single
- Married
- De facto
- Separated
- Divorced
- Widowed
-

46. Do you have children under 18 living with you?

- Yes
- No

Yes Please specify: _____
No

47. How many children under 18 do you have?

Thank you very much for your time and participation in the study! 😊

If you would like to leave any comments about this questionnaire,
please use the space below:

.....
.....
.....
.....
.....

Appendix 37: Finalised Paper-Based PQ



PARENTS' QUESTIONNAIRE

Dear parent,

Thank you for taking part in our survey! Your contribution is highly appreciated!

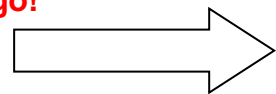
It will take around 20-25 minutes.

All answers will be kept confidential and only the researcher will have access to answers. We want to ask you about your attitudes about food, how you communicate with your child/ren about food, and your child/ren use of media.

You can withdraw at any time if you do not wish to participate, but we would appreciate if you could answer all questions.

Please enter your participant number:

Here we go!



The first few items are about the advice you think experts are giving to adults:

1. Do you think the *Dietary Guidelines for Australians* recommends that adults should be eating more, the same amount, or less of these foods? (tick one box per food):

	More	Same	Less	Not sure
Vegetables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sugary foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Starchy foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fatty foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High fibre foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Salty foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dairy products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. How many servings of fruit a day do you think experts are advising people to eat? (One serving could be, for example, an apple)

.....

3. How many servings of vegetables a day do you think experts are advising people to eat? (One serving could be, for example, a handful of chopped carrots)

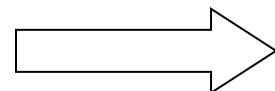
.....

4. Which fat do **nutritionists** say is the most important for people to cut down on? (tick one):

(a) monounsaturated fat (e.g. red meat or whole milk)	<input type="checkbox"/>
(b) polyunsaturated fat (e.g. sunflower seeds or walnuts)	<input type="checkbox"/>
(c) saturated fat (e.g. butter, cheese, or ice cream)	<input type="checkbox"/>
(d) not sure	<input type="checkbox"/>

5. What version of dairy foods do **nutritionists** say people should eat? (tick one):

(a) full fat	<input type="checkbox"/>
(b) lower fat	<input type="checkbox"/>
(c) both full fat and lower fat	<input type="checkbox"/>
(d) none, dairy foods should be avoided	<input type="checkbox"/>
(e) not sure	<input type="checkbox"/>



Nutritionists classify foods into groups. We are interested to see whether people are aware of what foods are in these groups:

6. Do you think these are high or low in added sugar? (tick one box per food):

	None	High	Low	Not sure
Bananas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unflavoured yoghurt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ice-cream	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Orange 35% juice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tomato sauce	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tinned fruit in natural juice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. Do you think these are high or low in fat? (tick one box per food):

	High	Low	Not sure
Pasta (without sauce)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mayonnaise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baked beans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lunch/sandwich meat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Honey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vegetarian pastry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nuts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
White bread	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cottage cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Polyunsaturated margarine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

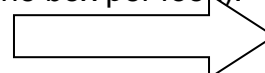
8. Do you think **nutritionists** put these in the starchy/high carbohydrate foods group? (tick one box per food):

	Yes	No	Not sure
Cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pasta	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Butter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nuts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Porridge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. Do you think these are high or low in salt? (tick one box per food):

	High	Low	Not sure
Sausages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pasta	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anchovies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Red meat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen vegetables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. Do you think these are high or low in protein? (tick one box per food):



	High	Low	Not sure
Chicken	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baked beans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Butter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cream	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. Do you think these fatty foods are high or low in fibre/roughage? (tick one box per food):

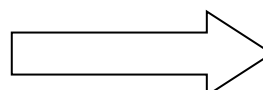
	High	Low	Not sure
Cornflakes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bananas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eggs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Red meat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Broccoli	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nuts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baked potatoes with skins	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chicken	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baked beans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. Do you think these fatty foods are high or low in saturated fat? (tick one box per food):

	High	Low	Not sure
Tuna	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Whole milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Olive oil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Red meat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sunflower margarine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chocolate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. Some foods contain a lot of fat but no cholesterol (tick one):

(a) right	<input type="checkbox"/>
(b) wrong	<input type="checkbox"/>
(c) not sure	<input type="checkbox"/>



14. Do you think nutritionists call these a healthy alternative to red meat? (tick one box per food):

	Yes	No	Not sure
Liver pate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lunch meats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baked beans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nuts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low fat cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mushrooms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. A glass of unsweetened (100%) fruit juice counts as one serve of fruit? (tick one):

(a) agree	<input type="checkbox"/>
(b) disagree	<input type="checkbox"/>
(c) not sure	<input type="checkbox"/>

16. Saturated fats are typically found in (tick one):

(a) vegetable oils	<input type="checkbox"/>
(b) dairy products	<input type="checkbox"/>
(c) both (a) and (b)	<input type="checkbox"/>
(d) not sure	<input type="checkbox"/>

17. Brown sugar is a healthy alternative to white sugar (tick one box per food):

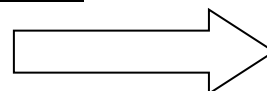
(a) agree	<input type="checkbox"/>
(b) disagree	<input type="checkbox"/>
(c) not sure	<input type="checkbox"/>

18. There is more protein in a glass of whole milk than in a glass of skim milk (tick one):

(a) agree	<input type="checkbox"/>
(b) disagree	<input type="checkbox"/>
(c) not sure	<input type="checkbox"/>

19. Polysaturated margarine contains less fat than butter (tick one):

(a) agree	<input type="checkbox"/>
(b) disagree	<input type="checkbox"/>
(c) not sure	<input type="checkbox"/>



20. Which of these breads contains the most vitamins and minerals? (tick one):

(a) white bread	<input type="checkbox"/>
(b) wholemeal bread	<input type="checkbox"/>
(b) wholegrain bread	<input type="checkbox"/>
(c) not sure	<input type="checkbox"/>

21. Which do you think is higher in kilojoules: butter or regular margarine? (tick one):

(a) butter	<input type="checkbox"/>
(b) regular margarine	<input type="checkbox"/>
(c) both the same	<input type="checkbox"/>
(d) not sure	<input type="checkbox"/>

22. Which type of oil contains mostly monounsaturated fat? (tick one):

(a) coconut oil	<input type="checkbox"/>
(b) sunflower oil	<input type="checkbox"/>
(c) olive oil	<input type="checkbox"/>
(d) palm oil	<input type="checkbox"/>
(e) not sure	<input type="checkbox"/>

23. There is more calcium in a glass of whole milk than in a glass of skim milk (tick one):

(a) agree	<input type="checkbox"/>
(b) disagree	<input type="checkbox"/>
(c) not sure	<input type="checkbox"/>

24. Which of the following has the most kilojoules for the same weight? (tick one):

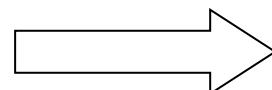
(a) sugar	<input type="checkbox"/>
(b) carbohydrate	<input type="checkbox"/>
(c) fibre/roughage	<input type="checkbox"/>
(d) fat	<input type="checkbox"/>
(e) not sure	<input type="checkbox"/>

25. Harder fats contain more: (tick one):

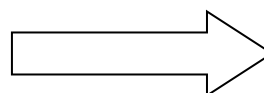
(a) monounsaturated fat	<input type="checkbox"/>
(b) polyunsaturated fat	<input type="checkbox"/>
(c) saturated fat	<input type="checkbox"/>
(d) not sure	<input type="checkbox"/>

26. Polyunsaturated fats are mainly found in (tick one):

(a) vegetable oils	<input type="checkbox"/>
(b) dairy products	<input type="checkbox"/>
(c) both (a) and (b)	<input type="checkbox"/>
(d) not sure	<input type="checkbox"/>



The next section is about your attitudes about communication with your child about food. If you have several children, please answer the questions in relation to child(ren) taking part in our study.

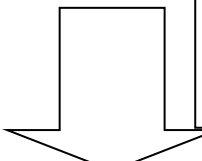


Please answer the upcoming questions only for children who take part in our study. If only one child participates in the study, answer the questions in relation to the “oldest child (1).” If more than one child participates in our study please answer each block of questions for each child.

27. Please tell us your opinion about the following statements:

Oldest child (1)	Never or only rarely true of me	Sometimes true of me	Half the time true of me	Frequently true of me	Always or almost always true of me	Not applicable
I try to explain to my child the difference between good foods and bad foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When my child sees a food advertisement I try to explain the motives behind the advertisement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I try to help my child understand what s/he sees on TV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I try to help my child understand the difference between advertisements and programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Second oldest child (2)	Never or only rarely true of me	Sometimes true of me	Half the time true of me	Frequently true of me	Always or almost always true of me	Not applicable
I try to explain to my child the difference between good foods and bad foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When my child sees a food advertisement I try to explain the motives behind the advertisement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I try to help my child understand what s/he sees on TV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I try to help my child understand the difference between advertisements and programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



 SAME QUESTIONS FOR YOUNGEST CHILD (3 and 4) taking part in our study. If only 2 children participate, go to Question 23 (page 10).

Please tell us your opinion about the following statements:

Youngest child (3)	Never or only rarely true of me	Sometimes true of me	Half the time true of me	Frequently true of me	Always or almost always true of me	Not applicable
I try to explain to my child the difference between good foods and bad foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When my child sees a food advertisement I try to explain the motives behind the advertisement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I try to help my child understand what s/he sees on TV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I try to help my child understand the difference between advertisements and programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Last youngest child (4)	Never or only rarely true of me	Sometimes true of me	Half the time true of me	Frequently true of me	Always or almost always true of me	Not applicable
I try to explain to my child the difference between good foods and bad foods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When my child sees a food advertisement I try to explain the motives behind the advertisement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I try to help my child understand what s/he sees on TV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I try to help my child understand the difference between advertisements and programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

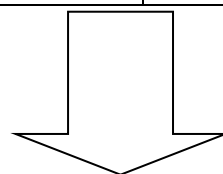
SKIP if only 2 children participate in our study and go to Question 23 (page 10).

Please answer the upcoming questions only for children who take part in our study. If only one child participates in the study, answer the questions in relation to the “oldest child (1).” If more than one child participates in our study please answer each block of questions for each child.

28. Please tell us your opinion about the following statements:

Oldest child (1)	Never or only rarely true of me	Sometimes true of me	Half the time true of me	Frequently true of me	Always or almost always true of me	Not applicable
I tell my child that advertising depicts products as better than they really are	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that that advertising does not always tell the truth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that the purpose of advertising is to sell products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that not all advertised products are of good quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that some advertised products are not good for children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Second oldest child (2)	Never or only rarely true of me	Sometimes true of me	Half the time true of me	Frequently true of me	Always or almost always true of me	Not applicable
I tell my child that advertising depicts products as better than they really are	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that that advertising does not always tell the truth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that the purpose of advertising is to sell products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that not all advertised products are of good quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that some advertised products are not good for children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



SAME QUESTIONS FOR YOUNGEST CHILD (3 and 4) taking part in our study. If only 2 children participate go to Question 24 (page 12).

Youngest child (3)	Never or only rarely true of me	Sometimes true of me	Half the time true of me	Frequently true of me	Always or almost always true of me	Not applicable
I tell my child that advertising depicts products as better than they really are	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that that advertising does not always tell the truth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that the purpose of advertising is to sell products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that not all advertised products are of good quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that some advertised products are not good for children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

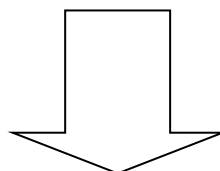
Last youngest child (4)	Never or only rarely true of me	Sometimes true of me	Half the time true of me	Frequently true of me	Always or almost always true of me	Not applicable
I tell my child that advertising depicts products as better than they really are	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that that advertising does not always tell the truth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that the purpose of advertising is to sell products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that not all advertised products are of good quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that some advertised products are not good for children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SKIP if only 2 children participate in our study and go to Question 24 (page 12).

Please answer the upcoming questions only for children who take part in our study. If only one child participates in the study, answer the questions in relation to the “oldest child (1).” If more than one child participates in our study please answer each block of questions for each child.

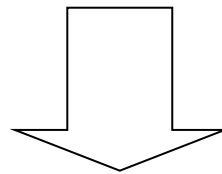
29. Please tell us your opinion about the following statements:

Oldest child (1)	Never or only rarely true of me	Sometimes true of me	Half the time true of me	Frequently true of me	Always or almost always true of me	Not applicable
I tell my child to turn off the television when (s)he is watching commercials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that (s)he should not watch commercial channels because they broadcast too many commercials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child to switch to a channel that broadcasts fewer commercials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that (s)he should not watch television advertising at all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child to watch specific channels that broadcast relatively few commercials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that every member of our family should have some say in family purchase decisions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child to give his/her opinion when discussing family purchases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



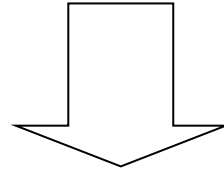
SAME QUESTIONS FOR YOUNGEST CHILD (2) taking part in our study. If only 1 child participates, go to Question 25 (page 16).

Second oldest child (2)	Never or only rarely true of me	Sometimes true of me	Half the time true of me	Frequently true of me	Always or almost always true of me	Not applicable
I tell my child to turn off the television when (s)he is watching commercials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that (s)he should not watch commercial channels because they broadcast too many commercials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child to switch to a channel that broadcasts fewer commercials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that (s)he should not watch television advertising at all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child to watch specific channels that broadcast relatively few commercials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that every member of our family should have some say in family purchase decisions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child to give his/her opinion when discussing family purchases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



SAME QUESTIONS FOR YOUNGEST CHILD (3) taking part in a study. If only 2 children participate, go to Question 25 (page 16).

Youngest child (3)	Never or only rarely true of me	Sometimes true of me	Half the time true of me	Frequently true of me	Always or almost always true of me	Not applicable
I tell my child to turn off the television when (s)he is watching commercials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that (s)he should not watch commercial channels because they broadcast too many commercials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child to switch to a channel that broadcasts fewer commercials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that (s)he should not watch television advertising at all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child to watch specific channels that broadcast relatively few commercials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that every member of our family should have some say in family purchase decisions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child to give his/her opinion when discussing family purchases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



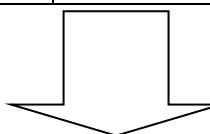
SAME QUESTIONS FOR YOUNGEST CHILD (4) taking part in our study. If only 3 children participate, go to Question 25 (page 16).

Please answer the upcoming questions only for children who take part in our study. If only one child participates in the study, answer the questions in relation to the “oldest child (1).” If more than one child participates in our study please answer each block of questions for each child.

30. Please tell us your opinion about the following statements:

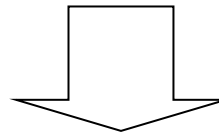
Oldest child (1)	Never or only rarely true of me	Sometimes true of me	Half the time true of me	Frequently true of me	Always or almost always true of me	Not applicable
I tell my child to give his/her opinion about products and brands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that I respect his/her expertise on certain products and brands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child to consider the advantages and disadvantages of products and brands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that (s)he can codecide when I make purchases for him/her	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that I know which products are best for him/her	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child not to argue with me when I say no to his/her product request	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that I expect him/her to accept my decisions about product purchases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child which products (s)he should or should not buy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that I have strict and clear rules when it comes to product purchases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that the (s)he is not allowed to ask for products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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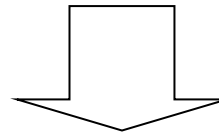
SAME QUESTIONS FOR YOUNGEST CHILD (2) taking part in our study. If only 1 child participates, go to Question 26 (page 20).

Second oldest child (2)	Never or only rarely true of me	Sometimes true of me	Half the time true of me	Frequently true of me	Always or almost always true of me	Not applicable
I tell my child to give his/her opinion about products and brands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that I respect his/her expertise on certain products and brands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child to consider the advantages and disadvantages of products and brands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that (s)he can codecide when I make purchases for him/her	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that I know which products are best for him/her	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child not to argue with me when I say no to his/her product request	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that I expect him/her to accept my decisions about product purchases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child which products (s)he should or should not buy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that I have strict and clear rules when it comes to product purchases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that the (s)he is not allowed to ask for products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



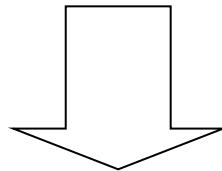
SAME QUESTIONS FOR YOUNGEST CHILD (3) taking part in our study. If only 2 children participate, go to Question 26 (page 20).

Youngest child (3)	Never or only rarely true of me	Sometimes true of me	Half the time true of me	Frequently true of me	Always or almost always true of me	Not applicable
I tell my child to give his/her opinion about products and brands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that I respect his/her expertise on certain products and brands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child to consider the advantages and disadvantages of products and brands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that (s)he can codecide when I make purchases for him/her	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that I know which products are best for him/her	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child not to argue with me when I say no to his/her product request	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that I expect him/her to accept my decisions about product purchases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child which products (s)he should or should not buy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that I have strict and clear rules when it comes to product purchases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that the (s)he is not allowed to ask for products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



SAME QUESTIONS FOR YOUNGEST CHILD (4) taking part in our study. If only 3 children participate, go to Question 26 (page 20).

Last youngest child (4)	Never or only rarely true of me	Sometimes true of me	Half the time true of me	Frequently true of me	Always or almost always true of me	Not applicable
I tell my child to give his/her opinion about products and brands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that I respect his/her expertise on certain products and brands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child to consider the advantages and disadvantages of products and brands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that (s)he can codecide when I make purchases for him/her	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that I know which products are best for him/her	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child not to argue with me when I say no to his/her product request	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that I expect him/her to accept my decisions about product purchases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child which products (s)he should or should not buy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that I have strict and clear rules when it comes to product purchases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tell my child that the (s)he is not allowed to ask for products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Please tell us your opinion about the following statements:
 (tick the answer, if you are not sure select “3,” **please tick your answer**)

31. Members of my family/extended family eat fast food at least once per week:

1 Disagree	2	3	4	5 Agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

32. My friends eat fast food at least per week:

1 Disagree	2	3	4	5 Agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

33. People who live in my **neighbourhood** eat fast food at least once per week:

1 Disagree	2	3	4	5 Agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

34. We can easily walk to a fast food restaurant from our house:

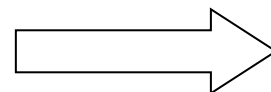
1 Disagree	2	3	4	5 Agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

35. We can easily drive to a fast food restaurant from our house:

1 Disagree	2	3	4	5 Agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

36. How often do you eat fast food **as a family**?

Never	Less than once a week	One or two times a week	Three or four times a week	More than four times a week
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Please answer question 33 only for children who take part in our study. If only one child participates in our study, answer the questions in relation to the “oldest child (1).”

37. How often does your child/do your children who take part in our study eat fast foods (including take-away and fast food restaurants)?

	Never	Less than once a week	One or two times a week	Three or four times a week	More than four times a week
Oldest child taking part in the study (1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Second oldest child taking part in the study (2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Youngest child taking part in the study (3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Last youngest child taking part in the study (4)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please tell us your opinion about the following statements (if you are not sure select “3,” please tick your answer):

38. Fast food is not enjoyable/enjoyable:

1 Not enjoyable	2	3	4	5 Enjoyable
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

39. Fast food is bad/good:

1 Bad	2	3	4	5 Good
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

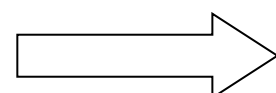
40. Fast food is inconvenient/convenient:

1 Inconvenient	2	3	4	5 Convenient
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

41. Fast food is a waste of money/value for money:

1 Waste of money	2	3	4	5 Value for money
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

In this last section we would like to ask several questions about you and your child(ren).



42. What is your child's weight in kilograms? If you have several children participating in our study, please mention the weight for each child starting from the oldest one (e.g., 1 - 50 kg, 2 - 30 kg, etc.):

Oldest child (1) _____
 Second oldest child (2) _____
 Youngest child (3) _____
 Last youngest child (4) _____

43. What is your child's height (cm)? If you have several children participating in our study, please mention the height for each child starting from the oldest one (e.g., 1 – 110 cm, 2 - 150 cm, etc.):

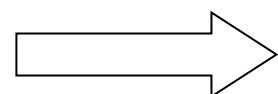
Oldest child (1) _____
 Second oldest child (2) _____
 Youngest child (3) _____
 Last youngest child (4) _____

44. How many hours does your child/do your children who take part in our study spend surfing the **Internet** on an **average weekday** (please specify only for children who take part in our study):

	Oldest child (1)	Second oldest child (2)	Youngest child (3)	Last youngest child (4)
Up to one	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to two	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to three	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to four	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to five	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to six	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
More than six	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

45. How many hours does your child/do your children who take part in our study spend surfing the **Internet** on an **average weekend day**:

	Oldest child (1)	Second oldest child (2)	Youngest child (3)	Last youngest child (4)
Up to one	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to two	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to three	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to four	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to five	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to six	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
More than six	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



46. How many hours of **TV** does your/do your children who take part in our study child watch on **an average weekday**:

	Oldest child (1)	Second oldest child (2)	Youngest child (3)	Last youngest child (4)
Up to one	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to two	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to three	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to four	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to five	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to six	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
More than six	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

47. How many hours of **TV** does your child/do your children who take part in our study watch on the an **average weekend day**:

	Oldest child (1)	Second oldest child (2)	Youngest child (3)	Last youngest child (4)
Up to one	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to two	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to three	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to four	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to five	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Up to six	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
More than six	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

48. On average, how often do **you** think you see snacks and fast foods advertised? (including TV, magazines, Internet or billboards):

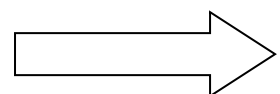
Never	Rarely	Sometimes	Often	Very often
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

49. On average, how often do **you** think you see healthy foods advertised? (including TV, magazines, Internet or billboards):

Never	Rarely	Sometimes	Often	Very often
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

50. Are you:

Female	<input type="checkbox"/>
Male	<input type="checkbox"/>



51. What is your relationship to the child(ren) who take part in our study?

Mother	<input type="checkbox"/>
Father	<input type="checkbox"/>
Sister	<input type="checkbox"/>
Brother	<input type="checkbox"/>
Aunt	<input type="checkbox"/>
Uncle	<input type="checkbox"/>
Grandmother	<input type="checkbox"/>
Grandfather	<input type="checkbox"/>
Other	Please specify:

52. How old are you? _____

53. What is your residential postcode? _____

54. What is your height in centimetres? _____

55. What is your weight in kilograms? _____

56. What is your highest level of education?

Some primary school	<input type="checkbox"/>
Finished primary school	<input type="checkbox"/>
Some secondary school	<input type="checkbox"/>
Finished secondary school	<input type="checkbox"/>
Some tertiary education (university, TAFE or college)	<input type="checkbox"/>
Finished tertiary education	<input type="checkbox"/>
Higher degree or higher diploma (e.g., PhD, Masters, Graduate Diploma)	<input type="checkbox"/>

57. Are you:

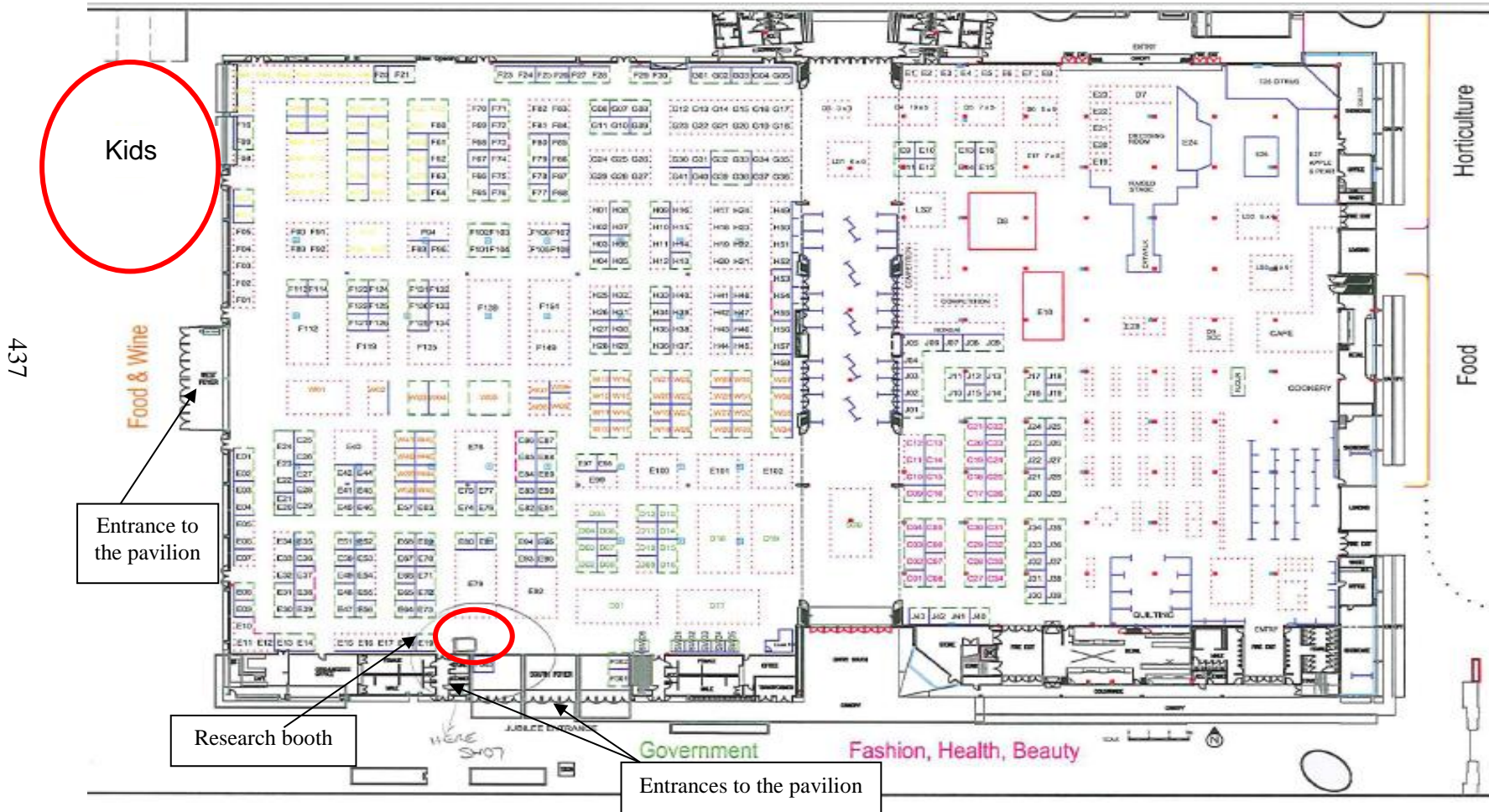
Single	<input type="checkbox"/>
Married	<input type="checkbox"/>
De facto	<input type="checkbox"/>
Separated	<input type="checkbox"/>
Divorced	<input type="checkbox"/>
Widowed	<input type="checkbox"/>

58. How many children under 18 do you have? _____

Thank you very much for your time and participation in our study! 😊

Appendix 38: Location of Research Site for Field Study

The stand (No SW07) was located in Jubilee Pavilion, close to one of the main entrances to the pavilion and in the proximity to the Kid’s Area of the Royal Adelaide Show.



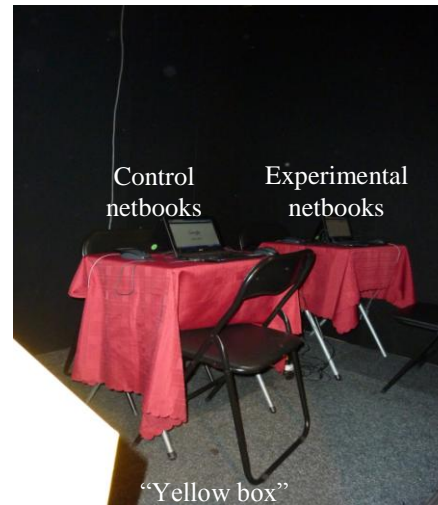
Map of the Jubilee Pavilion (Source: Ms Di Chalmers Business Sales Executive of the Royal Adelaide Show, August 18, 2011).

Appendix 39: Research Site for Field Study

Front desk



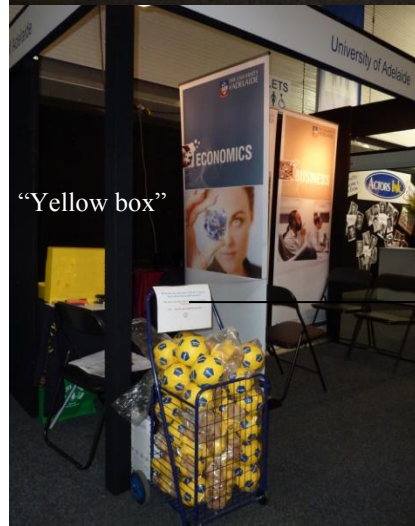
Children’s area



Parents’ area



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Text of the invitation:

“What do you and your child (7-13 years) think about food and Internet?

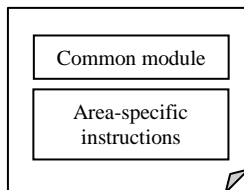
Take part in our study, which will only take 20 minutes of your time.

\$10 and a toy for your time! 😊



Appendix 40: Instructions for Research Assistants

Each research assistant received a set of instructions for his/her particular area. Instructions consisted of a common module and area-specific section explained below.



Common module:																																																																										
<p>INSTRUCTIONS:</p> <p>Research site layout</p>																																																																										
Area-specific instructions																																																																										
Research assistant No. 1: Front desk	Research assistant No. 2: Children's area	Research assistant No. 3: Parents' area																																																																								
<ul style="list-style-type: none"> - Recruit parents and children: explain the project and sign consent forms children [use the Information Sheet (blue colour)]. - Assign participant numbers to parents and children: <table border="1" style="margin-left: 20px;"> <tr><td>365</td><td>366</td></tr> <tr><td>367</td><td>368</td></tr> <tr><td>369</td><td>370</td></tr> </table> <ul style="list-style-type: none"> - Then, assign children to netbooks [you do not know which ones are experimental and which ones are control, just make sure you assign: 1) children from the same families to different desks and 2) assign children of different ages to each desk evenly. - Show children snacks in the "yellow box" and note down their preferences when an assistant from the "children's area" takes a child to you after ten minutes of Internet surfing → Say, "Let's play a game. Let's imagine you can choose what to eat tomorrow. Would you select the following food? Please show me how much you would like to eat each food using these smileys. See, it goes from 'not at all' to 'definitely.' If you certainly don't want this food at all, please point to 'not at all' for me. This one is for 'no.' This one, in the middle, is if you are not sure. This one is for "yes" and the last one is if you want 	365	366	367	368	369	370	<ul style="list-style-type: none"> - Explain the child what to do. Say, "Play on the Internet for ten minutes. After ten minutes the window will close and then we will play another game, alright? If you have any questions, just ask me." Offer noise reduction headphones. - Every netbook has an assigned number. Netbook one and two have experimental stimulus, three and four are control. Once the child is sited, enter his/her participant number and age on a special sheet [see below] for additional quality control. Ask children for age, but note down their number yourself because it is attached to participants' shoulder. Also, enter netbook's number or "E" for "experimental" or "C" for "Control" in the table: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Participant</th> <th>Group (E/C)</th> <th>Age</th> </tr> </thead> <tbody> <tr><td>1.1</td><td></td><td></td></tr> <tr><td>1.2</td><td></td><td></td></tr> <tr><td>1.3</td><td></td><td></td></tr> <tr><td>1.4</td><td></td><td></td></tr> <tr><td>2.1</td><td></td><td></td></tr> <tr><td>2.2</td><td></td><td></td></tr> <tr><td>2.3</td><td></td><td></td></tr> <tr><td>2.4</td><td></td><td></td></tr> <tr><td>3.1</td><td></td><td></td></tr> </tbody> </table> <div style="border: 1px solid black; padding: 5px; margin-left: 20px;"> <p>CHILDREN'S AREA</p> <p>E - experimental C - control</p> </div> <ul style="list-style-type: none"> - Unobtrusively supervise children's activity [make sure they use Internet Explorer browser]; address children's questions when the pop up message appears if they ask you what to do about it [tell them to shut the pop up and continue browsing]. - Take child to the front desk once he/she is 	Participant	Group (E/C)	Age	1.1			1.2			1.3			1.4			2.1			2.2			2.3			2.4			3.1			<ul style="list-style-type: none"> - Bring parents from the front desk to parents' area. Give them the questionnaires, answer any questions about the questionnaires. - Keep parents busy if they are done with surveys earlier than their children. - Check the questionnaires for missed answers. Check whether parents entered the correct number on the first page of the questionnaire [put their participant numbers on the questionnaire once they hand it over to you]. - Debrief parents and children [use the Information Sheet (orange colour)]. Then, ask them if they allow data to be used for research, give them debriefing packages with complaint form. Also, give \$10 and a toy to children. Note the permission on a separate sheet of paper [see below]: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Participant</th> <th>Money received</th> <th>Data can be used ✓ (yes) X (no)</th> </tr> </thead> <tbody> <tr><td>1.1</td><td></td><td></td></tr> <tr><td>1.2</td><td></td><td></td></tr> <tr><td>1.3</td><td></td><td></td></tr> <tr><td>1.4</td><td></td><td></td></tr> <tr><td>2.1</td><td></td><td></td></tr> <tr><td>2.2</td><td></td><td></td></tr> <tr><td>2.3</td><td></td><td></td></tr> <tr><td>2.4</td><td></td><td></td></tr> <tr><td>3.1</td><td></td><td></td></tr> <tr><td>3.2</td><td></td><td></td></tr> <tr><td>...</td><td></td><td></td></tr> </tbody> </table> <ul style="list-style-type: none"> - Ask parents to sign two forms to confirm the receipt of \$10 and of a toy: 	Participant	Money received	Data can be used ✓ (yes) X (no)	1.1			1.2			1.3			1.4			2.1			2.2			2.3			2.4			3.1			3.2			...		
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367	368																																																																									
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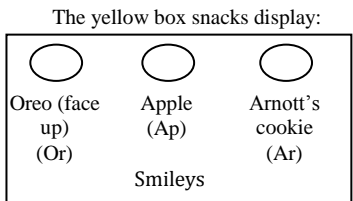
this food a lot!” [should be repeated for each food if the child forgets how to answer the questions]. Note down the preferences as a number (from “1” to “5”) on a special form:

Participant	Motivation to consume		
	Oreo	Apple	Arnott
1.1			
1.2			
1.3			
1.4			
2.1			
2.2			
2.3			
2.4			
3.1			
3.2			
3.3			
3.4			
4.1			
4.2			

FRONT DESK
Food preference [enter the number], e.g. 2, 3, etc.

- Once you finish with the “yellow box,” say, “Could you now go back to [name of the research assistant]. He/she would like to know more about your opinion about food” [refill the yellow box and recruit another participant if there is a spare netbook]. In case there is a child who wants to fill in a paper-based questionnaire, who requires your assistance (reading out the questions or answer options), and the research assistant from parents’ area is busy, stop recruiting new participants and help that child. Remember, read out the questions carefully and slowly, avoid explaining words and leading a child to an answer, remain neutral, don’t speed him/her up. If the child says he/she will fill it in on his/her own, check on him/her every once in a while to ask if all questions are clear. Once the child completes the survey, check if he/she answered all questions [check for missing data]. Children might tick, circle, or colour their answers. If there are two answers for the same question, ask the child which one he/she meant. Then, cross out the incorrect one (e.g., “X”).


- The display of snacks in the yellow box needs to be the same all the time in the following sequence: 1) a pack of Oreo biscuits; 2) an apple; and 3) Arnotts’ biscuits, all face up [see instructions below]:



done with surfing [after 10 minutes when Internet Explorer shuts down].

- While child’s preferences are being noted down at the front desk, open Mozilla Firefox and prepare Qualtrics questionnaire [Qualtrics link is saved as a MS file on the desktop, file name “Qualtrics”). If the child is not comfortable with the online questionnaire, take him/her to the research assistant No. 1 at the front desk who will give him/her a paper-based survey. If necessary, read out the questions from the online questionnaire to children if they ask for help. Ask them to point to an answer for you, which you will tick for them. When the child says he/she has finished the online questionnaire, make sure that the screen displays the following message, “Thank you! Your choice has been recorded.” Then, tell the child to go to his/her parents and research assistant No. 1.


Note: paper-based questionnaires and pens will be under the tables in the children’s area.


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confirm receiving \$ ____ for my child’s/children’s participation in Mila Tarabashkina’s study conducted at the Royal Adelaide Show as a part of her PhD project.

Signature _____

Date _____


THE UNIVERSITY OF ADELAIDE

confirm receiving a toy for my child’s participation in Mila Tarabashkina’s study conducted at the Royal Adelaide Show as a part of her PhD project.

Signature _____

Date _____

Put completed questionnaires under the front desk table in a special box.

Note:

1) Spare questionnaires, debriefing packages, and \$10/toy receipt forms are located in a box under desk [front desk].

2) In case there is a child who wants to fill in the paper-based CQ, who requires your assistance, such as reading out questions or answers, and the research assistant from the front desk is busy, help the child to fill it in. Remember, you are only required to read out questions carefully and slowly. Avoid explaining words, remain neutral, do not speed him/her up. If the child says he/she will fill it in on his/her own, still check on him/her every once in a while to ask if all questions are clear. Once the child completes the survey, check if he/she answered every question. Children might tick, circle, or coloured their answers. If there are two answers, ask the child which one should be considered by the researcher and, then, cross out the incorrect one (e.g., “X”).

Appendix 41: Flyers Distributed to Recruit Participants for Fieldwork

Size: 12.5x21 cm

What do you and your child (7-13 years) think about food?

Come and tell us!!! → Take part in our study!
It will take only 20 minutes of your time.

\$10 and a toy for your child for your time!

We are at the Jubilee Pavilion (J/SW07) → you will see the
University of Adelaide booth 😊

We are here



THE UNIVERSITY
of ADELAIDE



Appendix 42: Information Sheet for Participants at the Point of Recruitment



INFORMATION SHEET FOR PARENTS AND CHILDREN

Purpose of the project: The purpose of the study is to examine what children think about food and Internet and also examine parents' attitudes about food.

The procedure: During the study your child will surf the Internet for 10 minutes or less if he/she wishes to finish earlier. The Internet sites visited will be recorded, but no individually identifiable information will be collected. The ProWebSurfer software will be used to insure Internet content is child-appropriate. The data will be used to examine how easy Internet surfing is for children. After 10 minutes your child will stop surfing the Internet and will be asked to fill in an online or a paper-based questionnaire about his/her attitudes about food and Internet.

In a meantime, we would like to ask you to fill in a paper-based questionnaire about your child's use of media, your attitudes about food, and some general questions about you. The questionnaire will take around 20-25 minutes to complete.

If you are accompanied by several children, either all children or the oldest child can take part in the study.

Reimbursement for participation: \$10 or a toy will be offered to your child for taking the time to participate in our study. You can decide whether your child receives money directly or whether you receive it on his/her behalf.

Research outcomes: Information gathered from parents and children will be used to assess children's and parents' attitudes about food and children's attitudes about Internet.

Please note: In case of any complaints, your concerns or any concerns raised by your child can be addressed to the following persons (also, see the attached Complaint Form):

Prof. Pascale Quester
Principal supervisor
Phone: **08 830 35901**
pascale.quester@adelaide.edu.au

Dr. Cullen Habel
Associate supervisor
Phone: 08 830 34763
cullen.habel@adelaide.edu.au

Ms Liudmila Tarabashkina
The University of Adelaide Business School
PhD candidate
Phone: **0831 30736**
liudmila.tarabashkina@adelaide.edu.au

Appendix 43: Consent Forms for Full-Scale Fieldwork

Consent form No 1

THE UNIVERSITY OF ADELAIDE HUMAN RESEARCH ETHICS COMMITTEE

STANDARD CONSENT FORM
For Research to be Undertaken on a **CHILD, the Mentally Ill, and those**
in Dependant Relationships or Comparable Situations
To be Completed by Parent or Guardian

1.	I,	(please print name)
	consent for my child.....to take part in the research project about: children's attitudes about food and Internet.	
2.	I acknowledge that the purpose of the study has been explained to my child in my presence by the research worker and that my child was given a chance to ask any questions before his/her participation in the study.	
3.	I acknowledge that my child will be surfing the Internet under the supervision of the research team and in a close proximity to me.	
4.	My consent for my child to participate is given freely.	
5.	Although I understand that the purpose of this research project is to study children's attitudes about food and Internet, it has also been explained to me that the involvement of my child in the project may not be of any benefit to him/her.	
6.	I have been informed that, while information gained during the study may be published, my child will not be identified and that none of the personal data will be divulged.	
7.	I understand that my child is free to withdraw from the project at any time.	
8.	I am aware that the surfing history of my child will be recorded, but no personally identifiable information will be used.	
9.	I am aware that I should retain a copy of this Consent Form.	
10.	I acknowledge that I have read the "Information Sheet" about the study.	

	(signature)	(date)

WITNESS	
I have described to	(name of subject)
the nature of the research to be carried out. In my opinion she/he understood the explanation.	
Status in Project:	
Name:	
.....
(signature)	(date)

Consent form No 2

THE UNIVERSITY OF ADELAIDE HUMAN RESEARCH ETHICS COMMITTEE

**STANDARD CONSENT FORM
FOR PEOPLE WHO ARE PARTICIPANTS IN A RESEARCH PROJECT (PARENTS)**

1. I, *(please print name)*
consent to take part in a research project about parent's attitudes about food and children's use of media.

2. My consent is given freely.

3. Although I understand that the purpose of this research project is to examine adults' attitudes about food and children's use of media, it has also been explained that my involvement may not be of any benefit to me.

4. I have been informed that, while information gained during the study may be published, I will not be identified and my personal data will not be divulged.

5. I understand that I am free to withdraw from the project at any time.

6. I acknowledge that the complain procedures have been fully explained to me by the research worker.

7. I am aware that I should retain a copy of this Consent Form when completed.

8. I acknowledge that I have received the "Information sheet" about the study.

.....
(signature) *(date)*

WITNESS

I have described to *(name of subject)*
the nature of the research to be carried out. In my opinion she/he understood the explanation.

Status in Project:

Name:

.....
(signature) *(date)*

Appendix 44: Determination of Sample Size for Full-Scale Fieldwork

The sample size for experiment was calculated using an Event Rates Estimation Tool (ERST) for two independent cohorts provided by the Department of Obstetrics and Gynaecology at the University of Hon Kong. ERST can be used at the planning stage of a survey or experiment to test the null hypothesis whether the prevalence (probability) of an event in the two groups differ significantly. This tool assumes that the prevalence of the event in the two groups is known or can be estimated. For, example, if a researcher expects that the event of interest will occur in 10% (0.1) in one group and 20% (0.2) in the other, the sample size required for an alpha of .05 and 80% power, is 199 cases per each group (Chinese University of Hon Kong, n. d.). The calculation is based on the formula shown below:

$$n = \frac{[Z_{\alpha} \sqrt{(1+1/m)p(1-p)} + Z_{\beta} \sqrt{p_0(1-p_0)/m + p_1(1-p_1)}]^2}{(p_0 - p_1)^2}$$

$$\bar{p} = \frac{p_1 + m p_0}{m + 1}$$

$$n_c = \frac{n}{4} \left[1 + \sqrt{1 + \frac{2(m+1)}{nm |p_0 - p_1|}} \right]^2$$

where, p_0 – is the probability of event in control group
 p_1 – is the probability of event in treatment group
 m – is the ratio of controls to experimental subjects
 n_c – is continuity correction factor

In this study, it was assumed that the event occurred in 30% of cases in experimental group and 10% in control group, displaying a 20% difference between the groups. Controlling for Type I error and a power of 80%, these event rates (i.e., “.3” and “.1”) yielded a sample size of minimum 62 individuals per cell. A sample size of 82 respondents per group was required to control for Type I error and have a power of 90%.

Power	Type I error=.05	Type I error=.01	Type I error=.001
Power=80%	62	92	135
Power=90%	82	117	165
Power=99%	142	187	246

Note: Assuming outcome data are analysed by Uncorrected Chi-square test

Appendix 45: Missing Value Analysis for Fieldwork Data

A) Children's Questionnaire

Table 1: Experimental group							
Variables:		Frequency	Mean	Standard deviation	Missing cases		
					N	Percent	
Food preferences [dependent variable]	How much would you like to eat Oreo for your lunch tomorrow?	175	3.43	1.16	0	0	
	How much would you like to eat apple for your lunch tomorrow?	175	3.96	.912	0	0	
What foods will your friends choose tomorrow for lunch?	Sausage and bread	175	2.82	1.16	0	0	
	Oreo biscuits	175	3.67	1.01	0	0	
	An apple	175	3.71	1.07	0	0	
	French fries	175	3.64	1.27	0	0	
	Bread, vegetables, and fruit	175	3.46	1.16	0	0	
	Burger, French fries, and soft drink	175	3.34	1.39	0	0	
Nutritional Knowledge Test [categorical variables]	Which one has the highest content of FAT? [Traditional yogurt, Oreo biscuits, an apple, Gouda cheese, cucumber and don't know]	175	-	-	0	0	
	Which one has the highest content of FAT? [3.5% fat cheese, 1% fat cheese, a burger, broccoli, bread and a sausage, and don't know]	175	-	-	0	0	
	Which one has the highest content of SALT? [Pizza, bread and vegetables, bread and a sausage, an apple, soft drink, and don't know]	175	-	-	0	0	
	Which one has the highest content of SUGAR? [Fruit juice, a glass of water, soft drink, muffin, an apple, and don't know]	175	-	-	0	0	
	Which one has the lowest content of FAT? [Burger, French fries, and soft drink, bread and vegetables, bread and a sausage, traditional yogurt, Gouda cheese, and don't know]	175	-	-	0	0	
	Which one has the lowest content of SALT? [Potato chips, bread, cucumber, 2 Oreo biscuits, French fries, and don't know]	175	-	-	0	0	
	Which one has the lowest content of SUGAR? [Chocolate muffin, banana, broccoli, soft drink, traditional yogurt, and don't know]	175	-	-	0	0	
	Which one has the lowest content of FAT? [Cookies, banana, French fries, bread and vegetables, Gouda cheese, and don't know]	175	-	-	0	0	
Evaluations of foods/brand evaluations	Burger	Do you think this food is funny?	175	1.86	0.89	0	0
		Do you think this food is tasty?	175	3.81	1.11	0	0
		Do you think this food is healthy?	175	1.51	0.91	0	0
		Do you think this food is could make you popular with other children?	175	2.25	1.26	0	0
	Apple	Do you think this food is funny?	175	1.95	1.03	0	0
		Do you think this food is tasty?	175	4.23	0.88	0	0
		Do you think this food is healthy?	175	4.71	0.58	0	0
		Do you think this food is could make you popular with other children?	175	2.66	1.22	0	0
	Oreo [experimental stimulus]	Do you think this food is funny?	175	1.98	1.08	0	0
		Do you think this food is tasty?	174	3.66	1.13	1	0.6
		Do you think this food is healthy?	174	1.77	0.79	1	0.6
		Do you think this food is could make you popular with other children?	174	2.61	1.25	1	0.6
Advertising literacy	Special deal	It wants people to buy this food	175	4.18	1.40	0	0
		It tries to make you to like the food	174	3.45	1.63	1	0.6
		It wants you to think that having this food will make you feel good	175	3.35	1.61	0	0
	New offer/character	It wants to grab your attention with a special offer	175	3.91	1.59	0	0
		It wants people to buy this food because it is new	175	4.15	1.32	0	0
		It tries to make you like the food	175	3.85	1.50	0	0
	It wants people to buy this food because	175	2.61	1.74	0	0	

	teddy likes it					
	It wants you to think that having this food will make you feel good	175	3.47	1.60	0	0
	It wants to grab your attention with a new offer and a teddy	175	3.41	1.78	0	0
Toy sale	It wants people to like toys	175	3.98	1.33	0	0
	It tries to make you like the toys.	175	3.90	1.38	0	0
	It wants you to think that having these toys will make you feel good	175	3.74	1.46	0	0
	It wants to grab your attention with a sale	175	4.18	1.40	0	0
Oreo	It wants people to buy this food	175	4.19	1.30	0	0
	It tries to make you like this food	175	3.96	1.39	0	0
	It wants you to think that having this food will make you feel good	175	3.58	1.57	0	0
	It wants to grab your attention	175	4.00	1.39	0	0
	It tries to make you want this product	175	4.01	1.46	0	0
	I see advertising for treats, lollies, soft drink or fast food	175	4.50	1.48	0	0
	I ask my family to buy me treats, lollies, soft drink or fast food that I have seen advertised	175	2.70	1.46	0	0
	I ask my family to buy me fast food, snacks or cereals that have a free toy, gift or competition	175	2.16	1.31	0	0
	I buy treats, lollies, soft drink or fast food with my own money	175	2.15	1.17	0	0
	Our local fast food restaurants have special deals, like family packs and meal deals	175	2.79	1.48	0	0
	I see advertising for treats, lollies, soft drink or fast food	175	2.31	0.90	0	0
	I ask my family to buy me treats, lollies, soft drink or fast food that I have seen advertised	175	3.28	1.22	0	0
	I ask my family to buy me fast food, snacks or cereals that have a free toy, gift or competition	175	3.05	1.30	0	0
	Age	175	10.31	1.72	0	0
	Are Oreos good for you? [categorical]	175	-	-	0	0
Social acceptability:	Apple	175	4.64	0.80	0	0
How often do people think it is OK to eat these foods?	Bread and vegetables	174	4.49	0.88	1	0.6
	Oreo	175	3.11	1.12	0	0
	Broccoli	175	4.36	1.02	0	0
	Pizza	175	2.55	0.88	0	0
	Burger, French fries, and soft drink	175	2.43	0.98	0	0
Gender		175	-	-	0	0

Notes:

Mean and standard deviation were not calculated for categorical variables. Only number of missing cases and their percentage were examined for above-mentioned variables.

Variables with missing data are marked in red.

Table 2: Control group							
Variables:		Frequency	Mean	Standard deviation	Missing cases		
					N	Percent	
Food preferences [dependent variable]	How much would you like to eat Oreo for your lunch tomorrow?	179	3.52	1.19	0	0	
	How much would you like to eat apple for your lunch tomorrow?	179	4.00	.930	0	0	
What foods will your friends choose tomorrow for lunch?	Sausage and bread	179	2.90	1.04	0	0	
	Oreo biscuits	179	3.87	1.09	0	0	
	An apple	179	3.61	1.11	0	0	
	French fries	179	3.74	1.20	0	0	
	Bread, vegetables, and fruit	179	3.47	.996	0	0	
	Burger, French fries, and soft drink	179	3.29	1.38	0	0	
Nutritional Knowledge Test [categorical variables]	Which one has the highest content of FAT? [Traditional yogurt, Oreo biscuits, an apple, Gouda cheese, cucumber and don't know]	179	-	-	0	0	
	Which one has the highest content of FAT? [3.5% fat cheese, 1% fat cheese, a burger, broccoli, bread and a sausage, and don't know]	179	-	-	0	0	
	Which one has the highest content of SALT? [Pizza, bread and vegetables, bread and a sausage, an apple, soft drink, and don't know]	179	-	-	0	0	
	Which one has the highest content of SUGAR? [Fruit juice, a glass of water, soft drink, muffin, an apple, and don't know]	179	-	-	0	0	
	Which one has the lowest content of FAT? [Burger, French fries, and soft drink, bread and vegetables, bread and a sausage, traditional yogurt, Gouda cheese, and don't know]	179	-	-	0	0	
	Which one has the lowest content of SALT? [Potato chips, bread, cucumber, 2 Oreo biscuits, French fries, and don't know]	179	-	-	0	0	
	Which one has the lowest content of SUGAR? [Chocolate muffin, banana, broccoli, soft drink, traditional yogurt, and don't know]	179	-	-	0	0	
	Which one has the lowest content of FAT? [Cookies, banana, French fries, bread and vegetables, Gouda cheese, and don't know]	179	-	-	0	0	
Evaluations of foods/brand evaluations	Burger	Do you think this food is funny?	179	2.00	0.97	0	0
		Do you think this food is tasty?	179	3.69	1.16	0	0
		Do you think this food is healthy?	179	1.46	0.90	0	0
		Do you think this food is could make you popular with other children?	179	2.48	1.36	0	0
	Apple	Do you think this food is funny?	178	1.89	1.03	1	0.6
		Do you think this food is tasty?	178	4.17	0.88	1	0.6
		Do you think this food is healthy?	178	4.67	0.71	1	0.6
		Do you think this food is could make you popular with other children?	178	2.68	1.13	1	0.6
	Oreo [experimental stimulus]	Do you think this food is funny?	179	1.95	1.02	0	.0
		Do you think this food is tasty?	179	3.77	1.10	0	.0
		Do you think this food is healthy?	179	1.67	.755	0	.0
		Do you think this food is could make you popular with other children?	179	2.74	1.27	0	.0
Advertising literacy	Special deal	It wants people to buy this food	178	4.22	1.39	1	.6
		It tries to make you to like the food	179	3.61	1.52	0	0
		It wants you to think that having this food will make you feel good	179	3.40	1.59	0	0
		It wants to grab your attention with a special offer	179	3.97	1.63	0	0
	New offer/character	It wants people to buy this food because it is new	178	4.02	1.28	1	0.6
		It tries to make you like the food	176	3.89	1.34	3	1.7
		It wants people to buy this food because teddy likes it	177	2.86	1.66	2	1.1
		It wants you to think that having this food will make you feel good	178	3.24	1.65	1	0.6
		It wants to grab your attention with a new offer and a teddy	178	3.46	1.68	1	0.6
	Toy sale	It wants people to like toys	178	3.89	1.44	1	0.6
		It tries to make you like the toys.	178	3.84	1.48	1	0.6
		It wants you to think that having these toys will make you feel good	178	3.67	1.45	1	0.6

Oreo	It wants to grab your attention with a sale	178	4.30	1.20	1	0.6
	It wants people to buy this food	178	4.24	1.19	1	0.6
	It tries to make you like this food	178	3.91	1.38	1	0.6
	It wants you to think that having this food will make you feel good	178	3.45	1.66	1	0.6
	It wants to grab your attention	178	3.95	1.47	1	0.6
	It tries to make you want this product	178	4.05	1.44	1	0.6
I see advertising for treats, lollies, soft drink or fast food		178	4.38	1.60	1	0.6
I ask my family to buy me treats, lollies, soft drink or fast food that I have seen advertised		178	2.91	1.40	1	0.6
I ask my family to buy me fast food, snacks or cereals that have a free toy, gift or competition		178	2.34	1.49	1	0.6
I buy treats, lollies, soft drink or fast food with my own money		178	2.27	1.28	1	0.6
Our local fast food restaurants have special deals, like family packs and meal deals		178	2.98	1.55	1	0.6
I see advertising for treats, lollies, soft drink or fast food		178	2.44	1.06	1	0.6
I ask my family to buy me treats, lollies, soft drink or fast food that I have seen advertised		178	3.25	1.29	1	0.6
I ask my family to buy me fast food, snacks or cereals that have a free toy, gift or competition		178	3.02	1.39	1	0.6
Age		179	10.16	1.90	0	0
Are Oreos good for you? [categorical]		179	-	-	0	0
Social acceptability: How often do people think it is OK to eat these foods?	Apple	179	4.51	0.96	0	0
	Bread and vegetables	179	4.34	0.96	0	0
	Oreo	179	3.06	1.05	0	0
	Broccoli	178	4.18	1.19	1	0.6
	Pizza	179	2.51	0.82	0	0
Burger, French fries, and soft drink		179	2.39	0.96	0	0
Gender		179	-	-	0	0

Notes:

Mean and standard deviation were not calculated for categorical variables. Only number of missing cases and their percentage were examined for above-mentioned variables.

Variables with missing data are marked in red.

B) Parents' Questionnaire

Table 1: Experimental group						
Variables:	Frequency	Mean	Standard deviation	Missing cases		
				N	Percent	
I try to explain to my child the difference between good foods and bad foods	175	4.17	0.84	0	0	
When my child sees a food advertisement I try to explain the motives behind the advertisement	175	3.31	1.29	0	0	
I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	175	3.01	1.49	0	0	
I try to help my child understand what s/he sees on TV	174	3.90	1.09	1	0.6	
I try to help my child understand the difference between advertisements and programs	175	3.69	1.37	0	0	
Members of my family/extended family often eat fast food at least once per week	175	2.97	1.78	0	0	
My friends often eat fast food	174	3.06	1.43	1	0.6	
People who live in my neighbourhood often eat fast food at least once per week	175	3.10	1.26	0	0	
We can easily walk to a fast	175	2.42	1.78	0	0	
We can easily drive to a fast	175	4.47	1.16	0	0	
How often do you eat fast food as a family?	175	2.25	0.57	0	0	
How often does your child/do your children who take part in our study eat fast foods (including take-away and fast food restaurants)?	175	2.25	0.55	0	0	
What is your child's weight?	170	37.21	10.45	5	2.9	
What is your child's height?	162	140.89	14.70	13	7.4	
How many hours does your child/do your children who take part in our study spend surfing the Internet on an average weekday?	174	2.11	1.52	1	0.6	
How many hours does your child/do your children who take part in our study spend surfing the Internet on an average weekend day?	174	2.36	1.51	1	0.6	
How many hours of TV does your/do your children who take part in our study child watch on an average weekday?	174	3.08	1.47	1	0.6	
How many hours of TV does your child/do your children who take part in our study watch on the an average weekend day?	174	4.04	1.55	1	0.6	
On average, how often do you think you see snacks and fast foods advertised? (including TV, magazines, Internet or billboards)?	174	4.34	0.75	1	0.6	
On average, how often do you think you see healthy foods advertised? (including TV, magazines, Internet or billboards)?	174	2.88	0.83	1	0.6	
Parent's gender	175	-	-	0	0	
Parent's age	175	41.31	5.67	0	0	
What is your height in cm?	169	167.57	11.13	6	3.4	
What is your weight in kg?	172	75.10	15.77	3	1.7	
What is your highest level of education?	175	5.53	1.25	0	0	
Residential postcode	174	-	-	1	0.6	
Do you think <i>Dietary Guidelines for Australians</i> recommends that people should be eating more, the same amount, or less of these foods? [categorical]	Vegetables	174	-	-	1	0.6
	Sugary foods	174	-	-	1	0.6
	Meat	172	-	-	3	1.7
	Starchy foods	173	-	-	2	1.1
	Fatty foods	173	-	-	2	1.1
	High fiber foods	174	-	-	1	0.6
	Fruit	174	-	-	1	0.6
	Salty foods	174	-	-	1	0.6
Dairy products	174	-	-	1	0.6	
Which fat do nutritionists say is most important for people to cut down on?	172	-	-	3	1.7	
What version of dairy foods do nutritionists say people should eat?	174	-	-	1	0.6	
Do you think these are high or low in added sugar? [categorical]	Bananas	173	-	-	2	1.1
	Unflavoured yoghurt	174	-	-	1	0.6
	Ice cream	174	-	-	1	0.6
	Orange 35% juice	174	-	-	1	0.6
	Tomato sauce	174	-	-	1	0.6
	Tinned fruit in natural juice	174	-	-	1	0.6
Do you think these are high or low in fat? [categorical]	Pasta (without sauce)	174	-	-	1	0.6
	Mayonnaise	174	-	-	1	0.6
	Baked beans	174	-	-	1	0.6
	Lunch/sandwich meat	175	-	-	0	0
	Vegetarian pastry	174	-	-	1	0.6
	Honey	174	-	-	1	0.6
	Nuts	175	-	-	0	0
	White bread	175	-	-	0	0
	Cottage cheese	175	-	-	0	0
	Polyunsaturated margarine	174	-	-	1	0.6
Do you think nutritionists put these in the	Cheese	175	-	-	0	0

starchy/high carbohydrates foods group? [categorical]	Pasta	175	-	-	0	0
	Butter	175	-	-	0	0
	Nuts	175	-	-	0	0
	Rice	175	-	-	0	0
	Porridge	175	-	-	0	0
Do you think these are high or low in salt? [categorical]	Sausages	175	-	-	0	0
	Pasta	175	-	-	0	0
	Anchovies	175	-	-	0	0
	Red meat	175	-	-	0	0
	Frozen vegetables	175	-	-	0	0
	Cheese	175	-	-	0	0
Do you think these are high or low in protein? [categorical]	Chicken	175	-	-	0	0
	Cheese	175	-	-	0	0
	Fruit	174	-	-	1	0.6
	Baked beans	175	-	-	0	0
	Butter	175	-	-	0	0
	Cream	175	-	-	0	0
Do you think these fatty foods are high or low in fibre/roughage? [categorical]	Cornflakes	175	-	-	0	0
	Bananas	175	-	-	0	0
	Eggs	175	-	-	0	0
	Red meat	175	-	-	0	0
	Broccoli	175	-	-	0	0
	Nuts	175	-	-	0	0
	Fish	175	-	-	0	0
	Baked potatoes with skins	175	-	-	0	0
	Chicken	174	-	-	1	0.6
	Baked beans	175	-	-	0	0
Do you think these are high or low in saturated fat? [categorical]	Tuna	175	-	-	0	0
	Whole milk	175	-	-	0	0
	Olive oil	175	-	-	0	0
	Red meat	175	-	-	0	0
	Sunflower margarine	175	-	-	0	0
	Chocolate	175	-	-	0	0
Some foods contain a lot of fat but no cholesterol [categorical]		174	-	-	1	0.6
Do you think nutritionists call these a healthy alternative to red meat? [categorical]	Liver pate	175	-	-	0	0
	Lunch meats	175	-	-	0	0
	Baked beans	174	-	-	1	0.6
	Nuts	174	-	-	1	0.6
	Low fat cheese	175	-	-	0	0
	Mushrooms	175	-	-	0	0
A glass of unsweetened (100%) fruit juice counts as one serve of fruit? [categorical]	175	-	-	0	0	
Saturated fats are mainly found in? [categorical]	175	-	-	0	0	
Brown sugar is a healthy alternative to white? [categorical]	175	-	-	0	0	
There is more protein in a glass of whole milk than in a glass of skim milk [categorical]	175	-	-	0	0	
Polysaturated margarine contains less fat than butter [categorical]	175	-	-	0	0	
Which of these breads contain the most vitamins and minerals? [categorical]	175	-	-	0	0	
Which do you think is higher in kilojoules: butter or regular margarine? [categorical]	175	-	-	0	0	
Which type of oil contains mostly monounsaturated fat? [categorical]	175	-	-	0	0	
There is more calcium in a glass of whole milk than in a glass of skim milk [categorical]	175	-	-	0	0	
Which of the following has the most kilojoules for the same weight? [categorical]	175	-	-	0	0	
Harder fats contain more? [categorical]	174	-	-	1	0.6	
Polyunsaturated fats are mainly found in? [categorical]	175	-	-	0	0	
What is your relationship to the child taking part in the study? [categorical]	175	-	-	0	0	
Marital status [categorical]	175	-	-	0	0	

Notes:

Mean and standard deviation were not calculated for categorical variables. Only number of missing cases and their percentage were examined for above-mentioned variables.

Variables with missing data are marked in red.

Table 2: Control group						
Variables:	Frequency	Mean	Standard deviation	Missing cases		
				N	Percent	
I try to explain to my child the difference between good foods and bad foods	179	4.10	1.00	0	0	
When my child sees a food advertisement I try to explain the motives behind the advertisement	179	3.27	1.30	0	0	
I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	179	3.22	1.59	0	0	
I try to help my child understand what s/he sees on TV	178	3.93	1.02	1	0.6	
I try to help my child understand the difference between advertisements and programs	179	3.62	1.38	0	0	
Members of my family/extended family often eat fast food at least once per week	179	2.89	1.77	0	0	
My friends often eat fast food	178	3.15	1.47	1	0.6	
People who live in my neighbourhood often eat fast food at least once per week	179	3.07	1.27	0	0	
We can easily walk to a fast	179	2.57	1.83	0	0	
We can easily drive to a fast	178	4.37	1.34	1	0.6	
How often do you eat fast food as a family?	179	2.19	0.53	0	0	
How often does your child/do your children who take part in our study eat fast foods (including take-away and fast food restaurants)?	179	2.19	0.54	0	0	
What is your child's weight?	170	37.29	11.16	9	5.0	
What is your child's height?	166	139.76	15.66	13	7.3	
How many hours does your child/do your children who take part in our study spend surfing the Internet on an average weekday?	177	2.15	1.51	2	1.1	
How many hours does your child/do your children who take part in our study spend surfing the Internet on an average weekend day?	177	2.34	1.42	2	1.1	
How many hours of TV does your/do your children who take part in our study child watch on an average weekday?	175	3.22	1.57	4	2.2	
How many hours of TV does your child/do your children who take part in our study watch on the an average weekend day?	175	4.22	1.50	4	2.2	
On average, how often do you think you see snacks and fast foods advertised? (including TV, magazines, Internet or billboards)?	176	4.36	0.71	3	1.7	
On average, how often do you think you see healthy foods advertised? (including TV, magazines, Internet or billboards)?	176	2.81	0.85	3	1.7	
Parent's gender	179	1.21	0.41	0	0	
Parent's age	178	41.49	6.79	1	0.6	
What is your height in cm?	170	167.90	11.90	9	5.0	
What is your weight in kg?	172	75.23	16.34	7	3.9	
What is your highest level of education?	179	5.43	1.30	0	0	
Residential postcode	178	-	-	1	0.6	
Do you think <i>Dietary Guidelines for Australians</i> recommends that people should be eating more, the same amount, or less of these foods? [categorical]	Vegetables	178	-	-	1	0.6
	Sugary foods	177	-	-	2	1.1
	Meat	175	-	-	4	2.2
	Starchy foods	177	-	-	2	1.1
	Fatty foods	175	-	-	4	2.2
	High fiber foods	176	-	-	3	1.7
	Fruit	176	-	-	3	1.7
	Salty foods	176	-	-	3	1.7
Dairy products	176	-	-	3	1.7	
Which fat do nutritionists say is most important for people to cut down on?	178	-	-	1	0.6	
What version of dairy foods do nutritionists say people should eat?	178	-	-	1	0.6	
Do you think these are high or low in added sugar? [categorical]	Bananas	179	-	-	0	0
	Unflavoured yoghurt	178	-	-	1	0.6
	Ice cream	179	-	-	0	0
	Orange 35% juice	178	-	-	1	0.6
	Tomato sauce	178	-	-	1	0.6
	Tinned fruit in natural juice	178	-	-	1	0.6
	Pasta (without sauce)	178	-	-	1	0.6
Do you think these are high or low in fat? [categorical]	Mayonnaise	178	-	-	1	0.6
	Baked beans	177	-	-	2	1.1
	Lunch/sandwich meat	179	-	-	0	0
	Vegetarian pastry	177	-	-	2	1.1
	Honey	179	-	-	0	0
	Nuts	179	-	-	0	0
	White bread	179	-	-	0	0
	Cottage cheese	179	-	-	0	0
	Polyunsaturated	179	-	-	0	0

	margarine					
Do you think nutritionists put these in the starchy/high carbohydrates foods group? [categorical]	Cheese	179	-	-	0 0	
	Pasta	179	-	-	0 0	
	Butter	179	-	-	0 0	
	Nuts	179	-	-	0 0	
	Rice	179	-	-	0 0	
	Porridge	179	-	-	0 0	
Do you think these are high or low in salt? [categorical]	Sausages	179	-	-	0 0	
	Pasta	179	-	-	0 0	
	Anchovies	179	-	-	0 0	
	Red meat	178	-	-	1 0.6	
	Frozen vegetables	179	-	-	0 0	
	Cheese	179	-	-	0 0	
Do you think these are high or low in protein? [categorical]	Chicken	179	-	-	0 0	
	Cheese	179	-	-	0 0	
	Fruit	179	-	-	0 0	
	Baked beans	179	-	-	0 0	
	Butter	179	-	-	0 0	
	Cream	179	-	-	0 0	
Do you think these fatty foods are high or low in fibre/roughage? [categorical]	Cornflakes	179	-	-	0 0	
	Bananas	179	-	-	0 0	
	Eggs	179	-	-	0 0	
	Red meat	179	-	-	0 0	
	Broccoli	179	-	-	0 0	
	Nuts	179	-	-	0 0	
	Fish	179	-	-	0 0	
	Baked potatoes with skins	179	-	-	0 0	
	Chicken	178	-	-	1 0.6	
	Baked beans	179	-	-	0 0	
Do you think these are high or low in saturated fat? [categorical]	Tuna	179	-	-	0 0	
	Whole milk	179	-	-	0 0	
	Olive oil	179	-	-	0 0	
	Red meat	179	-	-	0 0	
	Sunflower	179	-	-	0 0	
	margarine					
	Chocolate	179	-	-	0 0	
Some foods contain a lot of fat but no cholesterol [categorical]		177	-	-	2 1.1	
Do you think nutritionists call these a healthy alternative to red meat? [categorical]	Liver pate	179	-	-	0 0	
	Lunch meats	179	-	-	0 0	
	Baked beans	178	-	-	1 0.6	
	Nuts	178	-	-	1 0.6	
	Low fat cheese	179	-	-	0 0	
	Mushrooms	179	-	-	0 0	
A glass of unsweetened (100%) fruit juice counts as one serve of fruit? [categorical]		179	-	-	0 0	
Saturated fats are mainly found in? [categorical]		179	-	-	0 0	
Brown sugar is a healthy alternative to white? [categorical]		179	-	-	0 0	
There is more protein in a glass of whole milk than in a glass of skim milk [categorical]		179	-	-	0 0	
Polysaturated margarine contains less fat than butter [categorical]		179	-	-	0 0	
Which of these breads contain the most vitamins and minerals? [categorical]		179	-	-	0 0	
Which do you think is higher in kilojoules: butter or regular margarine? [categorical]		179	-	-	0 0	
Which type of oil contains mostly monounsaturated fat? [categorical]		179	-	-	0 0	
There is more calcium in a glass of whole milk than in a glass of skim milk [categorical]		179	-	-	0 0	
Which of the following has the most kilojoules for the same weight? [categorical]		179	-	-	0 0	
Harder fats contain more? [categorical]		178	-	-	1 0.6	
Polyunsaturated fats are mainly found in? [categorical]		179	-	-	0 0	
What is your relationship to the child taking part in the study? [categorical]		179	-	-	0 0	
Marital status [categorical]		179	-	-	0 0	

Note:

Mean and standard deviation were not calculated for categorical variables. Only number of missing cases and their percentage were examined for above-mentioned variables. Variables with missing data are marked in red.

Appendix 46: Reliability of Likert-Type Items (Full-Scale Fieldwork)

A) Children's Sample

1. Oreo-Related Items

Experimental group:

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.893
Bartlett's Test of Sphericity	Approx. Chi-Square	2297.639
	df	300
	Sig.	.000

Communalities		
	Initial	Extraction
Do you think this food is funny?	1.000	.635
Do you think this food is tasty?	1.000	.662
Do you think this food is healthy?	1.000	.509
Do you think this food could make you popular with other children?	1.000	.595
It wants people to buy this food (Oreo)	1.000	.802
It tries to make you like this food (Oreo)	1.000	.611
It wants you to think that having this food will make you feel good (Oreo)	1.000	.690
It wants to grab your attention (Oreo)	1.000	.713
It tries to make you want this product (Oreo)	1.000	.631
It wants people to buy this food (special deal)	1.000	.734
It tries to make you like this food (special deal)	1.000	.662
It wants you to think that having this food will make you feel good (special deal)	1.000	.608
It wants to grab your attention with a special offer (special deal)	1.000	.696
It tries to make you want this product (special deal)	1.000	.709
It wants people to buy this food because it is new (new product/character)	1.000	.620
It tries to make you like the food (new product/character)	1.000	.707
It wants people to buy this food because of teddy (new product/character)	1.000	.594
It wants you to think that having this food will make you feel good (new product/character)	1.000	.575
It wants to grab your attention with a new offer and a teddy (new product/character)	1.000	.707
It tries to make you want this product (new product/character)	1.000	.713
It wants people to like toys (toys sale)	1.000	.736
It tries to make you like toys (toys sale)	1.000	.778
It wants you to think that having these toys will make you feel good (toys sale)	1.000	.735
It wants to grab your attention with a sale (toys sale)	1.000	.649
It tries to make you want this product (toys sale)	1.000	.584

Notes:

Extraction Method: Principal Component Analysis.

Control group:

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.894
Bartlett's Test of Sphericity	Approx. Chi-Square	2251.256
	df	300
	Sig.	.000

Communalities		
	Initial	Extraction
Do you think this food is funny?	1.000	.515
Do you think this food is tasty?	1.000	.647
Do you think this food is healthy?	1.000	.560
Do you think this food could make you popular with other children?	1.000	.551
It wants people to buy this food (Oreo)	1.000	.718
It tries to make you like this food (Oreo)	1.000	.746
It wants you to think that having this food will make you feel good (Oreo)	1.000	.657
It wants to grab your attention (Oreo)	1.000	.712
It tries to make you want this product (Oreo)	1.000	.757
It wants people to buy this food (special deal)	1.000	.619
It tries to make you like this food (special deal)	1.000	.603
It wants you to think that having this food will make you feel good (special deal)	1.000	.567
It wants to grab your attention with a special offer (special deal)	1.000	.676
It tries to make you want this product (special deal)	1.000	.635
It wants people to buy this food because it is new (new product/character)	1.000	.487
It tries to make you like the food (new product/character)	1.000	.537
It wants people to buy this food because of teddy (new product/character)	1.000	.436
It wants you to think that having this food will make you feel good (new product/character)	1.000	.572
It wants to grab your attention with a new offer and a teddy (new product/character)	1.000	.573

It tries to make you want this product (new product/character)	1.000	.603
It wants people to like toys (toys sale)	1.000	.653
It tries to make you like toys (toys sale)	1.000	.718
It wants you to think that having these toys will make you feel good (toys sale)	1.000	.625
It wants to grab your attention with a sale (toys sale)	1.000	.620
It tries to make you want this product (toys sale)	1.000	.621

Notes:

Extraction Method: Principal Component Analysis.

2. Apple-Related Items

Experimental group:

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.894
Bartlett's Test of Sphericity	Approx. Chi-Square	2310.457
	df	300
	Sig.	.000

Communalities		
	Initial	Extraction
It wants people to buy this food (Oreo)	1.000	.783
It tries to make you like this food (Oreo)	1.000	.624
It wants you to think that having this food will make you feel good (Oreo)	1.000	.664
It wants to grab your attention (Oreo)	1.000	.754
It tries to make you want this product (Oreo)	1.000	.674
It wants people to buy this food (special deal)	1.000	.749
It tries to make you like this food (special deal)	1.000	.648
It wants you to think that having this food will make you feel good (special deal)	1.000	.607
It wants to grab your attention with a special offer (special deal)	1.000	.715
It tries to make you want this product (special deal)	1.000	.684
It wants people to buy this food because it is new (new product/character)	1.000	.632
It tries to make you like the food (new product/character)	1.000	.607
It wants people to buy this food because of teddy (new product/character)	1.000	.564
It wants you to think that having this food will make you feel good (new product/character)	1.000	.580
It wants to grab your attention with a new offer and a teddy (new product/character)	1.000	.739
It tries to make you want this product (new product/character)	1.000	.689
It wants people to like toys (toys sale)	1.000	.748
It tries to make you like toys (toys sale)	1.000	.797
It wants you to think that having these toys will make you feel good (toys sale)	1.000	.725
It wants to grab your attention with a sale (toys sale)	1.000	.660
It tries to make you want this product (toys sale)	1.000	.563
Do you think this food is funny?	1.000	.578
Do you think this food is tasty?	1.000	.649
Do you think this food is healthy?	1.000	.560
Do you think this food could make you popular with other children?	1.000	.653

Notes:

Extraction Method: Principal Component Analysis.

Control group:

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.896
Bartlett's Test of Sphericity	Approx. Chi-Square	2212.880
	df	300
	Sig.	.000

Communalities		
	Initial	Extraction
It wants people to buy this food (Oreo)	1.000	.730
It tries to make you like this food (Oreo)	1.000	.752
It wants you to think that having this food will make you feel good (Oreo)	1.000	.669
It wants to grab your attention (Oreo)	1.000	.687
It tries to make you want this product (Oreo)	1.000	.752
It wants people to buy this food (special deal)	1.000	.639
It tries to make you like this food (special deal)	1.000	.675
It wants you to think that having this food will make you feel good (special deal)	1.000	.655
It wants to grab your attention with a special offer (special deal)	1.000	.662
It tries to make you want this product (special deal)	1.000	.630
It wants people to buy this food because it is new (new product/character)	1.000	.472
It tries to make you like the food (new product/character)	1.000	.567
It wants people to buy this food because of teddy (new product/character)	1.000	.516
It wants you to think that having this food will make you feel good (new product/character)	1.000	.696
It wants to grab your attention with a new offer and a teddy (new product/character)	1.000	.600
It tries to make you want this product (new product/character)	1.000	.627
It wants people to like toys (toys sale)	1.000	.683
It tries to make you like toys (toys sale)	1.000	.751
It wants you to think that having these toys will make you feel good (toys sale)	1.000	.587
It wants to grab your attention with a sale (toys sale)	1.000	.683
It tries to make you want this product (toys sale)	1.000	.597
Do you think this food is funny?	1.000	.655
Do you think this food is tasty?	1.000	.706
Do you think this food is healthy?	1.000	.694
Do you think this food could make you popular with other children?	1.000	.652

Notes:

Extraction Method: Principal Component Analysis.

3. Less Healthy Foods

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.874
Bartlett's Test of Sphericity	Approx. Chi-Square	5737.088
	df	703
	Sig.	.000

Communalities		
	Initial	Extraction
Social acceptability: an apple	1.000	.645
Social acceptability: bread and vegetables	1.000	.659
Social acceptability: broccoli	1.000	.547
Social acceptability: pizza	1.000	.724
Social acceptability: burger, French fries, and soft drink	1.000	.710
It wants people to buy this food (Oreo)	1.000	.753
It tries to make you like this food (Oreo)	1.000	.681
It wants you to think that having this food will make you feel good (Oreo)	1.000	.640
It wants to grab your attention (Oreo)	1.000	.669
It tries to make you want this product (Oreo)	1.000	.661
Friends' preferences: sausage and bread	1.000	.403
Friends' preferences: an apple	1.000	.517
Friends' preferences: French fries	1.000	.664
Friends' preferences: bread, vegetables and fruit	1.000	.488
Friends' preferences: burger, French fries and soft drink	1.000	.700
Do you think this food is funny? (burger, French fries, and soft drink)	1.000	.647
Do you think this food is tasty? (burger, French fries, and soft drink)	1.000	.470
Do you think this food is healthy? (burger, French fries, and soft drink)	1.000	.555
Do you think this food could make you popular with other children? (burger, French fries, and soft drink)	1.000	.491
How often do you eat fast food from restaurants such as McDonald's, KFC or Pizza Hut?	1.000	.600
How often do you eat treats and lollies?	1.000	.546
How often do you have soft drink?	1.000	.616
It wants people to buy this food (special deal)	1.000	.700
It tries to make you like this food (special deal)	1.000	.654
It wants you to think that having this food will make you feel good (special deal)	1.000	.588
It tries to make you want this product (special deal)	1.000	.696
It wants to grab your attention with a special offer (special deal)	1.000	.669
It wants people to buy this food because it is new (new product/character)	1.000	.595
It tries to make you like the food (new product/character)	1.000	.532
It wants people to buy this food because of teddy (new product/character)	1.000	.609
It wants you to think that having this food will make you feel good (new product/character)	1.000	.665
It wants to grab your attention with a new offer and a teddy (new product/character)	1.000	.663

It tries to make you want this product (new product/character)	1.000	.670
It wants people to like toys (toys sale)	1.000	.699
It tries to make you like toys (toys sale)	1.000	.774
It wants you to think that having these toys will make you feel good (toys sale)	1.000	.642
It wants to grab your attention with a sale (toys sale)	1.000	.635
It tries to make you want this product (toys sale)	1.000	.568

Notes:

Extraction Method: Principal Component Analysis.

B) Parents Sample

1. Experimental group

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.762
Bartlett's Test of Sphericity	Approx. Chi-Square	483.476
	df	28
	Sig.	.000

Communalities ^a		
	Initial	Extraction
I try to explain to my child the difference between good foods and bad foods	1.000	.289
When my child sees a food advertisement I try to explain the motives behind the advertisement	1.000	.758
I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	1.000	.581
I try to help my child understand what s/he sees on TV	1.000	.755
I try to help my child understand the difference between advertisements and programs	1.000	.685
Members of my family/extended family eat fast food at least once per week	1.000	.614
My friends often eat fast food	1.000	.678
People who live in my neighbourhood eat fast food at least once per week	1.000	.604

Notes:

Extraction Method: Principal Component Analysis.

Communalities below or equal to .3 are marked in red.

2. Control Group

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.752
Bartlett's Test of Sphericity	Approx. Chi-Square	555.941
	df	28
	Sig.	.000

Communalities		
	Initial	Extraction
I try to explain to my child the difference between good foods and bad foods	1.000	.265
When my child sees a food advertisement I try to explain the motives behind the advertisement	1.000	.790
I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	1.000	.637
I try to help my child understand what s/he sees on TV	1.000	.732
I try to help my child understand the difference between advertisements and programs	1.000	.700
Members of my family/extended family eat fast food at least once per week	1.000	.560
My friends often eat fast food	1.000	.754
People who live in my neighbourhood eat fast food at least once per week	1.000	.672

Notes:

Extraction Method: Principal Component Analysis.

Communalities below or equal to .3 are marked in red.

3. Less Healthy Foods

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.767
Bartlett's Test of Sphericity	Approx. Chi-Square	1017.964
	df	28
	Sig.	.000

Communalities		
	Initial	Extraction
I try to explain to my child the difference between good foods and bad foods	1.000	.271
When my child sees a food advertisement I try to explain the motives behind the advertisement	1.000	.774
I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	1.000	.608
I try to help my child understand what s/he sees on TV	1.000	.742
I try to help my child understand the difference between advertisements and programs	1.000	.690

Members of my family/extended family eat fast food at least once per week	1.000	.583
My friends often eat fast food	1.000	.715
People who live in my neighbourhood eat fast food at least once per week	1.000	.639

Notes:

Extraction Method: Principal Component Analysis.

Communalities below or equal to .3 are marked in red.

Appendix 47: Reliability of Test Items (Full-Scale Fieldwork)

A) Children's Sample

1. CTT Item Analysis of NKT

1.1. Experimental group

CTT Item Analysis								
NKT item	NKT1 (Q1)	NKT2 (Q2)	NKT3 (Q3)	NKT4 (Q4)	NKT5 (Q5)	NKT6 (Q6)	NKT7 (Q7)	NKT8 (Q8)
<i>Correct answer</i>	4	2	1	3	4	3	3	2
Option 1	20 (11%)	9 (5%)	77 (44%)	10 (6%)	9 (5%)	5 (3%)	2 (1%)	7 (4%)
Option 2	96 (55%)	136 (78%)	6 (3%)	0	119 (68%)	30 (17%)	37 (21%)	82 (47%)
Option 3	4 (2%)	4 (2%)	21 (12%)	106 (61%)	2 (1%)	119 (68%)	113 (65%)	3 (2%)
Option 4	41 (23%)	6 (3%)	4 (2%)	48 (27%)	39 (22%)	8 (5%)	4 (2%)	71 (41%)
Option 5	1 (1%)	15 (9%)	49 (28%)	7 (4%)	6 (3%)	7 (4%)	12 (7%)	8 (5%)
Option 6	13 (7%)	5 (3%)	18 (10%)	4 (2%)	0	6 (3%)	7 (4%)	4 (2%)
IF total ¹	23%	78%	44%	61%	22%	68%	65%	47%
IF upper ²	43%	97%	69%	84%	24%	95%	84%	64%
IF lower ³	14%	55%	17%	33%	17%	36%	40%	29%
Item discrimination ⁴	29%	41%	52%	52%	7%	59%	45%	34%

Notes:

¹ – Item facility or difficulty, proportion of students who answered question correctly.

² – Proportion of top third of test takers who answered question correctly.

³ – Proportion of bottom third of test takers who answered question correctly.

⁴ – The difference between the top third and the bottom third of test takers.

Correct answers are marked in bold.

Summary:

N	175
Mean	4.07
Standard Deviation	1.45
Variance	2.12
Skewness	-0.38
Kurtosis	-0.23
Standard error of mean	0.11
Standard error of measurement	1.29

1.2. Control group

CTT Item Analysis								
NKT item	NKT1 (Q1)	NKT2 (Q2)	NKT3 (Q3)	NKT4 (Q4)	NKT5 (Q5)	NKT6 (Q6)	NKT7 (Q7)	NKT8 (Q8)
<i>Correct answer</i>	4	2	1	3	4	3	3	2
Option 1	18 (10%)	3 (2%)	71 (40%)	9 (5%)	11 (6%)	12 (7%)	7 (4%)	7 (4%)
Option 2	98 (55%)	153 (85%)	1 (1%)	1 (1%)	121 (68%)	26 (15%)	37 (21%)	89 (50%)
Option 3	3 (2%)	1 (1%)	21 (12%)	111 (62%)	1 (1%)	117 (65%)	114 (64%)	5 (3%)
Option 4	49 (27%)	4 (2%)	2 (1%)	48 (27%)	31 (17%)	11 (6%)	7 (4%)	67 (37%)
Option 5	1 (1%)	13 (7%)	57 (32%)	4 (2%)	9 (5%)	9 (5%)	10 (6%)	5 (3%)
Option 6	10 (6%)	5 (3%)	27 (15%)	6 (3%)	6 (3%)	4 (2%)	4 (2%)	6 (3%)
IF total ¹	27%	85%	40%	62%	17%	65%	64%	50%
IF upper ²	56%	97%	66%	78%	31%	92%	86%	78%
IF lower ³	8%	69%	12%	36%	8%	41%	29%	15%
Item discrimination ⁴	47%	27%	54%	42%	22%	51%	58%	63%

Notes:

¹ – Item facility or difficulty, proportion of students who answered question correctly.

² – Proportion of top third of test takers who answered question correctly.

³ – Proportion of bottom third of test takers who answered question correctly.

⁴ – The difference between the top third and the bottom third of test takers.

Correct answers are marked in bold.

Summary:

N	179
Mean	4.11
Standard Deviation	1.65
Variance	2.72
Skewness	-0.20
Kurtosis	-0.87
Standard error of mean	0.12
Standard error of measurement	1.23

2. IRT Item Analysis of NKT

2.1. Experimental group (8 Items)

SUMMARY OF THE ESTIMATION

```

=====
Estimation method was: Gauss-Hermite Quadrature with 15 nodes
Assumed population distribution was: Gaussian
Constraint was: DEFAULT
The Data File: CTT_IRT_E.dat
The format: id 1-4 family 5 agebin 6 gender 7 age3 8 responses 9-16
The regression model:
Grouping Variables:
The item model: item
Sample size: 175
Final Deviance:      1720.71441
Total number of estimated parameters: 9
The number of iterations: 85
Termination criteria: Max iterations=1000, Parameter Change= 0.00010
                      Deviance Change= 0.00010
Iterations terminated because the deviance convergence criteria was reached
Random number generation seed:  1.00000
Number of nodes used when drawing PVs: 2000
Number of nodes used when computing fit: 1000
Number of plausible values to draw: 5
Maximum number of iterations without a deviance improvement: 100
Maximum number of Newton steps in M-step: 10
Value for obtaining finite MLEs for zero/perfects:  0.30000
key 1 scored as 1: 42134332
=====

```

TABLES OF RESPONSE MODEL PARAMETER ESTIMATES

TERM 1: item

VARIABLES		UNWEIGHTED FIT					WEIGHTED FIT		
item		ESTIMATE	ERROR^	MNSQ	CI	T	MNSQ	CI	T
1	NKT1 Harder item	1.259	0.118	1.02	(0.79, 1.21)	0.2	1.02	(0.82, 1.18)	0.2
2	NKT2 Easier item	-1.265	0.118	0.98	(0.79, 1.21)	-0.1	0.99	(0.80, 1.20)	-0.0
3	NKT3	0.282	0.110	0.99	(0.79, 1.21)	-0.0	0.99	(0.94, 1.06)	-0.2
4	NKT4	-0.416	0.110	0.97	(0.79, 1.21)	-0.3	0.97	(0.92, 1.08)	-0.6
5	NKT5 Harder item	1.325	0.118	1.17	(0.79, 1.21)	1.6	1.09	(0.81, 1.19)	1.0
6	NKT6	-0.753	0.113	0.97	(0.79, 1.21)	-0.3	0.98	(0.88, 1.12)	-0.3
7	NKT7	-0.594	0.111	0.97	(0.79, 1.21)	-0.3	0.98	(0.90, 1.10)	-0.4
8	NKT8	0.162*	0.302	0.98	(0.79, 1.21)	-0.1	0.98	(0.94, 1.06)	-0.7

Notes: An asterisk next to a parameter estimate indicates that it is constrained.
Easier items are marked in grey, harder items in blue.
Separation Reliability=0.987
Chi-square test of parameter equality=447.65, df=7, Sig Level=0.000
^ Quick standard errors have been used

RELIABILITY COEFFICIENTS

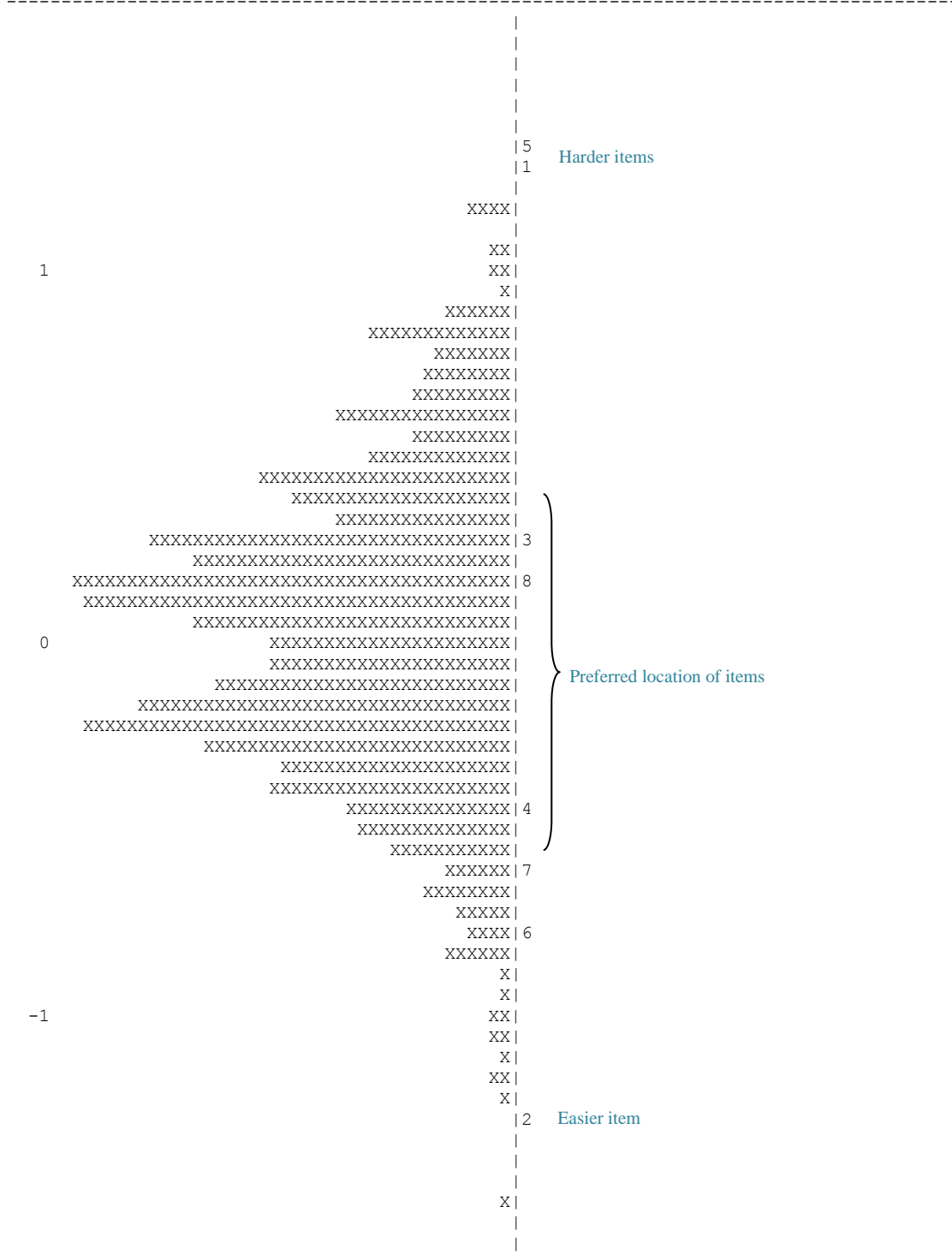
Dimension: (Dimension 1)

```

-----
MLE Person separation RELIABILITY:  Unavailable
WLE Person separation RELIABILITY:  Unavailable
EAP/PV RELIABILITY:                  0.216
-----

```

Map of Latent Distributions



Each 'X' represents 0.3 cases

2.2. Experimental group (5 Items)

Notes: Items NKT1, NKT2, and NKT5 were removed.

SUMMARY OF THE ESTIMATION

```

=====
Estimation method was: Gauss-Hermite Quadrature with 15 nodes
Assumed population distribution was: Gaussian
Constraint was: DEFAULT
The Data File: CTT_IRT_E_NO125.dat
The format: ID 1-4 family 5 agebin 6 gender 7 age3 8 responses 9-13
The regression model:
Grouping Variables:
The item model: item
Sample size: 175
Final Deviance:      1154.75382
Total number of estimated parameters: 6
The number of iterations: 61
Termination criteria: Max iterations=1000, Parameter Change= 0.00010
                      Deviance Change= 0.00010
Iterations terminated because the deviance convergence criteria was reached
Random number generation seed:  1.00000
Number of nodes used when drawing PVs: 2000
Number of nodes used when computing fit: 1000
Number of plausible values to draw: 5
Maximum number of iterations without a deviance improvement: 100
Maximum number of Newton steps in M-step: 10
Value for obtaining finite MLEs for zero/perfects:  0.30000
key 1 scored as 1: 13332

```

TABLES OF RESPONSE MODEL PARAMETER ESTIMATES

TERM 1: item

VARIABLES		UNWEIGHTED FIT					WEIGHTED FIT		
		ESTIMATE	ERROR [^]	MNSQ	CI	T	MNSQ	CI	T
1	NKT3	0.570	0.112	1.02	(0.79, 1.21)	0.2	1.01	(0.92, 1.08)	0.4
2	NKT4	-0.159	0.113	1.01	(0.79, 1.21)	0.1	1.01	(0.90, 1.10)	0.3
3	NKT6	-0.510	0.115	1.06	(0.79, 1.21)	0.6	1.04	(0.86, 1.14)	0.6
4	NKT7	-0.344	0.114	1.07	(0.79, 1.21)	0.6	1.04	(0.88, 1.12)	0.7
5	NKT8	0.444*	0.227	1.00	(0.79, 1.21)	0.0	0.99	(0.92, 1.08)	-0.2

Although NKT6 and NKT7 have MNSQ above 1.3, the fit of items is acceptable

```

Notes: An asterisk next to a parameter estimate indicates that it is constrained.
Separation Reliability=0.943
Chi-square test of parameter equality=56.63, df=4, Sig Level=0.000
^ Quick standard errors have been used

```

RELIABILITY COEFFICIENTS

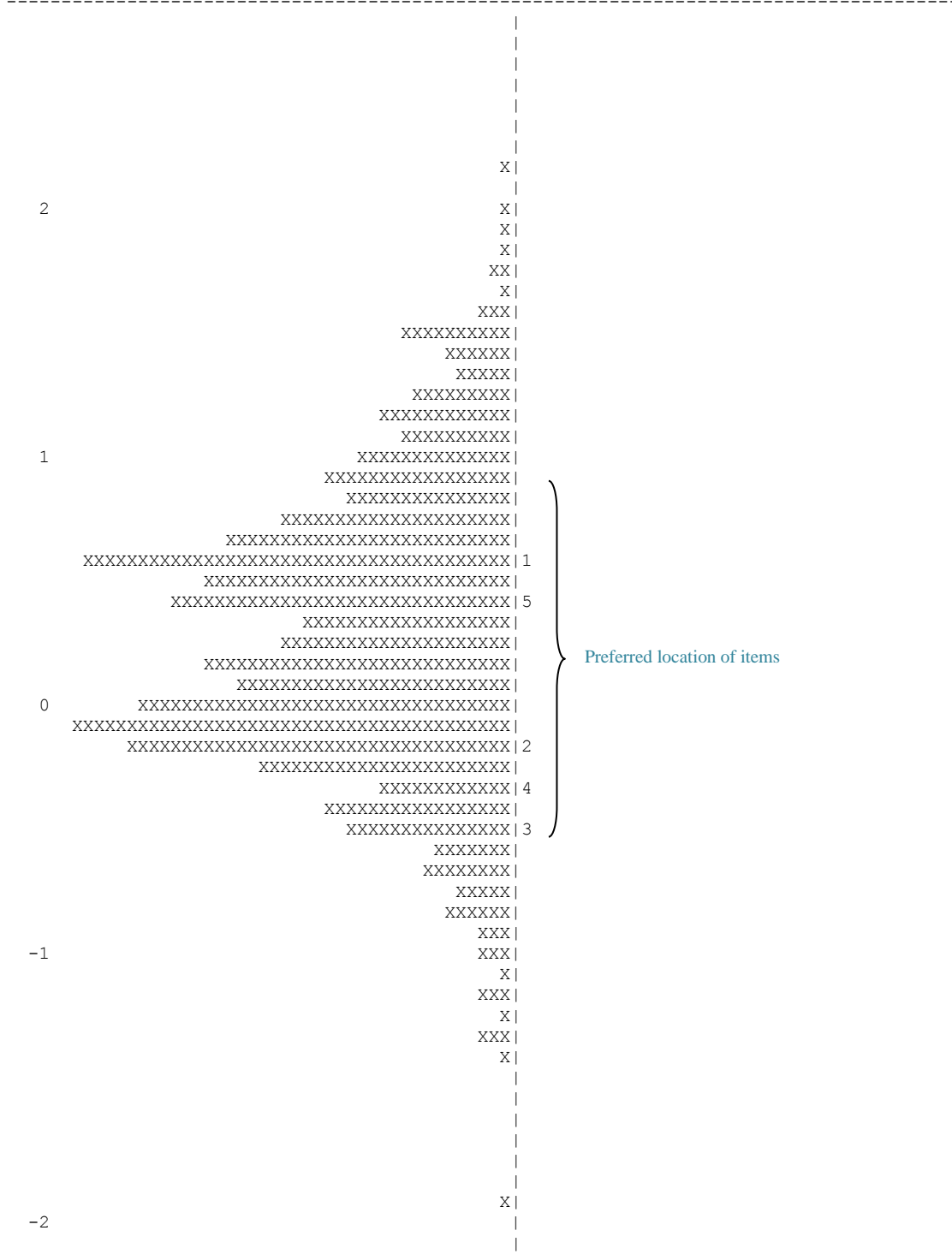
Dimension: (Dimension 1)

```

MLE Person separation RELIABILITY: Unavailable
WLE Person separation RELIABILITY: Unavailable
EAP/PV RELIABILITY: 0.314

```

Map of Latent Distributions



Each 'X' represents 0.3 cases

2.3. Control group (8 Items)

SUMMARY OF THE ESTIMATION

```

=====
Estimation method was: Gauss-Hermite Quadrature with 15 nodes
Assumed population distribution was: Gaussian
Constraint was: DEFAULT
The Data File: CTT_IRT_C.dat
The format: ID 1-4 family 5 agebin 6 gender 7 age3 8 responses 9-16
The regression model:
Grouping Variables:
The item model: item
Sample size: 179
Final Deviance:      1683.26580
Total number of estimated parameters: 9
The number of iterations: 22
Termination criteria: Max iterations=1000, Parameter Change= 0.00010
                      Deviance Change= 0.00010
Iterations terminated because the deviance convergence criteria was reached
Random number generation seed: 1.00000
Number of nodes used when drawing PVs: 2000
Number of nodes used when computing fit: 1000
Number of plausible values to draw: 5
Maximum number of iterations without a deviance improvement: 100
Maximum number of Newton steps in M-step: 10
Value for obtaining finite MLEs for zero/perfects: 0.30000
key 1 scored as 1: 42134332
=====

```

TABLES OF RESPONSE MODEL PARAMETER ESTIMATES

TERM 1: item

VARIABLES		UNWEIGHTED FIT					WEIGHTED FIT		
item		ESTIMATE	ERROR^	MNSQ	CI	T	MNSQ	CI	T
1	NKT1 Harder item	1.156	0.118	1.19	(0.79, 1.21)	1.7	1.02	(0.84, 1.16)	0.3
2	NKT2 Easier item	-1.889	0.128	0.94	(0.79, 1.21)	-0.6	0.98	(0.72, 1.28)	-0.1
3	NKT3	0.539	0.113	1.02	(0.79, 1.21)	0.2	1.03	(0.89, 1.11)	0.6
4	NKT4	-0.481	0.114	1.04	(0.79, 1.21)	0.4	1.05	(0.88, 1.12)	0.9
5	NKT5 Harder item	1.797	0.125	1.32	(0.79, 1.21)	2.8	1.05	(0.76, 1.24)	0.4
6	NKT6	-0.643	0.115	0.94	(0.79, 1.21)	-0.6	0.94	(0.87, 1.13)	-0.9
7	NKT7	-0.561	0.114	0.89	(0.79, 1.21)	-1.0	0.90	(0.88, 1.12)	-1.6
8	NKT8	0.081*	0.313	0.98	(0.79, 1.21)	-0.1	1.01	(0.90, 1.10)	0.1

Notes: An asterisk next to a parameter estimate indicates that it is constrained.
Easier items are marked in grey, harder items in blue.
Separation Reliability=0.991
Chi-square test of parameter equality=614.47, df=7, Sig Level=0.000
^ Quick standard errors have been used

TABLES OF POPULATION MODEL PARAMETER ESTIMATES

RELIABILITY COEFFICIENTS

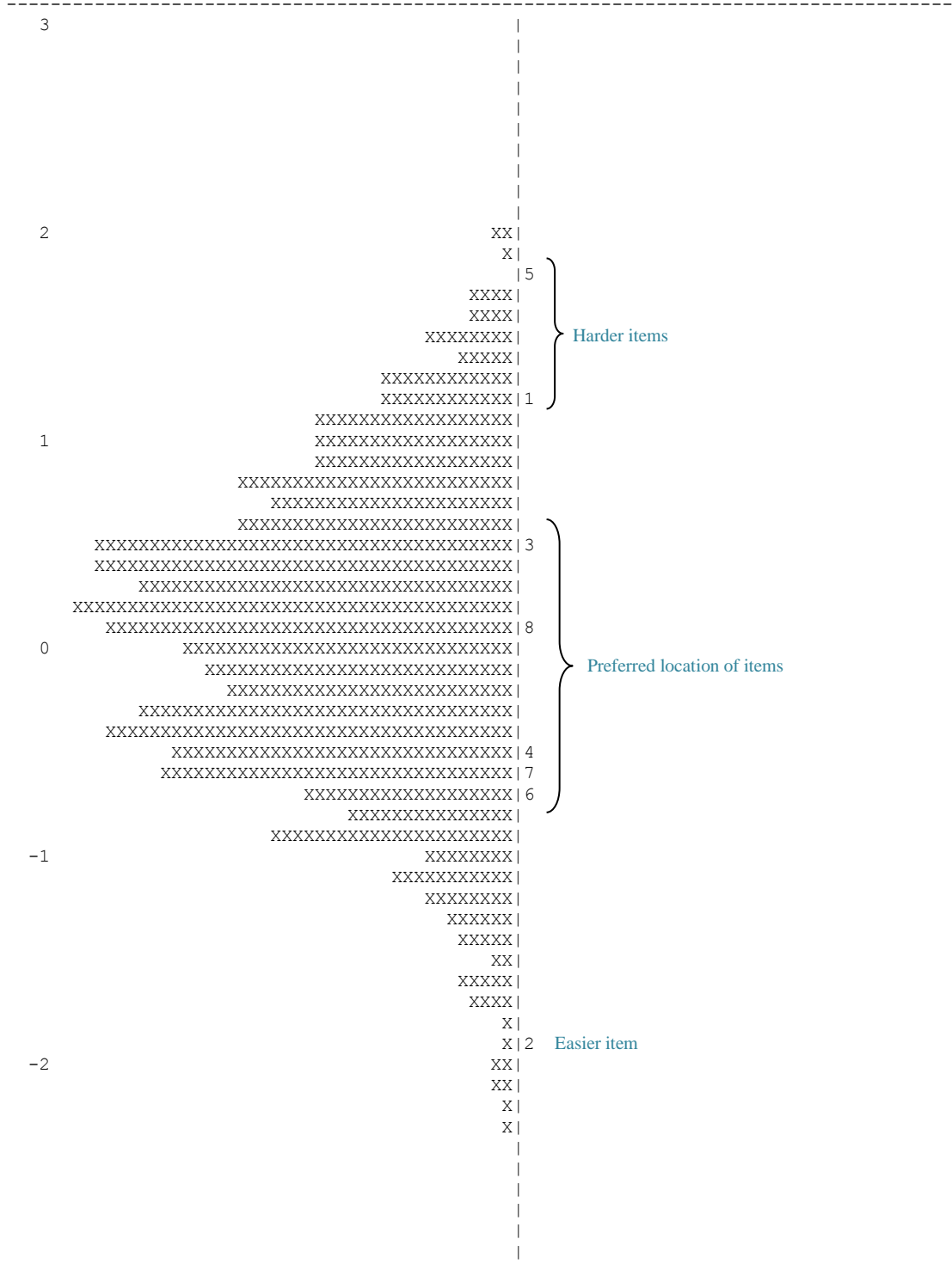
Dimension: (Dimension 1)

```

-----
MLE Person separation RELIABILITY:  Unavailable
WLE Person separation RELIABILITY:  Unavailable
EAP/PV RELIABILITY:                 0.416
-----

```

Map of Latent Distributions



Each 'X' represents 0.3 cases

2.4. Control group (5 Items)

Notes: Items NKT1, NKT2, and NKT5 were removed.

SUMMARY OF THE ESTIMATION

```

=====
Estimation method was: Gauss-Hermite Quadrature with 15 nodes
Assumed population distribution was: Gaussian
Constraint was: DEFAULT
The Data File: CTT_IRT_C_refined_NO125.dat
The format: ID 1-4 family 5 agebin 6 gender 7 age3 8 responses 9-13
The regression model:
Grouping Variables:
The item model: item
Sample size: 179
Final Deviance:      1164.67416
Total number of estimated parameters: 6
The number of iterations: 27
Termination criteria: Max iterations=1000, Parameter Change= 0.00010
                      Deviance Change= 0.00010
Iterations terminated because the deviance convergence criteria was reached
Random number generation seed:  1.00000
Number of nodes used when drawing PVs: 2000
Number of nodes used when computing fit: 1000
Number of plausible values to draw: 5
Maximum number of iterations without a deviance improvement: 100
Maximum number of Newton steps in M-step: 10
Value for obtaining finite MLEs for zero/perfects:  0.30000
key 1 scored as 1: 13332
  
```

TABLES OF RESPONSE MODEL PARAMETER ESTIMATES

TERM 1: item

VARIABLES	UNWEIGHTED FIT			WEIGHTED FIT					
	item	ESTIMATE	ERROR [^]	MNSQ	CI	T	MNSQ	CI	T
1 NKT3		0.781	0.115	1.03	(0.79, 1.21)	0.3	1.03	(0.88, 1.12)	0.5
2 NKT4		-0.278	0.116	1.04	(0.79, 1.21)	0.4	1.05	(0.87, 1.13)	0.8
3 NKT6		-0.446	0.117	0.90	(0.79, 1.21)	-1.0	0.95	(0.86, 1.14)	-0.7
4 NKT7		-0.362	0.116	0.81	(0.79, 1.21)	-1.9	0.87	(0.87, 1.13)	-2.0
5 NKT8		0.305*	0.232	1.05	(0.79, 1.21)	0.5	1.05	(0.89, 1.11)	0.9

Although NKT4 and NKT8 have MNSQ above 1.3, the fit of items is acceptable

```

Notes: An asterisk next to a parameter estimate indicates that it is constrained.
Separation Reliability=0.959
Chi-square test of parameter equality=76.02, df=4, Sig Level=0.000
^ Quick standard errors have been used
  
```

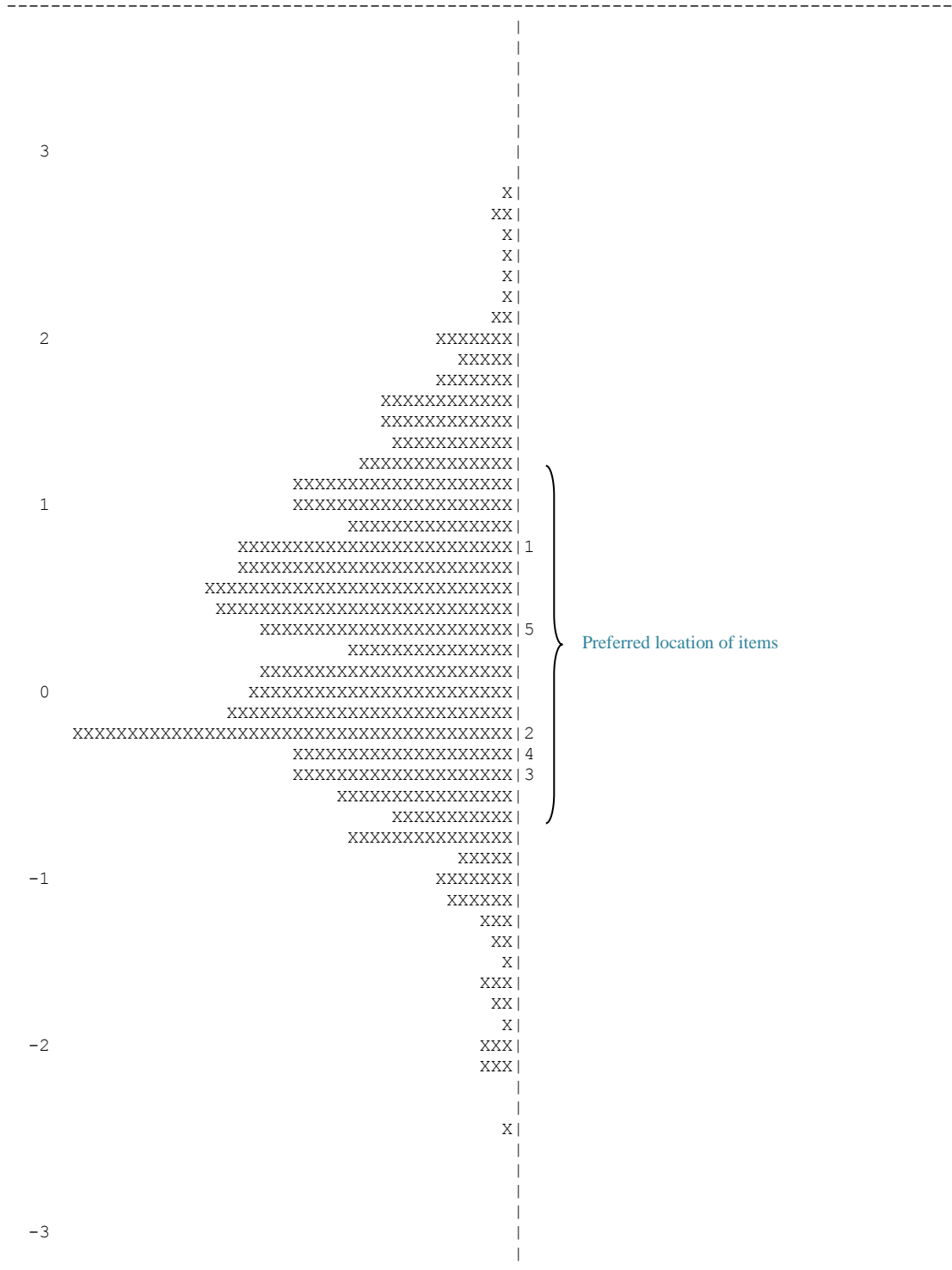
RELIABILITY COEFFICIENTS

Dimension: (Dimension 1)

```

MLE Person separation RELIABILITY: Unavailable
WLE Person separation RELIABILITY: Unavailable
EAP/PV RELIABILITY: 0.368
  
```

Map of Latent Distributions



Each 'X' represents 0.4 cases

B) Parents' Sample

1. CTT Item Analysis of GNKQ

1.1. Experimental Group

Item	EXPREC1	EXPREC2	EXPREC3	EXPREC4	EXPREC5	EXPREC6	EXPREC7	EXPREC8	EXPREC9	CUT	DAIRY	EXPSUGAR1
<i>Correct answer</i>	<i>1</i>	<i>3</i>	<i>3</i>	<i>1</i>	<i>3</i>	<i>1</i>	<i>1</i>	<i>3</i>	<i>1</i>	<i>3</i>	<i>2</i>	<i>1</i>
Option 1	159 (91%)	0	27 (16%)	3 (2%)	0	157 (90%)	152 (87%)	0	66 (38%)	9 (5%)	10 (6%)	91 (53%)
Option 2	10 (6%)	8 (5%)	90 (52%)	40 (23%)	7 (4%)	12 (7%)	17 (10%)	8 (5%)	89 (51%)	7 (4%)	125 (72%)	20 (12%)
Option 3	1 (1%)	161 (93%)	40 (23%)	117 (68%)	162 (94%)	0	0	159 (91%)	9 (6%)	157 (90%)	35 (20%)	57 (33%)
Option4	4 (2%)	5 (3%)	15 (9%)	13 (8%)	4 (2%)	5 (3%)	5 (3%)	7 (4%)	10 (17%)	1 (1%)	1 (1%)	5 (3%)
Option 5	-	-	-	-	-	-	-	-	-	-	3 (2%)	-
IF total ¹	91%	91%	22%	2%	91%	90%	87%	87%	38%	89%	72%	52%
IF upper ²	97%	97%	41%	3%	95%	100%	91%	97%	34%	91%	90%	66%
IF lower ³	84%	86%	12%	2%	88%	76%	81%	76%	28%	78%	50%	26%
Item discrimination ⁴	12%	10%	29%	2%	7%	24%	10%	21%	7%	14%	40%	40%

Item	EXPSUGAR2	EXSUGAR3	EXPSUGAR4	EXPSUGAR5	EXPSUGAR6	EXPFAT1	EXPFAT2	EXPFAT3	EXPFAT4	EXPFAT5
<i>Correct answer</i>	<i>3</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>3</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>2</i>
Option 1	30 (17%)	0	0	1 (1%)	15 (9%)	13 (7%)	167 (95%)	19 (11%)	110 (63%)	14 (8%)
Option 2	16 (9%)	172 (99%)	156 (89%)	153 (87%)	74 (42%)	157 (90%)	4 (2%)	151 (87%)	56 (32%)	157 (90%)
Option 3	122 (70%)	1 (1%)	18 (10%)	19 (11%)	75 (43%)	5 (3%)	4 (2%)	4 (2%)	9 (5%)	3 (2%)
Option 4	6 (3%)	1 (1%)	1 (1%)	2 (1%)	11 (6%)	--	--	--	--	--
IF total ¹	70%	98%	89%	86%	42%	89%	95%	87%	62%	8%
IF upper ²	71%	100%	100%	97%	52%	95%	98%	98%	88%	0%
IF lower ³	69%	98%	79%	81%	33%	81%	90%	72%	41%	21%
Item discrimination ⁴	2%	2%	21%	16%	19%	14%	9%	26%	47%	-21%

Item	EXPFAT6	EXPFAT7	EXPFAT8	EXPFAT9	EXPFAT10	CARB1	CARB2	CARB3	CARB4	CARB5	CARB6	EXPSALT1
<i>Correct answer</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>1</i>
Option 1	130 (74%)	113 (65%)	77 (44%)	48 (27%)	121 (69%)	21 (12%)	166 (95%)	41 (23%)	51 (29%)	156 (89%)	107 (61%)	170 (97%)
Option 2	37 (21%)	59 (34%)	91 (52%)	119 (68%)	36 (21%)	137 (78%)	7 (4%)	120 (69%)	103 (59%)	10 (10%)	51 (29%)	3 (2%)
Option 3	8 (5%)	3 (2%)	7 (4%)	8 (5%)	18 (10%)	17 (10%)	2 (1%)	14 (8%)	20 (11%)	1 (1%)	17 (10%)	2 (1%)
IF total ¹	22%	65%	51%	67%	69%	78%	95%	68%	58%	89%	61%	97%
IF upper ²	9%	83%	69%	81%	86%	91%	100%	93%	71%	93%	81%	97%
IF lower ³	38%	47%	28%	57%	60%	62%	88%	45%	34%	79%	38%	95%
Item discrimination ⁴	-29%	36%	41%	24%	26%	29%	12%	48%	36%	14%	43%	2%

Notes:

For variable names and correct answers refer to Appendix 32. Valid percentages reported in tables below due to missing data for some variables.

¹ – Item facility or difficulty, proportion of students who answered question correctly.

² – Proportion of top third of test takers who answered question correctly.

³ – Proportion of bottom third of test takers who answered question correctly.

⁴ – The difference between the top third and the bottom third of test takers.

Correct answers are marked in bold.

Item	EXPSALT2	EXPSALT3	EXPSALT4	EXPSALT5	EXPSALT6	EXPPRO1	EXPPRO2	EXPPRO3	EXPPRO4	EXPPRO5	EXPPRO6
<i>Correct answer</i>	2	1	2	2	1	1	1	2	1	2	2
Option 1	18 (10%)	162 (93%)	20 (11%)	18 (10%)	96 (55%)	160 (91%)	106 (61%)	18 (10%)	157 (90%)	17 (10%)	24 (14%)
Option 2	155 (89%)	7 (4%)	150 (86%)	150 (86%)	59 (34%)	13 (7%)	60 (34%)	150 (86%)	11 (6%)	141 (81%)	133 (76%)
Option 3	2 (1%)	6 (3%)	5 (3%)	7 (4%)	20 (11%)	12 (1%)	9 (5%)	6 (3%)	7 (4%)	17 (10%)	18 (10%)
IF total ¹	89%	93%	86%	86%	54%	92%	61%	86%	89%	80%	75%
IF upper ²	93%	98%	95%	93%	67%	100%	78%	97%	98%	88%	78%
IF lower ³	84%	91%	78%	74%	41%	78%	47%	74%	78%	71%	72%
Item discrimination ⁴	9%	7%	17%	19%	26%	22%	31%	22%	21%	17%	5%

Item	EXPFIBRE1	EXPFIBRE2	EXPFIBRE3	EXPFIBRE4	EXPFIBRE5	EXPFIBRE 6	EXPFIBRE7	EXPFIBRE8	EXPFIBRE9	EXPFIBRE10
<i>Correct answer</i>	2	1	2	2	1	1	2	1	2	1
Option 1	57 (33%)	148 (85%)	15 (9%)	38 (22%)	152 (87%)	123 (70%)	29 (17%)	132 (75%)	26 (15%)	147 (84%)
Option 2	110 (63%)	18 (10%)	149 (85%)	125 (71%)	17 (10%)	42 (24%)	137 (78%)	31 (18%)	133 (76%)	21 (12%)
Option 3	8 (5%)	9 (5%)	11 (6%)	12 (7%)	3 (3%)	10 (6%)	9 (5%)	12 (7%)	15 (9%)	7 (4%)
IF total ¹	63%	84%	85%	71%	87%	70%	78%	75%	76%	84%
IF upper ²	76%	95%	97%	95%	98%	69%	95%	93%	93%	97%
IF lower ³	48%	72%	66%	48%	72%	66%	60%	55%	60%	64%
Item discrimination ⁴	28%	22%	31%	47%	26%	3%	34%	38%	33%	33%

Item	EXPSATF1	EXPSATF2	EXPSATF3	EXPSATF4	EXPSATF5	EXPSATF6	CHOL	READMEAT1	READMEAT2	READMEAT3	READMEAT4
<i>Correct answer</i>	2	1	2	1	2	1	1	2	2	1	1
Option 1	23 (13%)	134 (77%)	41 (23%)	79 (45%)	73 (42%)	158 (90%)	67 (39%)	19 (11%)	15 (9%)	147 (84%)	139 (80%)
Option 2	145 (83%)	37 (21%)	127 (73%)	84 (48%)	90 (51%)	9 (5%)	47 (27%)	126 (72%)	151 (86%)	19 (11%)	23 (13%)
Option 3	7 (4%)	4 (2%)	7 (4%)	12 (7%)	12 (7%)	8 (5%)	60 (34%)	30 (17%)	9 (5%)	8 (5%)	12 (7%)
IF total ¹	82%	77%	73%	45%	51%	90%	38%	72%	86%	84%	79%
IF upper ²	90%	81%	93%	66%	67%	98%	62%	90%	100%	95%	88%
IF lower ³	72%	76%	64%	36%	45%	86%	22%	48%	72%	64%	67%
Item discrimination ⁴	17%	5%	29%	29%	22%	12%	40%	41%	28%	31%	21%

Item	READMEAT5	READMEAT6	JUICEFRUIT	SATFAT	BROWNSUGAR1	SKIMMILK	BUTTER	BREAD	BUTTERORM	MONOFATS
<i>Correct answer</i>	1	2	1	2	2	2	2	3	3	3
Option 1	106 (61%)	151 (86%)	83 (47%)	25 (14%)	83 (47%)	36 (21%)	94 (54%)	0	80 (46%)	13 (7%)
Option 2	58 (33%)	18 (10%)	75 (43%)	66 (38%)	76 (43%)	90 (51%)	60 (34%)	27 (15%)	23 (13%)	24 (14%)
Option 3	11 (6%)	6 (3%)	17 (10%)	73 (42%)	16 (9%)	49 (28%)	21 (12%)	145 (83%)	60 (34%)	48 (27%)
Option 4	-	-	-	11 (6%)	-	-	-	3 (2%)	12 (7%)	28 (16%)
Option 5	-	-	-	-	-	-	-	-	-	62 (35%)
IF total ¹	61%	10%	47%	38%	43%	51%	34%	83%	34%	27%
IF upper ²	78%	12%	43%	60%	81%	88%	55%	90%	67%	45%
IF lower ³	48%	9%	47%	22%	16%	19%	21%	76%	10%	16%
Item discrimination ⁴	29%	3%	-3%	38%	66%	69%	34%	14%	57%	29%

Notes:

For variable names and correct answers refer to Appendix 32. Valid percentages reported in tables below due to missing data for some variables.

¹ – Item facility or difficulty, proportion of students who answered question correctly.

² – Proportion of top third of test takers who answered question correctly.

³ – Proportion of bottom third of test takers who answered question correctly.

⁴ – The difference between the top third and the bottom third of test takers.

Correct answers are marked in bold.

Item	CALCIUMMILK	SAMEWEIGHT	HARDFAT	POLSAT
<i>Correct answer</i>	<i>2</i>	<i>4</i>	<i>3</i>	<i>1</i>
Option 1	43 (25%)	63 (36%)	13 (7%)	104 (59%)
Option 2	107 (61%)	13 (7%)	7 (4%)	21 (12%)
Option 3	25 (14%)	4 (2%)	112 (64%)	23 (13%)
Option 4	-	56 (32%)	42 (24%)	0
Option 5	-	39 (22%)	-	-
IF total ¹	61%	32%	63%	59%
IF upper ²	90%	47%	83%	86%
IF lower ³	26%	16%	40%	24%
Item discrimination ⁴	64%	31%	43%	62%

Notes:

For variable names and correct answers refer to Appendix 32. Valid percentages reported in tables below due to missing data for some variables.

¹ – Item facility or difficulty, proportion of students who answered question correctly.

² – Proportion of top third of test takers who answered question correctly.

³ – Proportion of bottom third of test takers who answered question correctly.

⁴ – The difference between the top third and the bottom third of test takers.

Correct answers are marked in bold.

1.2. Control Group

Item	EXPREC1	EXPREC2	EXPREC3	EXPREC4	EXPREC5	EXPREC6	EXPREC7	EXPREC8	EXPREC9	CUT	DAIRY	EXPSUGAR1
<i>Correct answer</i>	<i>1</i>	<i>3</i>	<i>3</i>	<i>1</i>	<i>3</i>	<i>1</i>	<i>1</i>	<i>3</i>	<i>1</i>	<i>3</i>	<i>2</i>	<i>1</i>
Option 1	162 (91%)	0	35 (20%)	3 (2%)	1 (1%)	160 (91%)	151 (86%)	1 (1%)	60 (34%)	8 (4%)	8 (4%)	94 (53%)
Option 2	11 (6%)	11 (6%)	96 (55%)	47 (27%)	8 (5%)	12 (7%)	22 (13%)	12 (7%)	100 (57%)	3 (6%)	138 (78%)	26 (15%)
Option 3	1 (1%)	163 (91%)	37 (21%)	115 (65%)	163 (93%)	2 (1%)	0	158 (90%)	11 (6%)	166 (93%)	29 (16%)	56 (31%)
Option 4	3 (2%)	3 (2%)	7 (4%)	12 (7%)	3 (2%)	2 (1%)	3 (2%)	5 (3%)	5 (3%)	1 (1%)	0	3 (2%)
Option 5	-	-	-	-	-	-	-	0	-	-	3 (2%)	-
IF total ¹	91%	91%	21%	2%	90%	89%	84%	87%	34%	93%	77%	53%
IF upper ²	97%	100%	36%	0%	97%	98%	88%	97%	36%	97%	95%	73%
IF lower ³	83%	78%	8%	2%	81%	75%	78%	76%	25%	88%	59%	25%
Item discrimination ⁴	14%	22%	27%	-2%	15%	24%	10%	20%	10%	8%	36%	47%

Item	EXPSUGAR2	EXSUGAR3	EXPSUGAR4	EXPSUGAR5	EXPSUGAR6	EXPFAT1	EXPFAT2	EXPFAT3	EXPFAT4	EXPFAT5
<i>Correct answer</i>	<i>3</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>3</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>2</i>
Option 1	32 (18%)	0	1 (1%)	1 (1%)	24 (13%)	17 (9%)	171 (96%)	19 (11%)	113 (63%)	18 (10%)
Option 2	13 (7%)	173 (97%)	155 (87%)	147 (82%)	76 (42%)	155 (87%)	4 (2%)	153 (86%)	57 (32%)	155 (88%)
Option 3	122 (69%)	0	20 (11%)	26 (15%)	69 (39%)	7 (4%)	4 (2%)	5 (3%)	9 (5%)	4 (2%)
Option 4	11 (6%)	6 (3%)	3 (2%)	5 (3%)	10 (6%)	-	-	-	-	-
IF total ¹	68%	97%	86%	82%	38%	86%	95%	85%	63%	10%
IF upper ²	68%	100%	97%	88%	46%	93%	100%	98%	71%	3%
IF lower ³	69%	93%	71%	71%	31%	73%	93%	71%	47%	12%
Item discrimination ⁴	-2%	7%	25%	17%	15%	20%	7%	27%	24%	-8%

Item	EXPSUGAR2	EXSUGAR3	EXPSUGAR4	EXPSUGAR5	EXPSUGAR6	EXPFAT1	EXPFAT2	EXPFAT3	EXPFAT4	EXPFAT5
<i>Correct answer</i>	<i>3</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>3</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>2</i>
Option 1	32 (18%)	0	1 (1%)	1 (1%)	24 (13%)	17 (9%)	171 (96%)	19 (11%)	113 (63%)	18 (10%)
Option 2	13 (7%)	173 (97%)	155 (87%)	147 (82%)	76 (42%)	155 (87%)	4 (2%)	153 (86%)	57 (32%)	155 (88%)
Option 3	122 (69%)	0	20 (11%)	26 (15%)	69 (39%)	7 (4%)	4 (2%)	5 (3%)	9 (5%)	4 (2%)
Option 4	11 (6%)	6 (3%)	3 (2%)	5 (3%)	10 (6%)	-	-	-	-	-
IF total ¹	68%	97%	86%	82%	38%	86%	95%	85%	63%	10%
IF upper ²	68%	100%	97%	88%	46%	93%	100%	98%	71%	3%
IF lower ³	69%	93%	71%	71%	31%	73%	93%	71%	47%	12%
Item discrimination ⁴	-2%	7%	25%	17%	15%	20%	7%	27%	24%	-8%

Notes:

For variable names and correct answers refer to Appendix 32. Valid percentages reported in tables below due to missing data for some variables.

¹ – Item facility or difficulty, proportion of students who answered question correctly.

² – Proportion of top third of test takers who answered question correctly.

³ – Proportion of bottom third of test takers who answered question correctly.

⁴ – The difference between the top third and the bottom third of test takers.

Correct answers are marked in bold.

Item	EXPFAT6	EXPFAT7	EXPFAT8	EXPFAT9	EXPFAT10	CARB1	CARB2	CARB3	CARB4	CARB5	CARB6	EXPSALT1
<i>Correct answer</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>1</i>
Option 1	117 (65%)	118 (66%)	75 (42%)	63 (35%)	122 (68%)	32 (18%)	165 (92%)	47 (26%)	59 (33%)	153 (85%)	99 (55%)	167 (93%)
Option 2	46 (26%)	55 (31%)	92 (51%)	113 (63%)	47 (26%)	130 (73%)	10 (6%)	118 (66%)	104 (58%)	22 (12%)	61 (34%)	6 (3%)
Option 3	16 (9%)	6 (3%)	12 (7%)	3 (2%)	10 (6%)	17 (9%)	4 (2%)	14 (8%)	16 (9%)	4 (2%)	19 (11%)	6 (3%)
IF total ¹	26%	66%	52%	63%	68%	73%	92%	65%	58%	85%	55%	93%
IF upper ²	24%	86%	76%	71%	76%	92%	100%	92%	73%	97%	73%	95%
IF lower ³	34%	51%	27%	59%	61%	42%	80%	32%	36%	66%	34%	88%
Item discrimination ⁴	-10%	36%	49%	12%	15%	49%	20%	59%	37%	31%	39%	7%

Item	EXPSALT2	EXPSALT3	EXPSALT4	EXPSALT5	EXPSALT6	EXPPRO1	EXPPRO2	EXPPRO3	EXPPRO4	EXPPRO5	EXPPRO6
<i>Correct answer</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>2</i>
Option 1	15 (8%)	169 (94%)	23 (13%)	23 (13%)	103 (58%)	168 (94%)	114 (64%)	25 (14%)	162 (91%)	21 (12%)	30 (17%)
Option 2	160 (89%)	8 (4%)	149 (84%)	145 (81%)	56 (31%)	10 (6%)	57 (32%)	146 (82%)	12 (7%)	144 (80%)	133 (74%)
Option 3	4 (2%)	2 (1%)	5 (3%)	10 (6%)	20 (11%)	1 (1%)	8 (4%)	8 (4%)	5 (3%)	14 (8%)	16 (9%)
IF total ¹	89%	94%	83%	82%	58%	94%	64%	82%	90%	80%	74%
IF upper ²	92%	98%	86%	90%	68%	100%	76%	98%	93%	86%	80%
IF lower ³	83%	92%	69%	71%	49%	85%	49%	59%	78%	73%	66%
Item discrimination ⁴	8%	7%	17%	19%	19%	15%	27%	39%	15%	14%	14%

Item	EXPFIBRE1	EXPFIBRE2	EXPFIBRE3	EXPFIBRE4	EXPFIBRE5	EXPFIBRE 6	EXPFIBRE7	EXPFIBRE8	EXPFIBRE9	EXPFIBRE10
<i>Correct answer</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>1</i>
Option 1	74 (41%)	145 (81%)	21 (12%)	35 (20%)	154 (87%)	112 (63%)	32 (18%)	124 (69%)	29 (16%)	153 (85%)
Option 2	98 (55%)	22 (12%)	149 (83%)	132 (74%)	17 (10%)	53 (30%)	136 (76%)	46 (26%)	136 (76%)	19 (11%)
Option 3	7 (4%)	12 (7%)	9 (5%)	12 (7%)	7 (4%)	14 (8%)	11 (6%)	9 (5%)	13 (7%)	7 (4%)
IF total ¹	55%	81%	83%	74%	87%	62%	75%	69%	76%	85%
IF upper ²	73%	90%	97%	95%	97%	54%	95%	85%	92%	95%
IF lower ³	36%	73%	61%	46%	73%	54%	46%	49%	51%	68%
Item discrimination ⁴	37%	17%	36%	49%	24%	0%	49%	36%	41%	27%

Item	EXPSATF1	EXPSATF2	EXPSATF3	EXPSATF4	EXPSATF5	EXPSATF6	CHOL	READMEAT1	READMEAT2	READMEAT3	READMEAT4
<i>Correct answer</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>2</i>	<i>1</i>	<i>1</i>
Option 1	22 (12%)	146 (82%)	30 (17%)	90 (50%)	77 (43%)	164 (92%)	74 (42%)	23 (13%)	11 (6%)	144 (81%)	137 (77%)
Option 2	153 (85%)	28 (16%)	143 (80%)	79 (44%)	93 (52%)	5 (3%)	50 (28%)	132 (74%)	157 (88%)	22 (12%)	27 (15%)
Option 3	4 (2%)	5 (3%)	6 (3%)	10 (6%)	9 (5%)	10 (6%)	53 (30%)	24 (13%)	11 (6%)	12 (7%)	14 (8%)
IF total ¹	85%	82%	80%	50%	52%	92%	41%	74%	88%	80%	77%
IF upper ²	93%	83%	92%	69%	71%	97%	54%	92%	100%	88%	81%
IF lower ³	73%	83%	73%	41%	53%	85%	29%	56%	68%	64%	59%
Item discrimination ⁴	20%	0%	19%	29%	19%	12%	25%	36%	32%	24%	22%

Notes:

For variable names and correct answers refer to Appendix 32. Valid percentages reported in tables below due to missing data for some variables.

¹ – Item facility or difficulty, proportion of students who answered question correctly.

² – Proportion of top third of test takers who answered question correctly.

³ – Proportion of bottom third of test takers who answered question correctly.

⁴ – The difference between the top third and the bottom third of test takers.

Correct answers are marked in bold.

Item	READMEAT5	READMEAT6	JUICEFRUIT	SATFAT	BROWNSUGARI	SKIMMILK	BUTTER	BREAD	BUTTERORM	MONOFATS
<i>Correct answer</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>3</i>	<i>3</i>	<i>3</i>
Option 1	104 (58%)	146 (82%)	76 (42%)	23 (13%)	92 (51%)	51 (28%)	86 (48%)	0	85 (47%)	19 (11%)
Option 2	63 (35%)	19 (11%)	83 (46%)	63 (35%)	79 (44%)	94 (53%)	64 (36%)	25 (14%)	29 (16%)	25 (14%)
Option 3	12 (7%)	14 (8%)	20 (11%)	75 (42%)	8 (4%)	34 (19%)	29 (16%)	151 (84%)	53 (30%)	40 (22%)
Option 4	-	-	-	18 (10%)	-	-	-	3 (2%)	12 (7%)	25 (14%)
Option 5	-	-	-	-	-	-	-	-	-	70 (39%)
IF total ¹	58%	11%	42%	35%	44%	53%	36%	84%	30%	22%
IF upper ²	69%	14%	36%	63%	80%	78%	47%	86%	49%	39%
IF lower ³	44%	10%	41%	17%	14%	24%	24%	80%	14%	14%
Item discrimination ⁴	25%	3%	-5%	46%	66%	54%	24%	7%	36%	25%

Item	CALCIUMMILK	SAMEWEIGHT	HARDFAT	POLSAT
<i>Correct answer</i>	<i>2</i>	<i>4</i>	<i>3</i>	<i>1</i>
Option 1	42 (23%)	60 (34%)	10 (6%)	104 (58%)
Option 2	119 (66%)	16 (9%)	5 (3%)	19 (11%)
Option 3	18 (10%)	5 (3%)	128 (72%)	30 (17%)
Option 4	-	48 (27%)	36 (20%)	0
Option 5	-	50 (28%)	-	-
IF total ¹	66%	27%	71%	58%
IF upper ²	90%	36%	86%	85%
IF lower ³	36%	15%	47%	32%
Item discrimination ⁴	54%	20%	39%	53%

Notes:

For variable names and correct answers refer to Appendix 32. Valid percentages reported in tables below due to missing data for some variables.

¹ – Item facility or difficulty, proportion of students who answered question correctly.

² – Proportion of top third of test takers who answered question correctly.

³ – Proportion of bottom third of test takers who answered question correctly.

⁴ – The difference between the top third and the bottom third of test takers.

Correct answers are marked in bold.

2. IRT Item Analysis of GNKQ

2.1. Experimental Group (80 Items)

SUMMARY OF THE ESTIMATION

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=====
Estimation method was: Gauss-Hermite Quadrature with 15 nodes
Assumed population distribution was: Gaussian
Constraint was: DEFAULT
The Data File: E_parents.dat
The format: id 1-4 responses 5-84
The regression model:
Grouping Variables:
The item model: item
Sample size: 175
Final Deviance:      13146.17598
Total number of estimated parameters: 81
The number of iterations: 825
Termination criteria: Max iterations=1000, Parameter Change= 0.00010
                      Deviance Change= 0.00010
Iterations terminated because the deviance convergence criteria was reached
Random number generation seed: 1.00000
Number of nodes used when drawing PVs: 2000
Number of nodes used when computing fit: 1000
Number of plausible values to draw: 5
Maximum number of iterations without a deviance improvement: 100
Maximum number of Newton steps in M-step: 10
Value for obtaining finite MLEs for zero/perfects: 0.30000
key 1 scored as 1:
133131131321322232121211222121221112122111212221221121212121211221112122223332431
=====

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TABLES OF RESPONSE MODEL PARAMETER ESTIMATES

TERM 1: item

VARIABLES	item	UNWEIGHTED FIT			WEIGHTED FIT				
		ESTIMATE	ERROR [^]	MNSQ	CI	T	MNSQ	CI	T
		<i>Easier items in the test</i>							
1	EXPREC1	-1.413	0.140	1.17	(0.79, 1.21)	1.5	1.05	(0.57, 1.43)	0.3
2	EXPREC2	-1.575	0.142	0.92	(0.79, 1.21)	-0.7	1.04	(0.52, 1.48)	0.2
3	EXPREC3	2.480	0.123	0.94	(0.79, 1.21)	-0.5	0.97	(0.81, 1.19)	-0.3
4	EXPREC4	5.431	0.157	1.18	(0.79, 1.21)	1.7	0.99	(0.00, 2.08)	0.2
		<i>Harder item</i>							
5	EXPREC5	-1.757	0.145	0.95	(0.79, 1.21)	-0.5	1.05	(0.47, 1.53)	0.3
6	EXPREC6	-1.267	0.138	0.78	(0.79, 1.21)	-2.2	0.98	(0.60, 1.40)	-0.0
7	EXPREC7	-0.962	0.134	1.28	(0.79, 1.21)	2.4	1.12	(0.67, 1.33)	0.7
8	EXPREC8	-1.411	0.140	0.89	(0.79, 1.21)	-1.1	1.02	(0.57, 1.43)	0.2
9	EXPREC9	1.699	0.116	1.17	(0.79, 1.21)	1.5	1.14	(0.89, 1.11)	2.4
10	cut	-1.266	0.138	0.88	(0.79, 1.21)	-1.1	0.99	(0.60, 1.40)	0.0
11	dairy	0.110	0.120	0.92	(0.79, 1.21)	-0.7	0.97	(0.84, 1.16)	-0.3
12	EXPSUGAR1	1.041	0.114	1.00	(0.79, 1.21)	0.0	1.01	(0.91, 1.09)	0.2
13	EXPSUGAR2	0.211	0.119	1.31	(0.79, 1.21)	2.7	1.17	(0.85, 1.15)	2.1
14	EXPSUGAR3	-3.547	0.158	0.72	(0.79, 1.21)	-2.9	1.06	(0.00, 2.39)	0.3
15	EXPSUGAR4	-1.139	0.136	0.77	(0.79, 1.21)	-2.4	0.99	(0.63, 1.37)	-0.0
16	EXPSUGAR5	-0.964	0.134	0.95	(0.79, 1.21)	-0.4	1.04	(0.67, 1.33)	0.3
17	EXPSUGAR6	1.476	0.115	1.16	(0.79, 1.21)	1.4	1.12	(0.90, 1.10)	2.4
18	EXPFAT1	-1.203	0.137	1.12	(0.79, 1.21)	1.1	1.04	(0.62, 1.38)	0.3
19	EXPFAT2	-2.108	0.149	0.93	(0.79, 1.21)	-0.7	1.04	(0.35, 1.65)	0.2
20	EXPFAT3	-0.896	0.133	0.81	(0.79, 1.21)	-1.8	0.99	(0.68, 1.32)	0.0
21	EXPFAT4	0.568	0.116	0.95	(0.79, 1.21)	-0.5	0.97	(0.88, 1.12)	-0.6
22	EXPFAT5	-1.264	0.138	0.84	(0.79, 1.21)	-1.5	0.96	(0.60, 1.40)	-0.1
23	EXPFAT6	-0.021	0.121	0.99	(0.79, 1.21)	-0.1	1.02	(0.82, 1.18)	0.3
24	EXPFAT7	0.485	0.116	0.93	(0.79, 1.21)	-0.6	0.97	(0.88, 1.12)	-0.4
25	EXPFAT8	1.065	0.114	1.00	(0.79, 1.21)	0.0	1.00	(0.91, 1.09)	-0.1
26	EXPFAT9	0.316	0.118	1.09	(0.79, 1.21)	0.9	1.06	(0.86, 1.14)	0.9
27	EXPFAT10	0.257	0.118	1.02	(0.79, 1.21)	0.2	1.04	(0.86, 1.14)	0.6
28	CARB1	-0.262	0.124	0.86	(0.79, 1.21)	-1.3	0.95	(0.79, 1.21)	-0.4
29	CARB2	-1.982	0.147	0.77	(0.79, 1.21)	-2.3	1.02	(0.40, 1.60)	0.2
30	CARB3	0.286	0.118	0.92	(0.79, 1.21)	-0.7	0.97	(0.86, 1.14)	-0.4
31	CARB4	0.734	0.115	1.10	(0.79, 1.21)	0.9	1.07	(0.89, 1.11)	1.2
32	CARB5	-1.141	0.136	1.30	(0.79, 1.21)	2.6	1.07	(0.63, 1.37)	0.4
33	CARB6	0.648	0.115	0.92	(0.79, 1.21)	-0.7	0.95	(0.89, 1.11)	-0.9
34	EXPSALT1	-2.615	0.153	1.60	(0.79, 1.21)	4.8	1.06	(0.15, 1.85)	0.3
35	EXPSALT2	-1.081	0.135	1.21	(0.79, 1.21)	1.9	1.10	(0.64, 1.36)	0.6
36	EXPSALT3	-1.579	0.142	1.14	(0.79, 1.21)	1.2	1.10	(0.52, 1.48)	0.5
37	EXPSALT4	-0.810	0.131	1.11	(0.79, 1.21)	1.0	1.07	(0.70, 1.30)	0.5
38	EXPSALT5	-0.811	0.131	1.04	(0.79, 1.21)	0.4	1.02	(0.70, 1.30)	0.2

39	EXPSALT6	0.935	0.114	1.06	(0.79, 1.21)	0.6	1.07	(0.90, 1.10)	1.4
40	EXPPRO1	-1.417	0.140	0.71	(0.79, 1.21)	-2.9	0.99	(0.57, 1.43)	0.0
41	EXPPRO2	0.674	0.115	1.04	(0.79, 1.21)	0.4	1.05	(0.89, 1.11)	0.8
42	EXPPRO3	-0.850	0.132	0.95	(0.79, 1.21)	-0.5	1.02	(0.69, 1.31)	0.2
43	EXPPRO4	-1.207	0.137	0.72	(0.79, 1.21)	-2.9	0.95	(0.62, 1.38)	-0.2
44	EXPPRO5	-0.415	0.126	1.15	(0.79, 1.21)	1.4	1.03	(0.77, 1.23)	0.3
45	EXPPRO6	-0.123	0.122	1.25	(0.79, 1.21)	2.2	1.11	(0.81, 1.19)	1.2
46	EXPFIBRE1	0.566	0.116	1.01	(0.79, 1.21)	0.2	1.02	(0.88, 1.12)	0.4
47	EXPFIBRE2	-0.714	0.130	0.98	(0.79, 1.21)	-0.1	1.01	(0.72, 1.28)	0.1
48	EXPFIBRE3	-0.762	0.131	0.92	(0.79, 1.21)	-0.7	0.98	(0.71, 1.29)	-0.1
49	EXPFIBRE4	0.136	0.119	0.91	(0.79, 1.21)	-0.8	0.96	(0.84, 1.16)	-0.4
50	EXPFIBRE5	-0.952	0.134	0.75	(0.79, 1.21)	-2.5	0.98	(0.67, 1.33)	-0.1
51	EXPFIBRE6	0.196	0.119	1.24	(0.79, 1.21)	2.1	1.18	(0.85, 1.15)	2.2
52	EXPFIBRE7	-0.264	0.124	0.86	(0.79, 1.21)	-1.4	0.96	(0.79, 1.21)	-0.4
53	EXPFIBRE8	-0.089	0.122	0.88	(0.79, 1.21)	-1.1	0.95	(0.81, 1.19)	-0.5
54	EXPFIBRE9	-0.149	0.122	0.94	(0.79, 1.21)	-0.5	0.98	(0.81, 1.19)	-0.1
55	EXPFIBRE10	-0.668	0.129	0.71	(0.79, 1.21)	-3.0	0.88	(0.73, 1.27)	-0.9
56	EXPSATF1	-0.579	0.128	1.05	(0.79, 1.21)	0.5	1.05	(0.74, 1.26)	0.4
57	EXPSATF2	-0.157	0.122	1.27	(0.79, 1.21)	2.3	1.14	(0.81, 1.19)	1.3
58	EXPSATF3	0.074	0.120	0.96	(0.79, 1.21)	-0.3	1.03	(0.83, 1.17)	0.4
59	EXPSATF4	1.371	0.114	1.05	(0.79, 1.21)	0.5	1.02	(0.91, 1.09)	0.3
60	EXPSATF5	1.089	0.114	1.04	(0.79, 1.21)	0.4	1.05	(0.91, 1.09)	1.1
61	EXPSATF6	-1.272	0.138	1.24	(0.79, 1.21)	2.1	1.12	(0.60, 1.40)	0.6
62	CHOL	1.675	0.116	1.03	(0.79, 1.21)	0.3	1.01	(0.89, 1.11)	0.2
63	REDMEAT1	0.105	0.119	1.01	(0.79, 1.21)	0.1	0.99	(0.84, 1.16)	-0.1
64	REDMEAT2	-0.860	0.132	0.80	(0.79, 1.21)	-2.0	0.96	(0.69, 1.31)	-0.2
65	REDMEAT3	-0.711	0.130	0.86	(0.79, 1.21)	-1.3	0.95	(0.72, 1.28)	-0.3
66	REDMEAT4	-0.360	0.125	1.13	(0.79, 1.21)	1.2	1.06	(0.77, 1.23)	0.5
67	REDMEAT5	0.674	0.115	1.04	(0.79, 1.21)	0.4	1.04	(0.89, 1.11)	0.8
68	REDMEAT6	3.519	0.137	1.27	(0.79, 1.21)	2.4	1.05	(0.63, 1.37)	0.3
69	JUICEFRUIT	1.269	0.114	1.30	(0.79, 1.21)	2.6	1.26	(0.91, 1.09)	5.1
70	SATFAT	1.714	0.116	0.99	(0.79, 1.21)	-0.0	0.98	(0.89, 1.11)	-0.3
71	BROWNSUGAR	1.449	0.114	0.86	(0.79, 1.21)	-1.4	0.87	(0.90, 1.10)	-2.7
72	SKIMMILK	1.090	0.114	0.83	(0.79, 1.21)	-1.6	0.85	(0.91, 1.09)	-3.2
73	BUTTER	1.880	0.117	1.00	(0.79, 1.21)	0.1	1.00	(0.88, 1.12)	0.0
74	BREAD	-0.579	0.128	1.15	(0.79, 1.21)	1.4	1.09	(0.74, 1.26)	0.7
75	BUTTEROR	1.880	0.117	0.87	(0.79, 1.21)	-1.2	0.87	(0.88, 1.12)	-2.2
76	MONOFATS	2.237	0.120	0.95	(0.79, 1.21)	-0.4	0.98	(0.85, 1.15)	-0.2
77	CALCIUMMILK	0.648	0.115	0.87	(0.79, 1.21)	-1.3	0.91	(0.89, 1.11)	-1.6
78	SAMEWEIGHT	1.995	0.118	1.02	(0.79, 1.21)	0.2	1.01	(0.87, 1.13)	0.1
79	HARDERFATS	0.492	0.116	0.91	(0.79, 1.21)	-0.9	0.94	(0.88, 1.12)	-0.9
80	POLSAT	0.727*	1.130	0.86	(0.79, 1.21)	-1.3	0.89	(0.89, 1.11)	-2.1

Notes: An asterisk next to a parameter estimate indicates that it is constrained.
Easier items are marked in grey, harder items in blue.

Lower MNSQ fit and poorer t values are marked in grey in table.

Separation Reliability=0.992

Chi-square test of parameter equality=8493.23, df=79, Sig Level=0.000

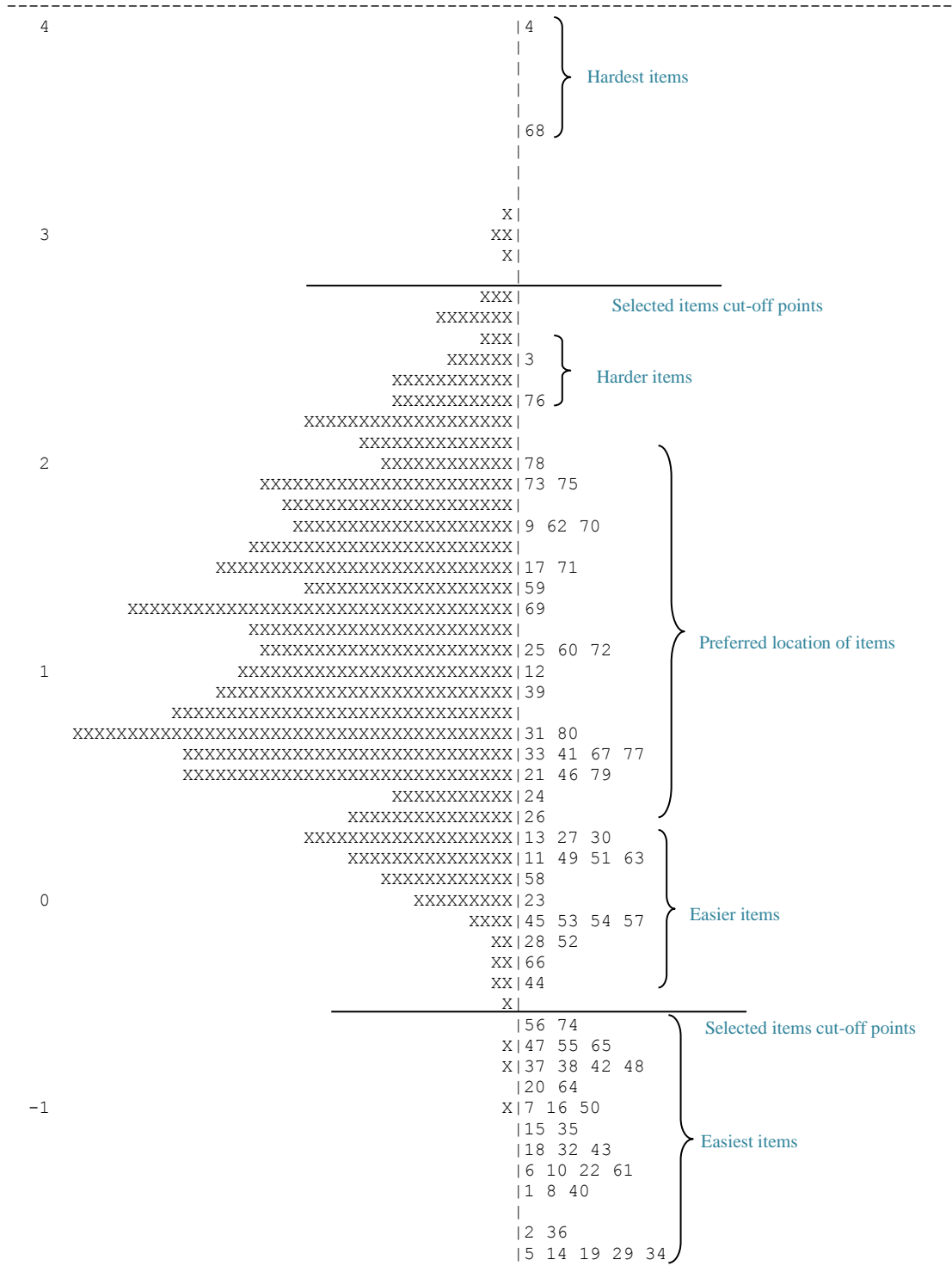
^ Quick standard errors have been used

RELIABILITY COEFFICIENTS

Dimension: (Dimension 1)

MLE Person separation RELIABILITY: Unavailable
WLE Person separation RELIABILITY: Unavailable
EAP/PV RELIABILITY: 0.946

Map of Latent Distributions



Each 'X' represents 0.3 cases

2.2. Control Group (80 Items)

SUMMARY OF THE ESTIMATION

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=====
Estimation method was: Gauss-Hermite Quadrature with 15 nodes
Assumed population distribution was: Gaussian
Constraint was: DEFAULT
The Data File: C_parents.dat
The format: id 1-4 responses 5-84
The regression model:
Grouping Variables:
The item model: item
Sample size: 179
Final Deviance: 13710.22012
Total number of estimated parameters: 81
The number of iterations: 974
Termination criteria: Max iterations=1000, Parameter Change= 0.00010
Deviance Change= 0.00010
Iterations terminated because the deviance convergence criteria was reached
Random number generation seed: 1.00000
Number of nodes used when drawing PVs: 2000
Number of nodes used when computing fit: 1000
Number of plausible values to draw: 5
Maximum number of iterations without a deviance improvement: 100
Maximum number of Newton steps in M-step: 10
Value for obtaining finite MLEs for zero/perfects: 0.30000
key 1 scored as 1:
13313113132132223212121122212122211121222111212221221121212121112122223332431
=====

```

TABLES OF RESPONSE MODEL PARAMETER ESTIMATES

TERM 1: item

VARIABLES	Easier items in the test		UNWEIGHTED FIT			WEIGHTED FIT			
	item	ESTIMATE	ERROR [^]	MNSQ	CI	T	MNSQ	CI	T
1	EXPREC1	-1.440	0.137	1.11	(0.79, 1.21)	1.0	1.03	(0.59, 1.41)	0.2
2	EXPREC2	-1.570	0.139	0.80	(0.79, 1.21)	-2.0	0.99	(0.55, 1.45)	0.1
3	EXPREC3	2.504	0.122	0.97	(0.79, 1.21)	-0.2	0.95	(0.80, 1.20)	-0.5
4	EXPREC4	5.321	0.153	1.11	(0.79, 1.21)	1.0	0.99	(0.00, 2.08)	0.2
5	EXPREC5	-1.734	0.141	0.82	(0.79, 1.21)	-1.8	1.00	(0.50, 1.50)	0.1
6	EXPREC6	-1.411	0.137	0.85	(0.79, 1.21)	-1.4	0.99	(0.59, 1.41)	0.0
7	EXPREC7	-0.881	0.129	1.36	(0.79, 1.21)	3.1	1.11	(0.70, 1.30)	0.8
8	EXPREC8	-1.274	0.135	1.09	(0.79, 1.21)	0.9	1.03	(0.62, 1.38)	0.2
9	EXPREC9	1.793	0.115	1.19	(0.79, 1.21)	1.7	1.12	(0.88, 1.12)	2.0
10	cut	-1.762	0.141	0.94	(0.79, 1.21)	-0.6	1.03	(0.50, 1.50)	0.2
11	dairy	-0.293	0.121	0.93	(0.79, 1.21)	-0.7	0.98	(0.80, 1.20)	-0.1
12	EXPSUGAR1	0.959	0.112	1.02	(0.79, 1.21)	0.2	1.00	(0.91, 1.09)	-0.1
13	EXPSUGAR2	0.224	0.116	1.26	(0.79, 1.21)	2.3	1.16	(0.86, 1.14)	2.2
14	EXPSUGAR3	-2.511	0.149	0.64	(0.79, 1.21)	-3.9	0.98	(0.25, 1.75)	0.1
15	EXPSUGAR4	-0.960	0.130	0.93	(0.79, 1.21)	-0.6	0.97	(0.69, 1.31)	-0.1
16	EXPSUGAR5	-0.597	0.125	1.04	(0.79, 1.21)	0.4	1.04	(0.75, 1.25)	0.3
17	EXPSUGAR6	1.581	0.113	1.21	(0.79, 1.21)	1.9	1.12	(0.90, 1.10)	2.4
18	EXPFAT1	-0.960	0.130	0.97	(0.79, 1.21)	-0.3	0.98	(0.69, 1.31)	-0.0
19	EXPFAT2	-2.206	0.146	0.88	(0.79, 1.21)	-1.2	1.01	(0.36, 1.64)	0.2
20	EXPFAT3	-0.937	0.130	0.96	(0.79, 1.21)	-0.3	1.03	(0.69, 1.31)	0.3
21	EXPFAT4	0.477	0.114	1.03	(0.79, 1.21)	0.4	1.02	(0.88, 1.12)	0.4
22	EXPFAT5	-1.055	0.132	0.93	(0.79, 1.21)	-0.6	1.01	(0.67, 1.33)	0.1
23	EXPFAT6	0.370	0.114	1.04	(0.79, 1.21)	0.4	1.03	(0.87, 1.13)	0.5
24	EXPFAT7	0.343	0.115	1.00	(0.79, 1.21)	0.1	1.03	(0.87, 1.13)	0.5
25	EXPFAT8	1.008	0.112	0.96	(0.79, 1.21)	-0.3	0.95	(0.91, 1.09)	-1.3
26	EXPFAT9	0.477	0.114	1.17	(0.79, 1.21)	1.5	1.12	(0.88, 1.12)	2.0
27	EXPFAT10	0.232	0.115	1.13	(0.79, 1.21)	1.2	1.13	(0.86, 1.14)	1.7
28	CARB1	-0.003	0.118	0.81	(0.79, 1.21)	-1.9	0.86	(0.83, 1.17)	-1.8
29	CARB2	-1.593	0.139	0.72	(0.79, 1.21)	-2.9	0.97	(0.55, 1.45)	-0.1
30	CARB3	0.343	0.115	0.88	(0.79, 1.21)	-1.1	0.90	(0.87, 1.13)	-1.6
31	CARB4	0.709	0.112	1.04	(0.79, 1.21)	0.4	1.02	(0.90, 1.10)	0.4
32	CARB5	-0.862	0.129	0.90	(0.79, 1.21)	-1.0	1.01	(0.71, 1.29)	0.1
33	CARB6	0.835	0.112	0.96	(0.79, 1.21)	-0.3	0.97	(0.91, 1.09)	-0.7
34	EXPSALT1	-1.767	0.141	1.13	(0.79, 1.21)	1.2	1.00	(0.50, 1.50)	0.1
35	EXPSALT2	-1.243	0.134	1.33	(0.79, 1.21)	2.9	1.09	(0.63, 1.37)	0.5
36	EXPSALT3	-1.969	0.143	1.00	(0.79, 1.21)	0.0	1.02	(0.44, 1.56)	0.2
37	EXPSALT4	-0.742	0.127	1.18	(0.79, 1.21)	1.7	1.08	(0.72, 1.28)	0.6
38	EXPSALT5	-0.544	0.124	1.03	(0.79, 1.21)	0.4	0.98	(0.76, 1.24)	-0.1
39	EXPSALT6	0.734	0.112	1.09	(0.79, 1.21)	0.8	1.08	(0.90, 1.10)	1.5

40	EXPPRO1	-1.866	0.142	0.70	(0.79, 1.21)	-3.1	1.00	(0.47, 1.53)	0.1
41	EXPPRO2	0.450	0.114	1.08	(0.79, 1.21)	0.8	1.06	(0.88, 1.12)	0.9
42	EXPPRO3	-0.559	0.124	0.84	(0.79, 1.21)	-1.6	0.97	(0.76, 1.24)	-0.2
43	EXPPRO4	-1.374	0.136	1.05	(0.79, 1.21)	0.5	1.01	(0.60, 1.40)	0.1
44	EXPPRO5	-0.481	0.123	1.20	(0.79, 1.21)	1.8	1.10	(0.77, 1.23)	0.9
45	EXPPRO6	-0.098	0.119	1.22	(0.79, 1.21)	2.0	1.12	(0.82, 1.18)	1.3
46	EXPFIBRE1	0.858	0.112	0.94	(0.79, 1.21)	-0.6	0.96	(0.91, 1.09)	-1.0
47	EXPFIBRE2	-0.519	0.124	1.05	(0.79, 1.21)	0.5	1.02	(0.77, 1.23)	0.2
48	EXPFIBRE3	-0.683	0.126	0.78	(0.79, 1.21)	-2.2	0.91	(0.74, 1.26)	-0.7
49	EXPFIBRE4	-0.066	0.118	0.90	(0.79, 1.21)	-0.9	0.96	(0.83, 1.17)	-0.5
50	EXPFIBRE5	-0.949	0.130	0.86	(0.79, 1.21)	-1.4	0.97	(0.69, 1.31)	-0.2
51	EXPFIBRE6	0.503	0.113	1.22	(0.79, 1.21)	2.0	1.14	(0.89, 1.11)	2.3
52	EXPFIBRE7	-0.195	0.120	0.84	(0.79, 1.21)	-1.5	0.95	(0.81, 1.19)	-0.5
53	EXPFIBRE8	0.174	0.116	1.01	(0.79, 1.21)	0.2	0.99	(0.85, 1.15)	-0.1
54	EXPFIBRE9	-0.221	0.120	0.92	(0.79, 1.21)	-0.8	0.92	(0.81, 1.09)	-0.8
55	EXPFIBRE10	-0.864	0.129	0.85	(0.79, 1.21)	-1.4	0.92	(0.71, 1.29)	-0.5
56	EXPSATF1	-0.864	0.129	1.06	(0.79, 1.21)	0.6	1.01	(0.71, 1.29)	0.1
57	EXPSATF2	-0.558	0.124	1.43	(0.79, 1.21)	3.6	1.18	(0.76, 1.24)	1.4
58	EXPSATF3	-0.442	0.123	1.10	(0.79, 1.21)	0.9	1.05	(0.69, 1.22)	0.5
59	EXPSATF4	1.056	0.112	0.97	(0.79, 1.21)	-0.2	0.98	(0.91, 1.09)	-0.5
60	EXPSATF5	0.982	0.112	1.07	(0.79, 1.21)	0.7	1.08	(0.91, 1.09)	1.7
61	EXPSATF6	-1.517	0.138	0.96	(0.79, 1.21)	-0.4	1.00	(0.57, 1.43)	0.1
62	CHOL	1.427	0.113	1.02	(0.79, 1.21)	0.2	1.00	(0.91, 1.09)	0.1
63	REDMEAT1	-0.066	0.118	0.92	(0.79, 1.21)	-0.7	0.95	(0.83, 1.17)	-0.6
64	REDMEAT2	-1.068	0.132	0.62	(0.79, 1.21)	-4.2	0.88	(0.67, 1.33)	-0.7
65	REDMEAT3	-0.515	0.124	0.90	(0.79, 1.21)	-0.9	0.94	(0.77, 1.23)	-0.5
66	REDMEAT4	-0.248	0.121	0.95	(0.79, 1.21)	-0.5	0.95	(0.80, 1.20)	-0.4
67	REDMEAT5	0.709	0.112	0.99	(0.79, 1.21)	-0.0	0.99	(0.90, 1.10)	-0.2
68	REDMEAT6 Harder item	3.353	0.134	1.45	(0.79, 1.21)	3.8	1.07	(0.65, 1.35)	0.4
69	JUICEFRUIT	1.403	0.112	1.21	(0.79, 1.21)	1.9	1.19	(0.91, 1.09)	4.0
70	SATFAT	1.737	0.114	0.91	(0.79, 1.21)	-0.8	0.94	(0.89, 1.11)	-1.1
71	BROWNSUGAR	1.328	0.112	0.84	(0.79, 1.21)	-1.6	0.86	(0.91, 1.09)	-3.4
72	SKIMMILK	0.958	0.112	0.91	(0.79, 1.21)	-0.8	0.92	(0.91, 1.09)	-1.9
73	BUTTER	1.711	0.114	1.07	(0.79, 1.21)	0.7	1.04	(0.89, 1.11)	0.7
74	BREAD	-0.770	0.127	1.49	(0.79, 1.21)	4.0	1.13	(0.72, 1.28)	1.0
75	BUTTEROR	2.015	0.116	0.97	(0.79, 1.21)	-0.3	0.94	(0.86, 1.14)	-0.8
76	MONOFATS	2.422	0.121	0.87	(0.79, 1.21)	-1.2	0.94	(0.81, 1.19)	-0.6
77	CALCIUMMILK	0.315	0.115	0.86	(0.79, 1.21)	-1.4	0.90	(0.87, 1.13)	-1.5
78	SAMEWEIGHT	2.163	0.118	0.97	(0.79, 1.21)	-0.3	1.00	(0.85, 1.15)	-0.0
79	HARDERFATS	0.057	0.117	0.88	(0.79, 1.21)	-1.1	0.94	(0.84, 1.16)	-0.7
80	POLSAT	0.709*	1.104	0.90	(0.79, 1.21)	-0.9	0.92	(0.90, 1.10)	-1.6

Notes: An asterisk next to a parameter estimate indicates that it is constrained.
Easier items are marked in grey, harder items in blue.

Lower MNSQ fit and poorer t values are marked in grey in table.

Separation Reliability=0.992

Chi-square test of parameter equality=8403.51, df=79, Sig Level=0.000

^ Quick standard errors have been used

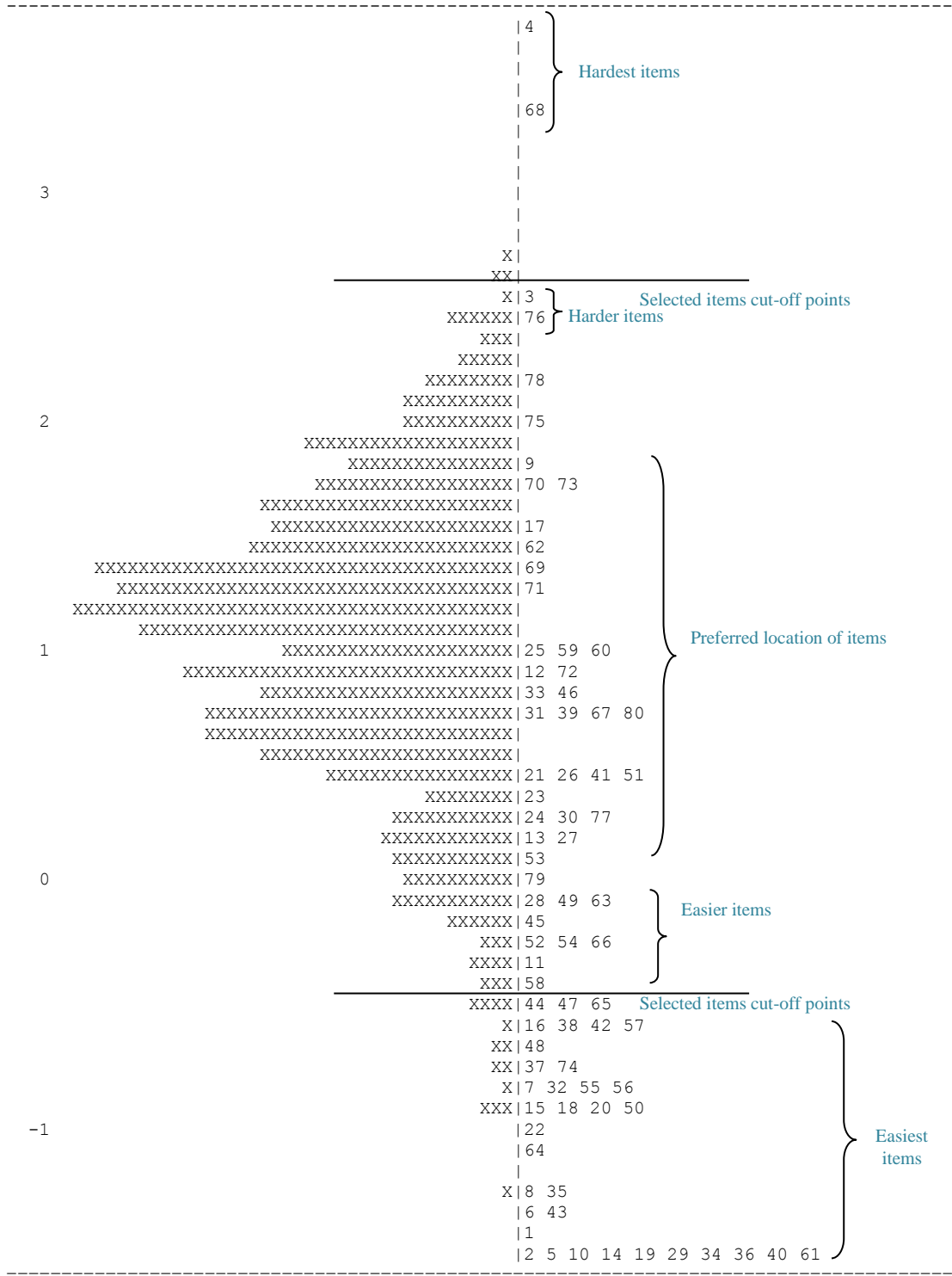
RELIABILITY COEFFICIENTS

Dimension: (Dimension 1)

MLE Person separation RELIABILITY: Unavailable
WLE Person separation RELIABILITY: Unavailable
EAP/PV RELIABILITY: 0.806

-T value is out of range

Map of Latent Distributions



Each 'X' represents 0.3 cases

2.3. Experimental Group (43 Items)

SUMMARY OF THE ESTIMATION

```

=====
Estimation method was: Gauss-Hermite Quadrature with 15 nodes
Assumed population distribution was: Gaussian
Constraint was: DEFAULT
The Data File: E2_parents.dat
The format: id 1-4 responses 5-47
The regression model:
Grouping Variables:
The item model: item
Sample size: 175
Final Deviance:      9052.67469
Total number of estimated parameters: 44
The number of iterations: 326
Termination criteria: Max iterations=1000, Parameter Change= 0.00010
                      Deviance Change= 0.00010
Iterations terminated because the deviance convergence criteria was reached
Random number generation seed: 1.00000
Number of nodes used when drawing PVs: 2000
Number of nodes used when computing fit: 1000
Number of plausible values to draw: 5
Maximum number of iterations without a deviance improvement: 100
Maximum number of Newton steps in M-step: 10
Value for obtaining finite MLEs for zero/perfects: 0.30000
key 1 scored as 1: 3121331112212221112221212212121112222332431
=====

```

TABLES OF RESPONSE MODEL PARAMETER ESTIMATES

TERM 1: item

VARIABLES		UNWEIGHTED FIT				WEIGHTED FIT		
item	ESTIMATE	ERROR [^]	MNSQ	CI	T	MNSQ	CI	T
1	EXPREC3	1.712	0.123	0.91 (0.79, 1.21)	-0.8	0.94 (0.81, 1.19)	-0.6	
2	EXPREC9	0.956	0.116	1.16 (0.79, 1.21)	1.5	1.15 (0.89, 1.11)	2.5	
3	dairy	-0.624	0.119	0.95 (0.79, 1.21)	-0.5	0.97 (0.85, 1.15)	-0.4	
4	EXPSUGAR1	0.271	0.114	1.04 (0.79, 1.21)	0.4	1.03 (0.90, 1.10)	0.5	
5	EXPSUGAR2	-0.554	0.119	1.39 (0.79, 1.21)	3.3	1.21 (0.85, 1.15)	2.6	
6	EXPSUGAR6	0.732	0.115	1.15 (0.79, 1.21)	1.4	1.12 (0.90, 1.10)	2.2	
7	EXPFAT4	-0.172	0.116	0.94 (0.79, 1.21)	-0.6	0.96 (0.89, 1.11)	-0.6	
8	EXPFAT6	-0.819	0.121	0.90 (0.79, 1.21)	-1.0	0.97 (0.82, 1.18)	-0.4	
9	EXPFAT7	-0.281	0.116	0.95 (0.79, 1.21)	-0.4	0.98 (0.88, 1.12)	-0.3	
10	EXPFAT8	0.296	0.114	0.94 (0.79, 1.21)	-0.5	0.95 (0.90, 1.10)	-0.9	
11	EXPFAT9	-0.479	0.118	1.14 (0.79, 1.21)	1.3	1.10 (0.86, 1.14)	1.4	
12	EXPFAT10	-0.538	0.118	0.93 (0.79, 1.21)	-0.6	0.99 (0.85, 1.15)	-0.1	
13	CARB1	-1.026	0.124	0.88 (0.79, 1.21)	-1.1	0.97 (0.80, 1.20)	-0.3	
14	CARB3	-0.479	0.118	0.85 (0.79, 1.21)	-1.4	0.89 (0.86, 1.14)	-1.5	
15	CARB4	-0.059	0.115	1.06 (0.79, 1.21)	0.6	1.05 (0.89, 1.11)	0.9	
16	CARB6	-0.145	0.115	0.94 (0.79, 1.21)	-0.6	0.96 (0.89, 1.11)	-0.7	
17	EXPSALT6	0.168	0.114	1.08 (0.79, 1.21)	0.7	1.07 (0.90, 1.10)	1.3	
18	EXPPRO2	-0.066	0.115	1.03 (0.79, 1.21)	0.3	1.03 (0.89, 1.11)	0.6	
19	EXPPRO6	-0.853	0.122	1.29 (0.79, 1.21)	2.5	1.13 (0.82, 1.18)	1.4	
20	EXPFIBRE1	-0.227	0.116	1.03 (0.79, 1.21)	0.3	1.03 (0.88, 1.12)	0.6	
21	EXPFIBRE4	-0.629	0.119	0.88 (0.79, 1.21)	-1.1	0.94 (0.84, 1.16)	-0.7	
22	EXPFIBRE6	-0.569	0.119	1.33 (0.79, 1.21)	2.8	1.20 (0.85, 1.15)	2.5	
23	EXPFIBRE7	-1.027	0.124	0.80 (0.79, 1.21)	-2.0	0.93 (0.79, 1.21)	-0.7	
24	EXPFIBRE8	-0.853	0.122	0.94 (0.79, 1.21)	-0.5	0.97 (0.82, 1.18)	-0.3	
25	EXPFIBRE9	-0.912	0.123	0.93 (0.79, 1.21)	-0.6	0.97 (0.81, 1.19)	-0.2	
26	EXPSATF3	-0.660	0.120	0.96 (0.79, 1.21)	-0.3	1.02 (0.84, 1.16)	0.3	
27	EXPSATF4	0.627	0.114	1.00 (0.79, 1.21)	0.0	1.00 (0.90, 1.10)	-0.0	
28	EXPSATF5	0.320	0.114	1.06 (0.79, 1.21)	0.6	1.07 (0.90, 1.10)	1.5	
29	CHOL	0.903	0.116	0.97 (0.79, 1.21)	-0.3	0.97 (0.89, 1.11)	-0.6	
30	REDMEAT1	-0.679	0.120	0.96 (0.79, 1.21)	-0.3	0.95 (0.84, 1.16)	-0.6	
31	REDMEAT4	-1.140	0.125	1.10 (0.79, 1.21)	0.9	1.04 (0.78, 1.22)	0.4	
32	REDMEAT5	-0.066	0.115	1.04 (0.79, 1.21)	0.4	1.05 (0.89, 1.11)	0.9	
33	JUICEFRUIT	0.499	0.114	1.35 (0.79, 1.21)	3.0	1.28 (0.90, 1.10)	5.4	
34	SATFAT	0.943	0.116	1.00 (0.79, 1.21)	0.0	0.98 (0.89, 1.11)	-0.4	
35	BROWNSUGAR	0.653	0.114	0.88 (0.79, 1.21)	-1.1	0.88 (0.90, 1.10)	-2.5	
36	SKIMMILK	0.346	0.114	0.80 (0.79, 1.21)	-2.0	0.82 (0.91, 1.09)	-3.9	
37	BUTTER	1.108	0.117	0.95 (0.79, 1.21)	-0.5	0.95 (0.88, 1.12)	-0.8	
38	BUTTEROR	1.108	0.117	0.80 (0.79, 1.21)	-2.0	0.83 (0.88, 1.12)	-2.9	
39	MONOFATS	1.464	0.120	0.98 (0.79, 1.21)	-0.2	1.00 (0.84, 1.16)	0.1	
40	CALCIUMMILK	-0.092	0.115	0.85 (0.79, 1.21)	-1.5	0.89 (0.89, 1.11)	-2.1	

41	SAMEWEIGHT	1.194	0.117	1.01 (0.79, 1.21)	0.1	1.00 (0.87, 1.13)	0.1
42	HARDERFATS	-0.302	0.117	0.90 (0.79, 1.21)	-0.9	0.94 (0.88, 1.12)	-0.9
43	POLSAT	-0.052*	0.762	0.84 (0.79, 1.21)	-1.5	0.88 (0.89, 1.11)	-2.3

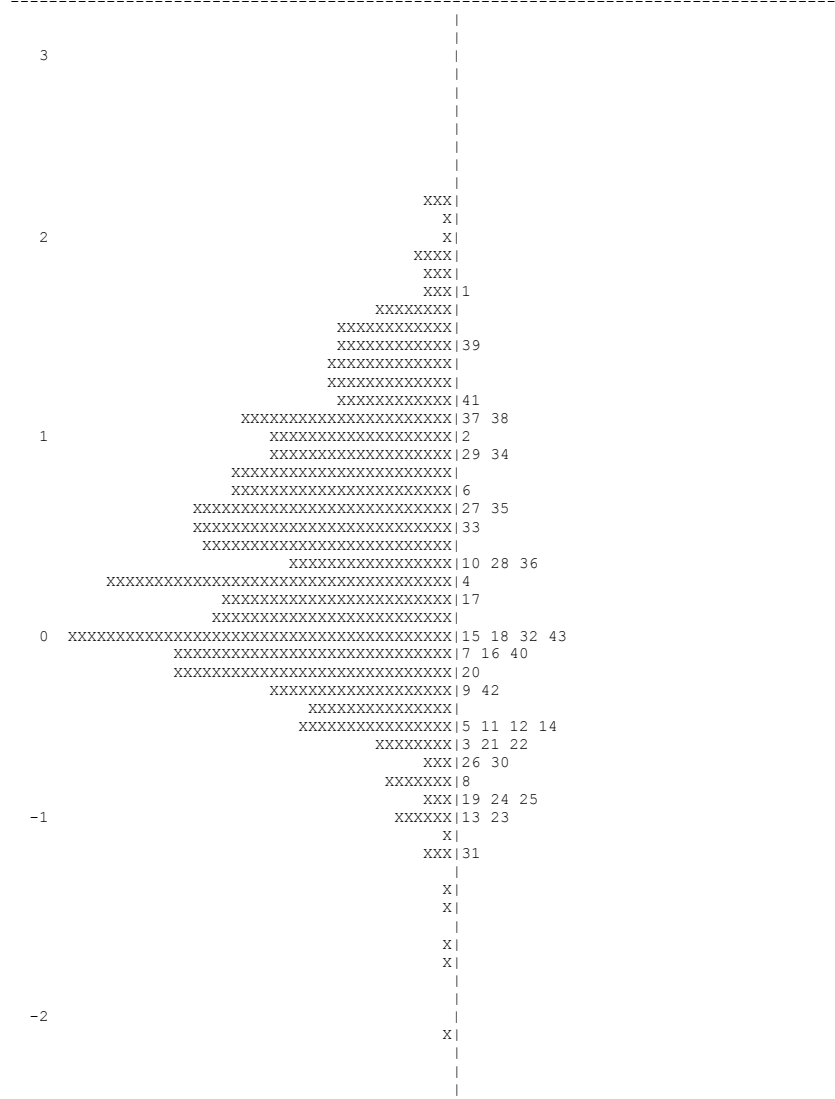
Notes: An asterisk next to a parameter estimate indicates that it is constrained.
 Separation Reliability=0.976
 Chi-square test of parameter equality=1633.24, df=42, Sig Level=0.000
 ^ Quick standard errors have been used

RELIABILITY COEFFICIENTS

Dimension: (Dimension 1)

MLE Person separation RELIABILITY: Unavailable
 WLE Person separation RELIABILITY: Unavailable
 EAP/PV RELIABILITY: 0.826

Map of Latent Distributions



Each 'X' represents 0.3 cases

2.4. Control Group (43 Items)

SUMMARY OF THE ESTIMATION

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Estimation method was: Gauss-Hermite Quadrature with 15 nodes
Assumed population distribution was: Gaussian
Constraint was: DEFAULT
The Data File: C2_parents.dat
The format: id 1-4 responses 5-47
The regression model:
Grouping Variables:
The item model: item
Sample size: 179
Final Deviance:      9335.13947
Total number of estimated parameters: 44
The number of iterations: 321
Termination criteria: Max iterations=1000, Parameter Change= 0.00010
                      Deviance Change= 0.00010
Iterations terminated because the deviance convergence criteria was reached
Random number generation seed: 1.00000
Number of nodes used when drawing PVs: 2000
Number of nodes used when computing fit: 1000
Number of plausible values to draw: 5
Maximum number of iterations without a deviance improvement: 100
Maximum number of Newton steps in M-step: 10
Value for obtaining finite MLEs for zero/perfects: 0.30000
key 1 scored as 1: 3121331112212221112221212212121112222332431
=====

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TABLES OF RESPONSE MODEL PARAMETER ESTIMATES

TERM 1: item

VARIABLES	UNWEIGHTED FIT						WEIGHTED FIT		
	item	ESTIMATE	ERROR^	MNSQ	CI	T	MNSQ	CI	T
1	EXPREC3	1.758	0.122	1.02	(0.79, 1.21)	0.2	1.01	(0.79, 1.21)	0.1
2	EXPREC9	1.041	0.115	1.27	(0.79, 1.21)	2.4	1.16	(0.88, 1.12)	2.6
3	dairy	-1.071	0.121	0.94	(0.79, 1.21)	-0.5	1.00	(0.80, 1.20)	0.0
4	EXPSUGAR1	0.209	0.112	1.01	(0.79, 1.21)	0.1	1.00	(0.92, 1.08)	-0.1
5	EXPSUGAR2	-0.525	0.116	1.19	(0.79, 1.21)	1.7	1.14	(0.87, 1.13)	1.9
6	EXPSUGAR6	0.855	0.113	1.18	(0.79, 1.21)	1.6	1.12	(0.90, 1.10)	2.3
7	EXPFAT4	-0.245	0.113	1.01	(0.79, 1.21)	0.1	1.00	(0.89, 1.11)	-0.1
8	EXPFAT6	-0.377	0.114	0.99	(0.79, 1.21)	-0.0	1.00	(0.88, 1.12)	0.1
9	EXPFAT7	-0.432	0.115	0.99	(0.79, 1.21)	-0.1	1.03	(0.88, 1.12)	0.5
10	EXPFAT8	0.233	0.112	0.96	(0.79, 1.21)	-0.3	0.95	(0.92, 1.08)	-1.1
11	EXPFAT9	-0.271	0.113	1.16	(0.79, 1.21)	1.5	1.11	(0.89, 1.11)	1.9
12	EXPFAT10	-0.515	0.115	1.09	(0.79, 1.21)	0.8	1.09	(0.87, 1.13)	1.3
13	CARB1	-0.719	0.117	0.81	(0.79, 1.21)	-1.9	0.85	(0.85, 1.15)	-2.0
14	CARB3	-0.432	0.115	0.89	(0.79, 1.21)	-1.1	0.90	(0.88, 1.12)	-1.6
15	CARB4	-0.041	0.112	1.05	(0.79, 1.21)	0.5	1.03	(0.91, 1.09)	0.7
16	CARB6	0.084	0.112	0.95	(0.79, 1.21)	-0.4	0.95	(0.91, 1.09)	-1.1
17	EXPSALT6	-0.016	0.112	1.03	(0.79, 1.21)	0.3	1.03	(0.91, 1.09)	0.7
18	EXPPRO2	-0.298	0.114	1.03	(0.79, 1.21)	0.3	1.02	(0.89, 1.11)	0.3
19	EXPPRO6	-0.843	0.119	1.25	(0.79, 1.21)	2.3	1.15	(0.83, 1.17)	1.6
20	EXPFIBRE1	0.109	0.112	0.96	(0.79, 1.21)	-0.3	0.97	(0.91, 1.09)	-0.6
21	EXPFIBRE4	-0.780	0.118	0.87	(0.79, 1.21)	-1.2	0.90	(0.84, 1.16)	-1.3
22	EXPFIBRE6	-0.220	0.113	1.17	(0.79, 1.21)	1.6	1.13	(0.89, 1.11)	2.3
23	EXPFIBRE7	-0.907	0.119	0.81	(0.79, 1.21)	-1.9	0.89	(0.82, 1.18)	-1.3
24	EXPFIBRE8	-0.544	0.116	1.04	(0.79, 1.21)	0.4	1.01	(0.86, 1.14)	0.2
25	EXPFIBRE9	-0.931	0.120	0.88	(0.79, 1.21)	-1.1	0.86	(0.82, 1.18)	-1.5
26	EXPSATF3	-1.185	0.123	1.03	(0.79, 1.21)	0.3	0.99	(0.78, 1.22)	-0.1
27	EXPSATF4	0.330	0.112	0.91	(0.79, 1.21)	-0.9	0.91	(0.92, 1.08)	-2.1
28	EXPSATF5	0.257	0.112	1.06	(0.79, 1.21)	0.5	1.06	(0.92, 1.08)	1.3
29	CHOL	0.675	0.113	1.00	(0.79, 1.21)	0.0	1.00	(0.91, 1.09)	-0.0
30	REDMEAT1	-0.779	0.118	0.87	(0.79, 1.21)	-1.2	0.90	(0.84, 1.16)	-1.2
31	REDMEAT4	-0.995	0.121	0.90	(0.79, 1.21)	-0.9	0.92	(0.81, 1.19)	-0.8
32	REDMEAT5	-0.015	0.112	0.99	(0.79, 1.21)	-0.1	0.99	(0.91, 1.09)	-0.3
33	JUICEFRUIT	0.627	0.112	1.24	(0.79, 1.21)	2.2	1.20	(0.91, 1.09)	4.1
34	SATFAT	0.986	0.114	0.95	(0.79, 1.21)	-0.5	0.96	(0.89, 1.11)	-0.7
35	BROWNSUGAR	0.577	0.112	0.87	(0.79, 1.21)	-1.3	0.88	(0.91, 1.09)	-2.7
36	SKIMMILK	0.208	0.112	0.89	(0.79, 1.21)	-1.0	0.91	(0.92, 1.08)	-2.3
37	BUTTER	0.960	0.114	1.03	(0.79, 1.21)	0.4	1.03	(0.89, 1.11)	0.5
38	BUTTEROR	1.263	0.116	0.98	(0.79, 1.21)	-0.2	0.96	(0.86, 1.14)	-0.5
39	MONOFATS	1.671	0.121	0.90	(0.79, 1.21)	-0.9	0.97	(0.80, 1.20)	-0.3
40	CALCIUMMILK	-0.431	0.115	0.89	(0.79, 1.21)	-1.1	0.91	(0.88, 1.12)	-1.4

41	SAMEWEIGHT	1.412	0.118	0.92 (0.79, 1.21)	-0.7	0.98 (0.84, 1.16)	-0.2
42	HARDERFATS	-0.658	0.117	0.89 (0.79, 1.21)	-1.1	0.93 (0.85, 1.15)	-0.9
43	POLSAT	-0.023*	0.746	0.90 (0.79, 1.21)	-1.0	0.91 (0.91, 1.09)	-1.9

An asterisk next to a parameter estimate indicates that it is constrained
Separation Reliability=0.978
Chi-square test of parameter equality=1771.20, df=42, Sig Level=0.000
^ Quick standard errors have been used
=====

RELIABILITY COEFFICIENTS

Dimension: (Dimension 1)

MLE Person separation RELIABILITY: Unavailable
WLE Person separation RELIABILITY: Unavailable
EAP/PV RELIABILITY: 0.747

Map of Latent Distributions



Each 'X' represents 0.3 cases

Appendix 48: Respondents' BMI

A) ABS BMI Cut-Off Points

The original ABS' table is shown below together with the explanatory notes. Children's weight status was determined using the BMI cut-off points provided by the Australian Bureau of Statistics (ABS 2007). Because children's age could not be determined precisely, only full age points were used (i.e., "5" instead of "5.5").

Guidelines for Males						Guidelines for Females					
UNDERWEIGHT			OVERWEIGHT		OBESSE	UNDERWEIGHT			OVERWEIGHT		OBESSE
Age (in years)	Adult cutoff point	Adult cutoff point	Adult cutoff point	Adult cutoff point	Adult cutoff point	Age (in years)	Adult cutoff point	Adult cutoff point	Adult cutoff point	Adult cutoff point	Adult cutoff point
	16.00	17.00	18.50	25.00	30.00		16.00	17.00	18.50	25.00	30.00
BMI cut-off points for adult males Underweight: lowest until 14.21 Overweight: 17.42-19.29 Obese: 19.30 and above						BMI cut-off points for adult females Underweight: lowest until 13.94 Overweight: 17.15-19.16 Obese: 19.17 and above					
5	12.66	13.31	14.21	17.42	19.30	5	12.50	13.09	13.94	17.15	19.17
5.5	12.58	13.22	14.13	17.45	19.47	5.5	12.40	12.99	13.86	17.20	19.34
6	12.50	13.15	14.07	17.55	19.78	6	12.32	12.93	13.82	17.34	19.65
6.5	12.45	13.10	14.04	17.71	20.23	6.5	12.28	12.90	13.82	17.53	20.08
7	12.42	13.08	14.04	17.92	20.63	7	12.26	12.91	13.86	17.75	20.51
7.5	12.41	13.09	14.08	18.16	21.09	7.5	12.27	12.95	13.93	18.03	21.01
8	12.42	13.11	14.15	18.44	21.60	8	12.31	13.00	14.02	18.35	21.57
8.5	12.45	13.17	14.24	18.76	22.17	8.5	12.37	13.08	14.14	18.69	22.18
9	12.50	13.24	14.35	19.10	22.77	9	12.44	13.18	14.28	19.07	22.81
9.5	12.57	13.34	14.49	19.46	23.39	9.5	12.53	13.29	14.43	19.45	23.46
10	12.66	13.45	14.64	19.84	24.00	10	12.64	13.43	14.61	19.86	24.11
10.5	12.77	13.58	14.80	20.20	24.57	10.5	12.78	13.59	14.81	20.29	24.77
11	12.89	13.72	14.97	20.55	25.10	11	12.95	13.79	15.05	20.74	25.42
11.5	13.03	13.87	15.16	20.89	25.58	11.5	13.15	14.01	15.32	21.20	26.05
12	13.18	14.05	15.35	21.22	26.02	12	13.39	14.28	15.62	21.68	26.67
12.5	13.37	14.25	15.58	21.56	26.43	12.5	13.65	14.56	15.93	22.14	27.24
13	13.59	14.48	15.84	21.91	26.84	13	13.92	14.85	16.26	22.58	27.76
13.5	13.83	14.74	16.12	22.27	27.25	13.5	14.20	15.14	16.57	22.98	28.20
14	14.09	15.01	16.41	22.62	27.63	14	14.48	15.43	16.88	23.34	28.57
14.5	14.35	15.28	16.69	22.96	27.98	14.5	14.75	15.72	17.18	23.66	28.87
15	14.60	15.55	16.98	23.29	28.30	15	15.01	15.98	17.45	23.94	29.11
15.5	14.86	15.82	17.26	23.60	28.60	15.5	15.25	16.22	17.69	24.17	29.29
16	15.12	16.08	17.54	23.90	28.88	16	15.46	16.44	17.91	24.37	29.43
16.5	15.36	16.34	17.80	24.19	29.14	16.5	15.63	16.62	18.09	24.54	29.56
17	15.60	16.58	18.05	24.46	29.41	17	15.78	16.77	18.25	24.70	29.69
17.5	15.81	16.80	18.28	24.73	29.70	17.5	15.90	16.89	18.38	24.85	29.84
18	16.00	17.00	18.50	25.00	30.00	18	16.00	17.00	18.50	25.00	30.00

B) Weight by Gender:

1. Children's data

	Experimental group						Control group					
	Females			Males			Females			Males		
	N	Percent	Valid percent	N	Percent	Valid percent	N	Percent	Valid percent	N	Percent	Valid percent
Underweight	17	18.9%	20.2%	11	12.9%	14.1%	19	19%	20.7%	10	12.7%	13.5%
Normal weight	48	53.3%	57.1%	42	49.4%	53.8%	52	52%	56.5%	29	36.7%	39.2%
Overweight	11	12.2%	13.1%	16	18.8%	20.5%	14	14%	15.2%	21	26.6%	28.4%
Obese	8	8.9%	9.5%	9	10.6%	11.5%	7	7%	7.6%	14	17.7%	18.9%
Missing	6	6.7%	-	7	8.2%	-	8	8%	-	5	6.3%	-
Total	90	-	-	85	-	-	100	-	-	79	-	-

2. Parents' data

	Experimental group						Control group					
	Females			Males			Females			Males		
	N	Percent	Valid percent	N	Percent	Valid percent	N	Percent	Valid percent	N	Percent	Valid percent
Underweight	3	2.1%	2.2%	-	-	-	1	0.7%	0.8%	-	-	-
Normal weight	53	37.1%	39.3%	12	37.5%	37.5%	60	42.6%	46.2%	9	23.7%	25%
Overweight	51	35.7%	37.8%	14	43.8%	43.8%	43	30.5%	33.1%	18	47.4%	50%
Obese	28	19.6%	20.7%	6	18.8%	18.8%	26	18.4%	20%	9	23.7%	25%
Missing	8	5.6%	-	-	-	-	11	7.8%	-	2	5.3%	-
Total	143	-	-	32	-	-	141	-	-	38	-	-

C) Body Mass Index in General Australian Population 2007-2008

The ABS data (ABS 2009c; ABS 2009b) used to judge the representativeness of the current sample against general Australian population is marked in green colour below. Using the available statistics for individuals between five and 12 years, and 18 years and above, “underweight” and “normal weight” percentages were added up to yield an estimate for the two groups combined. Similar approach was used to estimate the percentage of “overweight” and “obese” persons.

Australian Bureau of Statistics

43640DO017_20072008 National Health Survey: Summary of Results, 2007–2008 (Reissue)
Released at 11:30 am (Canberra time) 23 Nov 2010

Table 1.3 Measured Body Mass Index–2007–08 and 1995(a)(b), Proportion of persons

	Age group (years)									Total 5–17 years	Total 18 years and over
	5–12	13–17	18–24	25–34	35–44	45–54	55–64	65–74	75 years and over		
	PROPORTION OF PERSONS (%)										
Males											
2007–08											
Underweight	-	-	*3.6	*2.2	**0.8	**0.4	np	np	**1.0	-	1.2
Normal weight(c)	78.2	68.2	56.6	35.9	28.5	22.8	np	np	24.7	74.5	31.1
Overweight	14.7	18.8	28.0	42.5	44.2	47.0	40.0	44.9	52.8	16.2	42.2
Obese	7.1	13.0	11.9	19.5	26.6	29.7	34.9	34.0	21.5	9.3	25.5
Total(d)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Females											
2007–08											
Underweight	-	-	7.2	3.4	*1.9	*1.7	np	np	*2.5	-	2.7
Normal weight(c)	77.1	74.7	58.0	52.2	43.0	39.6	np	np	40.6	76.1	42.6
Overweight	17.2	20.0	20.7	26.4	32.4	32.5	34.7	42.0	32.6	18.2	31.0
Obese	5.8	5.4	14.2	18.0	22.7	26.3	33.2	29.4	24.3	5.6	23.6
Total(d)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* estimate has a relative standard error of 25% to 50% and should be used with caution
 ** estimate has a relative standard error greater than 50% and is considered too unreliable for general use
 - denotes nil or rounded to nil
 np Not available for publication but included in totals where applicable, unless otherwise indicated

(a) Based on measured height and weight. See Body Mass Index in Glossary.
 (b) ABS National Nutrition Survey: Nutrient Intakes and Physical Measurements, Australia, 1995. See ABS Website cat. no. 4805.0.
 (c) Underweight and normal weight combined for children aged 15–17 years. See Glossary.
 (d) Excludes those for whom height or weight were not measured.

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Appendix 49: Preliminary Analysis of Parent-Child Communication about Food and Food Advertising Items

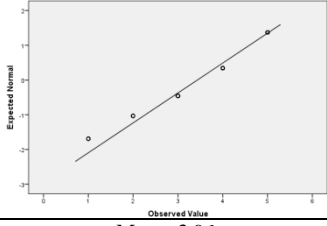
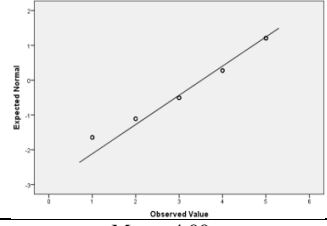
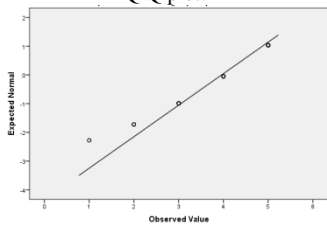
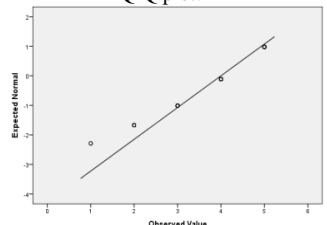
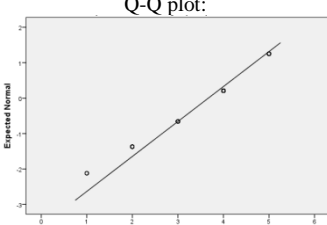
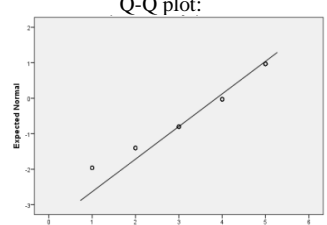
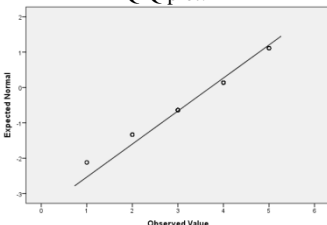
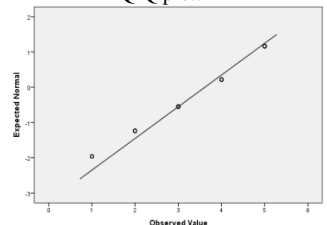
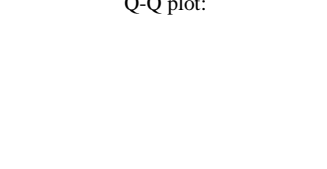
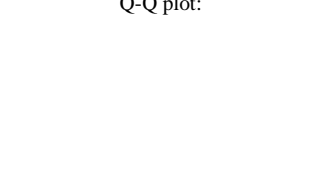
Items:	<i>Experimental group</i>		<i>Control group</i>		<i>Experimental and control groups</i>	
	N	Valid percent	N	Valid percent	N	Valid percent
When my child sees a food advertisement I try to explain the motives behind the advertisement	174	99.4% Missing due to recoding=0.6% Overall missing=0.6%	177	98.8% Missing due to recoding=1.1% Overall missing=1.1%	351	99.1% Missing due to recoding=0.8% Overall missing=0.8%
I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	167	95.4% Missing due to recoding=4.6% Overall missing=4.6%	165	91.2% Missing due to recoding=7.8% Overall missing=7.8%	332	93.7% Missing due to recoding=6.2% Overall missing=6.2%
I try to help my child understand what s/he sees on TV	174	99.4% Missing due to recoding=0.6% Overall missing=1.1%	178	99.4% Missing due to recoding=0.6% Overall missing=1.1%	352	99.4% Missing due to recoding=0.6% Overall missing=1.1%
I try to help my child understand the difference between advertisements and programs	170	97.1% Missing due to recoding=2.9% Overall missing=2.9%	173	96.6% Missing due to recoding=3.4% Overall missing=3.4%	343	96.8% Missing due to recoding=3.1% Overall missing=3.1%

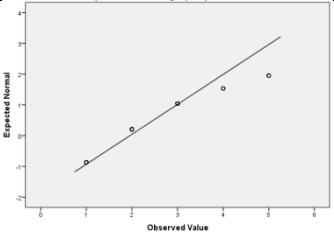
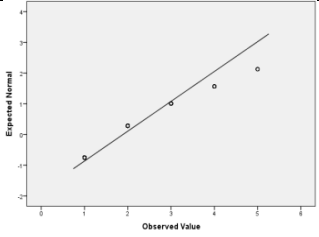
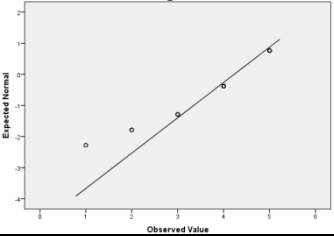
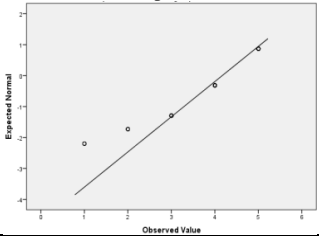
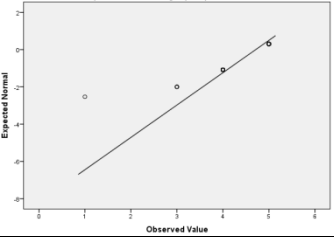
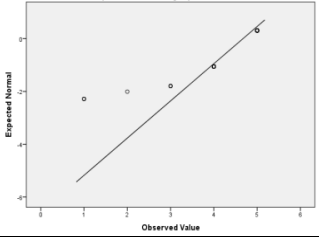
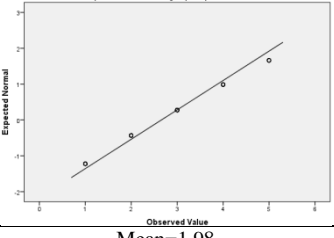
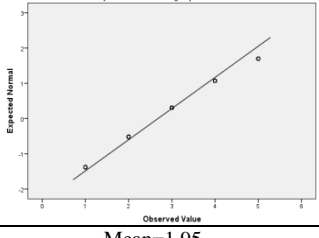
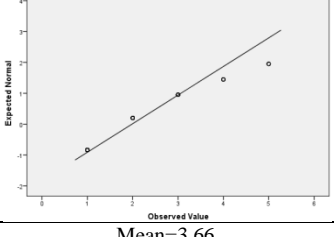
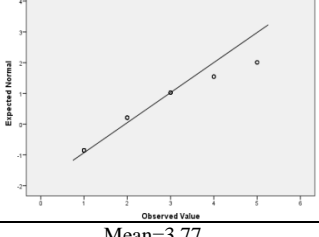


Appendix 50: Preliminary Analysis of Advertising Literacy Items

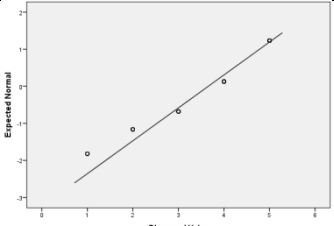
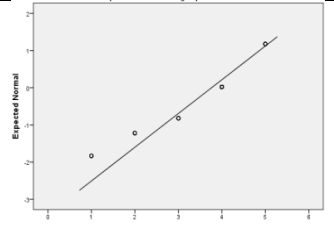
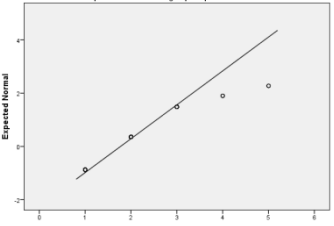
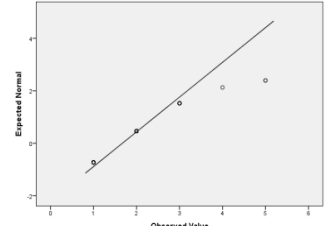
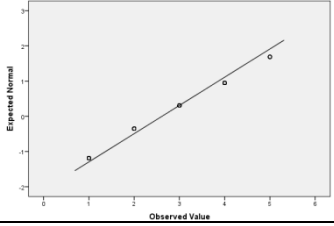
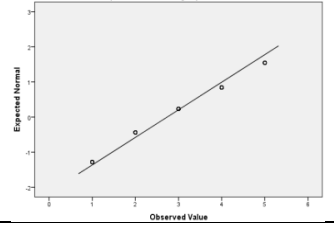
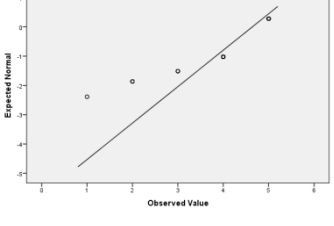
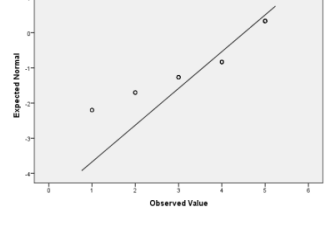
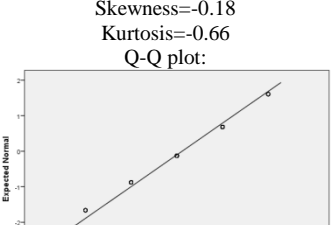
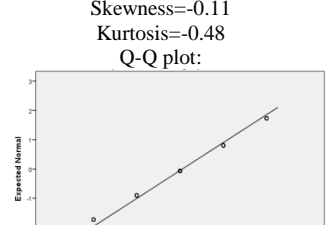
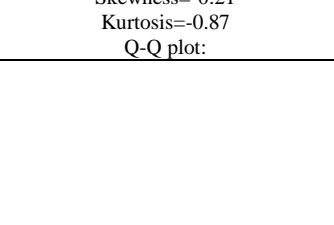
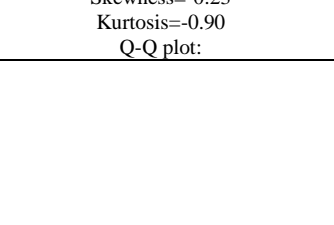
Variables:		Mean		Median		Mode		Standard deviation		Skewness		Kurtosis		N
		Original item	Aggregate variable	Original item	Aggregate variable	Original item	Aggregate variable	Original item	Aggregate variable	Original item	Aggregate variable	Original item	Aggregate variable	
Experimental group:														
Oreo advertisement	It wants people to buy this food	4.19		5		5		1.30		-1.83		2.77		175
	It tries to make you like this food	3.96		4		5		1.39		-1.44		1.32		175
	It wants you to think that having this food will make you feel good	3.58	16.53	4	17.80	5	21	1.57	4.93	-0.98	-1.44	-0.11	2.08	175
	It wants to grab your attention	4		5		5		1.39		-1.55		1.64		175
	It tries to make you want this product	4.01		5		5		1.46		-1.54		1.64		175
Control group:														
Oreo advertisement	It wants people to buy this food	4.24		5		5		1.19		-1.78		2.82		178
	It tries to make you like this food	3.91		5		5		1.38		-1.16		0.45		178
	It wants you to think that having this food will make you feel good	3.45	16.36	4	17	5	21	1.66	4.93	-0.71	-1.18	-0.81	1.37	178
	It wants to grab your attention	3.95		5		5		1.47		-1.25		0.43		178
	It tries to make you want this product	4.06		5		5		1.44		-1.46		1.11		178
Experimental and control groups														
Special deal	It wants people to buy this food	4.20		5		5		1.39		-1.82		2.28		353
	It tries to make you like this food	3.54		4		5		1.58		-0.83		-0.43		353
	It wants you to think that having this food will make you feel good	3.38	15.85	4	17	5	21	1.60	5.06	-0.59	-1.19	-0.86	1.18	354
	It wants to grab your attention with a special offer	3.94		5		5		1.61		-1.40		0.64		354
	It tries to make you want this product	3.94		5		5		1.60		-1.39		0.63		354
New product/charac	It wants people to buy this food because it is new	4.08		5		5		1.30		-1.47		1.52		353
	It tries to make you like the food	3.87		4		5		1.42		-1.25		0.73		351
	It wants people to buy this food because of teddy	2.74	18.16	3	18.83	5	25.83	1.70	5.83	-0.05	-0.77	-1.31	.042	352
	It wants you to think that having this food will make you feel good	3.35		4		5		1.63		-0.63		-0.85		353
	It wants to grab your attention with a new offer and a teddy	3.44		4		5		1.73		-0.75		-0.83		353
It tries to make you want this product	3.97		5		5		1.56		-1.52		1.13		353	

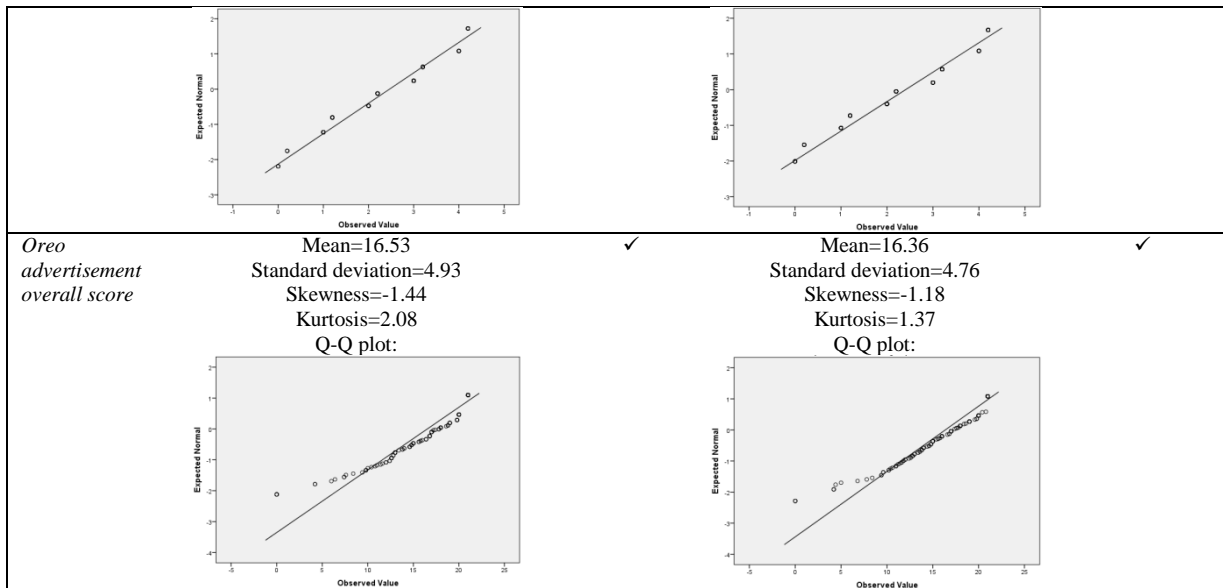
Appendix 51: Assessment of Data Normality

A. Children's data

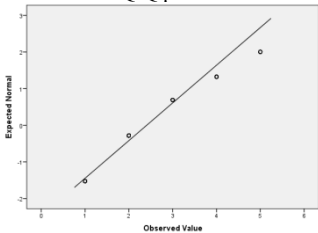
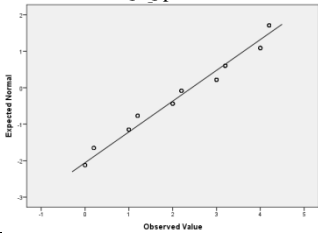
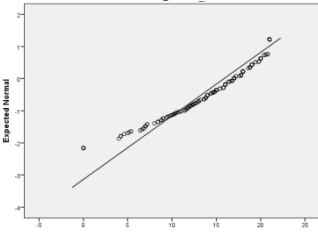
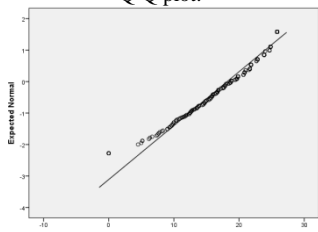
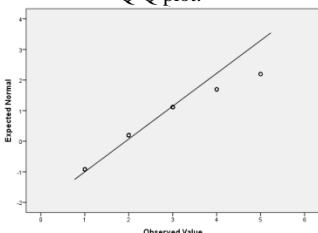
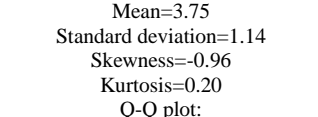
Variables:	Experimental group	Acceptable distribution	Control group	Acceptable distribution
Variables for Oreo (branded food) and apple (non-branded food) SEMs				
<i>How much would you like to eat Oreo for your lunch tomorrow?</i>	Mean=3.43 Standard deviation=1.16 Skewness=-0.59 Kurtosis=-0.43 Q-Q plot: 	✓	Mean=3.52 Standard deviation=1.19 Skewness=-0.63 Kurtosis=-0.30 Q-Q plot: 	✓
<i>How much would you like to eat an apple for your lunch tomorrow?</i>	Mean=3.96 Standard deviation=0.91 Skewness=-0.84 Kurtosis=0.71 Q-Q plot: 	✓	Mean=4.00 Standard deviation=0.93 Skewness=-0.93 Kurtosis=0.75 Q-Q plot: 	✓
<i>Friends' preferences: Oreo</i>	Mean=3.67 Standard deviation=1.01 Skewness=-0.60 Kurtosis=-0.10 Q-Q plot: 	✓	Mean=3.87 Standard deviation=1.09 Skewness=-0.89 Kurtosis=0.27 Q-Q plot: 	✓
<i>Friends' preferences: an apple</i>	Mean=3.71 Standard deviation=1.07 Skewness=-0.57 Kurtosis=-0.39 Q-Q plot: 	✓	Mean=3.61 Standard deviation=1.11 Skewness=-0.53 Kurtosis=-0.44 Q-Q plot: 	✓
<i>Do you think this food is funny? (Apple)</i>	Mean=1.95 Standard deviation=1.03 Skewness=1.28 Kurtosis=1.54 Q-Q plot: 	X <i>Recoding:</i> 1 → 1 ("No") 2 → 2 ("Not at all") 3 → 3 ("Not sure") 4 → 4 ("Yes") 5 → 4 See section C of this appendix	Mean=1.89 Standard deviation=1.03 Skewness=1.17 Kurtosis=0.88 Q-Q plot: 	✓

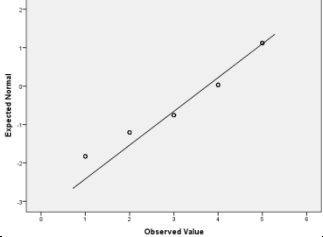
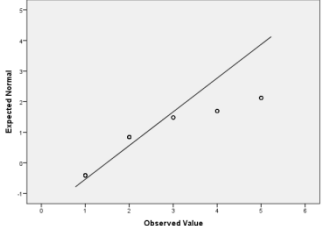
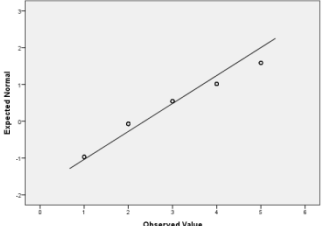
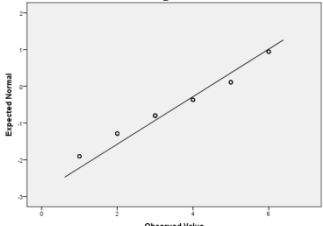
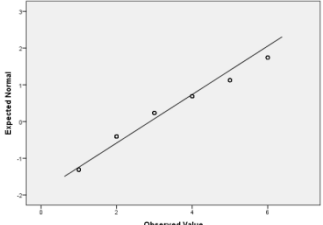
		for more detail		
<i>Do you think this food is tasty? (Apple)</i>	Mean=4.23 Standard deviation=0.88 Skewness=-1.38 Kurtosis=2.27 Q-Q plot: 	X Recoding: 1 → 1 2 → 1 ("No") 3 → 1 4 → 2 ("Yes") 5 → 3 ("Definitely") See section C of this appendix for more detail	Mean=4.17 Standard deviation=0.88 Skewness=-1.44 Kurtosis=2.75 Q-Q plot: 	X Recoding: 1 → 1 2 → 1 ("No") 3 → 1 4 → 2 ("Yes") 5 → 3 ("Definitely") See section C of this appendix for more detail
<i>Do you think this food is healthy? (Apple)</i>	Mean=4.71 Standard deviation=0.58 Skewness=-2.63 Kurtosis=10.13 Q-Q plot: 	X Recoding: 1 → 1 2 → 1 ("No") 3 → 1 4 → 2 ("Yes") 5 → 3 ("Definitely") See section C of this appendix for more detail	Mean=4.67 Standard deviation=0.71 Skewness=-3.08 Kurtosis=11.66 Q-Q plot: 	X Recoding: 1 → 1 2 → 1 ("No") 3 → 1 4 → 2 ("Yes") 5 → 3 ("Definitely") See section C of this appendix for more detail
<i>Do you think this food could make you popular with other children? (Apple)</i>	Mean=2.66 Standard deviation=1.22 Skewness=0.26 Kurtosis=-0.76 Q-Q plot: 	✓	Mean=2.68 Standard deviation=1.13 Skewness=0.33 Kurtosis=-0.42 Q-Q plot: 	✓
<i>Do you think this food is funny? (Oreo)</i>	Mean=1.98 Standard deviation=1.08 Skewness=1.17 Kurtosis=0.90 Q-Q plot: 	✓	Mean=1.95 Standard deviation=1.02 Skewness=1.21 Kurtosis=1.28 Q-Q plot: 	✓
<i>Do you think this food is tasty? (Oreo)</i>	Mean=3.66 Standard deviation=1.13 Skewness=-0.86 Kurtosis=0.01 Q-Q plot: 	✓	Mean=3.77 Standard deviation=1.21 Skewness=-1.08 Kurtosis=0.54 Q-Q plot: 	✓

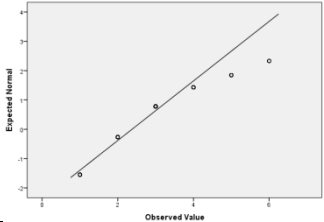
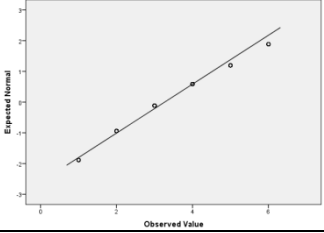
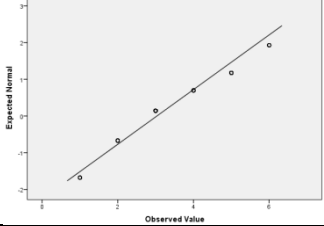
				
<i>Do you think this food is healthy? (Oreo)</i>	<p>Mean=1.77 Standard deviation=0.79 Skewness=1.52 Kurtosis=4.00 Q-Q plot:</p> 	X	<p>Mean=1.67 Standard deviation=0.75 Skewness=1.34 Kurtosis=3.07 Q-Q plot:</p> 	X
		<p>Recoding: 1 → 1 ("No") 2 → 2 ("Not at all") 3 → 3 ("Not sure") 4 → 4 ("Yes") 5 → 4</p> <p>See section C of this appendix for more detail</p>		<p>Recoding: 1 → 1 ("No") 2 → 2 ("Not at all") 3 → 3 ("Not sure") 4 → 4 ("Yes") 5 → 4</p> <p>See section C of this appendix for more detail</p>
<i>Do you think this food could make you popular with other children? (Oreo)</i>	<p>Mean=2.61 Standard deviation=1.25 Skewness=0.31 Kurtosis=-0.90 Q-Q plot:</p> 	✓	<p>Mean=2.74 Standard deviation=1.27 Skewness=-0.27 Kurtosis=-0.94 Q-Q plot:</p> 	✓
<i>Social acceptability: an apple</i>	<p>Mean=4.64 Standard deviation=0.80 Skewness=-2.62 Kurtosis=6.83 Q-Q plot:</p> 	X	<p>Mean=4.51 Standard deviation=0.96 Skewness=-2.09 Kurtosis=3.71 Q-Q plot:</p> 	X
		<p>Recoding: 1 → 1 2 → 1 ("low acceptability") 3 → 1 4 → 1 5 → 0 ("high acceptability") (reference category for the dummy variable)</p> <p>See section C of this appendix for more detail</p>		<p>Recoding: 1 → 1 2 → 1 ("low acceptability") 3 → 1 4 → 1 5 → 0 ("high acceptability") (reference category for the dummy variable)</p> <p>See section C of this appendix for more detail</p>
<i>Social acceptability: Oreo</i>	<p>Mean=3.11 Standard deviation=1.12 Skewness=-0.18 Kurtosis=-0.66 Q-Q plot:</p> 	✓	<p>Mean=3.06 Standard deviation=1.05 Skewness=-0.11 Kurtosis=-0.48 Q-Q plot:</p> 	✓
<i>Children's nutritional knowledge</i>	<p>Mean=2.46 Standard deviation=1.16 Skewness=-0.21 Kurtosis=-0.87 Q-Q plot:</p> 	✓	<p>Mean=2.41 Standard deviation=1.21 Skewness=-0.23 Kurtosis=-0.90 Q-Q plot:</p> 	✓



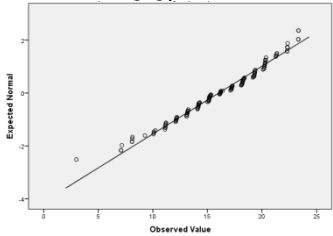
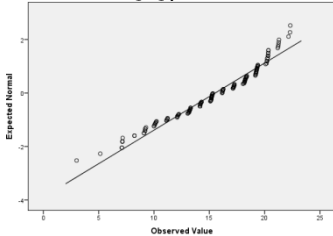
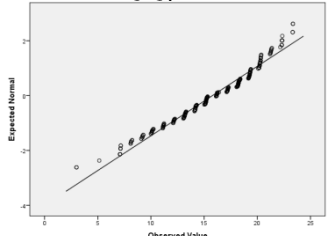
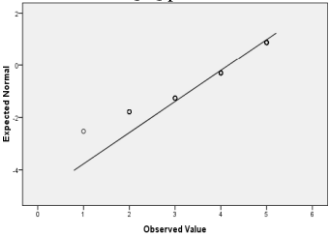
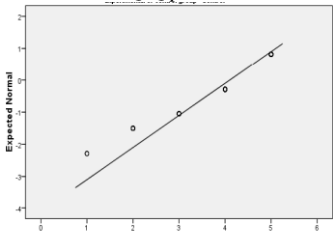
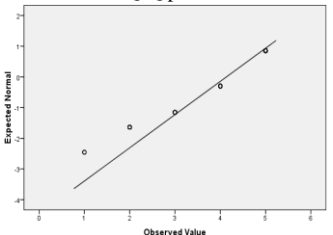
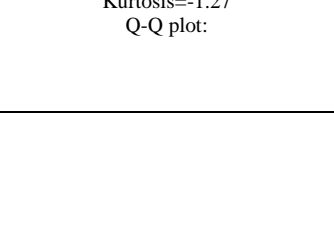
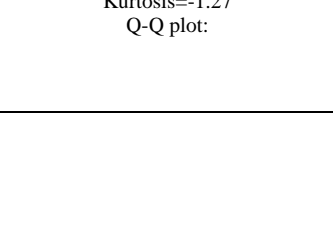
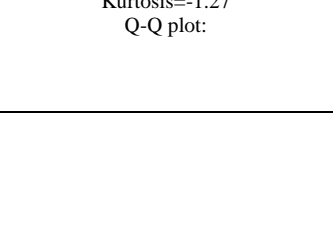
Variables:	Experimental and control groups	Acceptable distribution
Variables for Less Healthy Non-Branded Foods SEM		
<i>Friends' preferences: sausage and bread</i>	<p>Mean=2.86 Standard deviation=1.10 Skewness=-0.13 Kurtosis=-0.75 Q-Q plot:</p>	✓
<i>Friends' preferences: French fries</i>	<p>Mean=3.69 Standard deviation=1.23 Skewness=-0.70 Kurtosis=-0.49 Q-Q plot:</p>	✓
<i>Friends' preferences: burger, French fries and soft drink</i>	<p>Mean=3.31 Standard deviation=1.38 Skewness=-0.28 Kurtosis=-1.18 Q-Q plot:</p>	✓
<i>Social acceptability: burger, French fries, and soft drink</i>	<p>Mean=2.41 Standard deviation=0.97 Skewness=0.88 Kurtosis=0.45</p>	✓

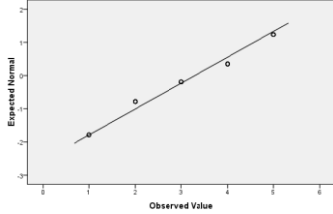
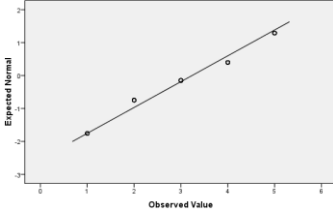
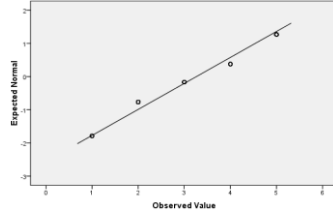
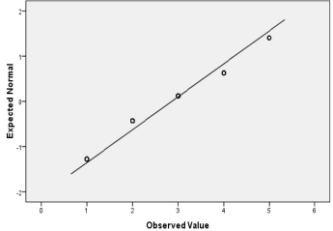
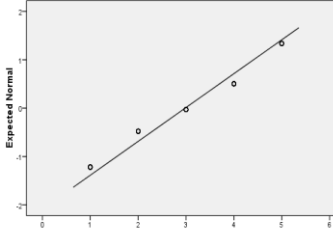
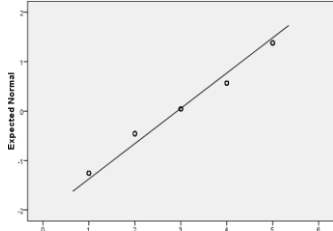
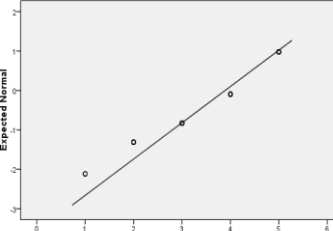
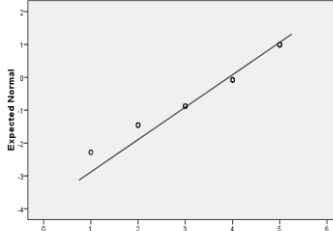
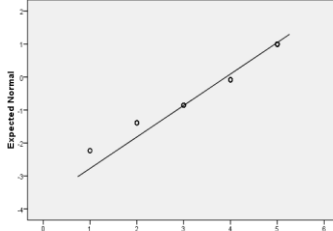
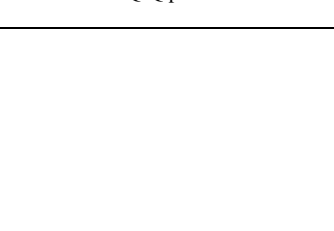
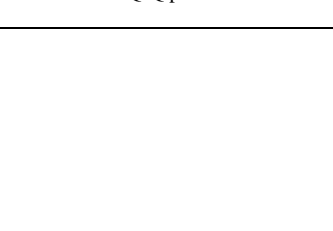
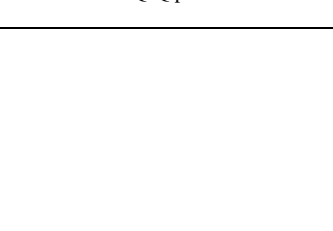
		<p>Q-Q plot:</p> 	
<i>Children's knowledge</i>	<i>nutritional</i>	<p>Mean=2.43 Standard deviation=1.18 Skewness=-0.22 Kurtosis=-0.88 Q-Q plot:</p> 	✓
<i>Special deal advertisement overall score</i>		<p>Mean=15.85 Standard deviation=5.05 Skewness=-1.19 Kurtosis=1.18 Q-Q plot:</p> 	✓
<i>New product/ character advertisement overall score</i>		<p>Mean=18.16 Standard deviation=5.83 Skewness=-0.77 Kurtosis=0.42 Q-Q plot:</p> 	✓
<i>Do you think this food is funny? (burger, French fries, and soft drink)</i>		<p>Mean=1.93 Standard deviation=0.93 Skewness=1.17 Kurtosis=1.54 Q-Q plot:</p> 	<p>X</p> <p>Recoding: 1 →1 ("No") 2 →2 ("Not at all") 3 →3 ("Not sure") 4 →4 ("Yes") 5 →4</p> <p>See section C of this appendix for more detail</p>
<i>Do you think this food is tasty? (burger, French fries, and soft drink)</i>		<p>Mean=3.75 Standard deviation=1.14 Skewness=-0.96 Kurtosis=0.20 Q-Q plot:</p> 	✓

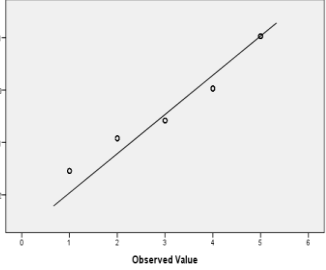
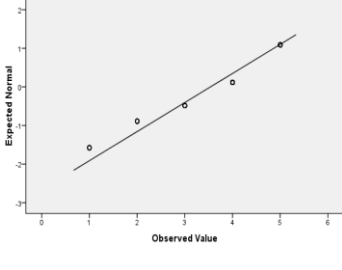
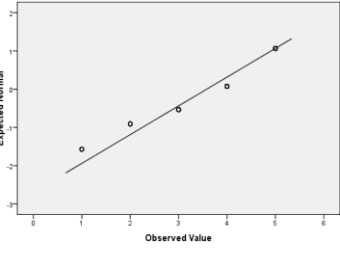
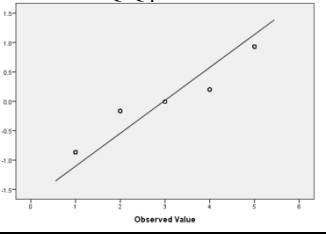
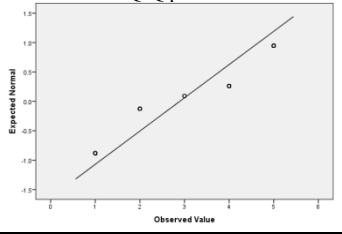
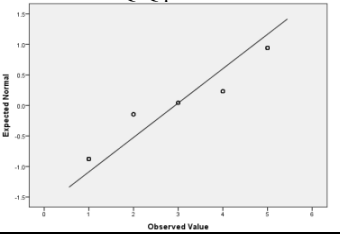
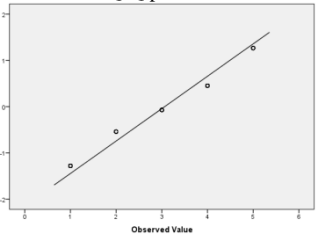
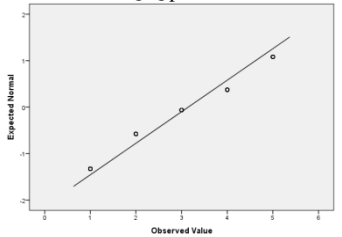
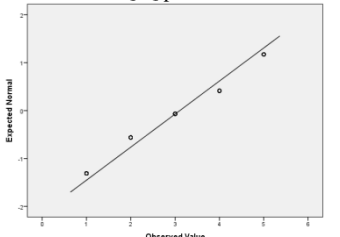
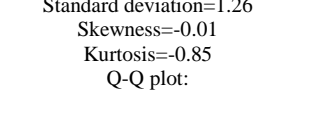
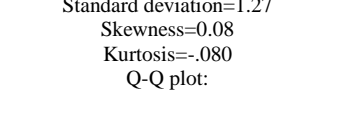
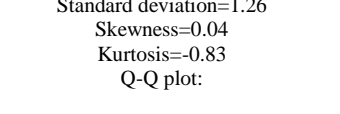
		
<p><i>Do you think this food is healthy? (burger, French fries, and soft drink)</i></p>	<p>Mean=1.49 Standard deviation=0.91 Skewness=2.41 Kurtosis=5.91 Q-Q plot:</p> 	<p style="text-align: right;">X</p> <p>Recoding: 1 → 1 ("No") 2 → 2 ("Not at all") 3 → 3 ("Not sure") 4 → 4 ("Yes") 5 → 4</p> <p>See section C of this appendix for more detail</p>
<p><i>Do you think this food could make you popular with other children? (burger, French fries, and soft drink)</i></p>	<p>Mean=2.36 Standard deviation=1.32 Skewness=0.70 Kurtosis=-0.61 Q-Q plot:</p> 	<p style="text-align: right;">✓</p>
<p><i>I see advertising for treats, lollies, soft drink or fast food</i></p>	<p>Mean=4.44 Standard deviation=1.55 Skewness=-0.69 Kurtosis=-0.65 Q-Q plot:</p> 	<p style="text-align: right;">✓</p>
<p><i>Our local fast food restaurants have special deals, like family packs and meal deals</i></p>	<p>Mean=2.89 Standard deviation=1.51 Skewness=0.59 Kurtosis=-0.66 Q-Q plot:</p> 	<p style="text-align: right;">X</p> <p>Recoding: 1 → 1 ("Never") 2 → 2 ("Once a month") 3 → 3 ("Once a week") 4 → 4 5 → 4 ("Twice a week or more")</p>
<p><i>How often do you eat fast food from restaurants such as McDonald's, KFC or Pizza Hut?</i></p>		

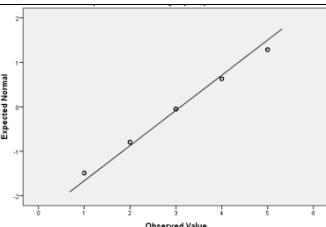
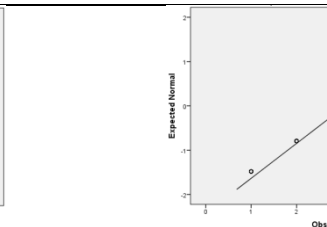
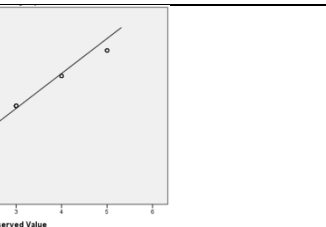
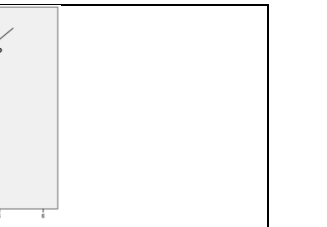
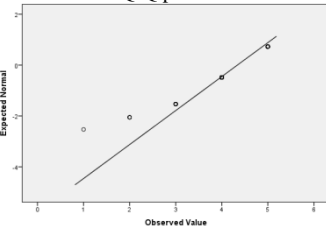
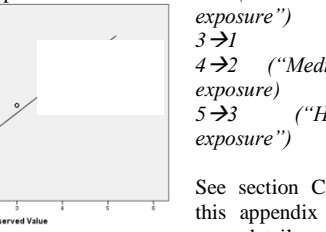
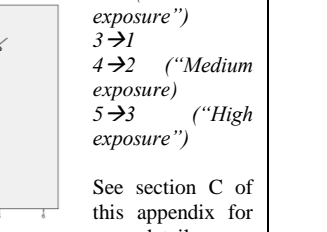
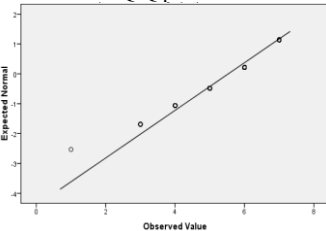
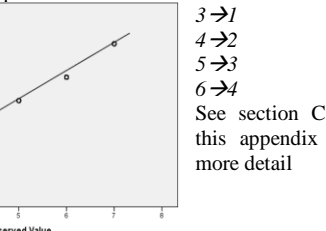
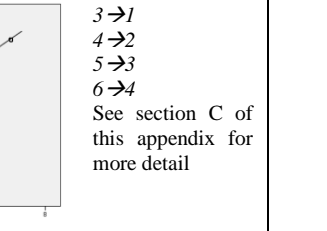
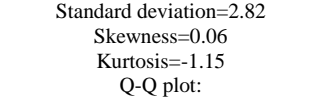


		<p>6 → 4</p> <p>See section C of this appendix for more detail</p>
<p><i>How often do you eat treats and lollies?</i></p>	<p>Mean=3.27 Standard deviation=1.26 Skewness=0.36 Kurtosis=-0.41 Q-Q plot:</p> 	<p>✓</p>
<p><i>How often do you have soft drink?</i></p>	<p>Mean=3.03 Standard deviation=1.34 Skewness=0.56 Kurtosis=-0.51 Q-Q plot:</p> 	<p>✓</p>

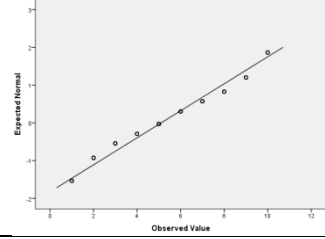
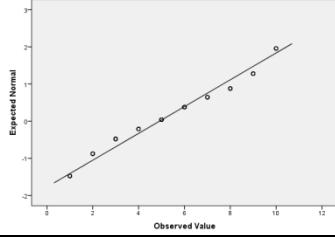
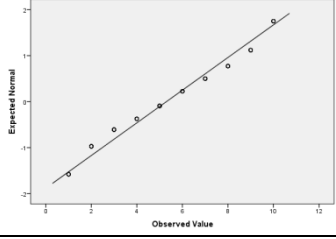
B. Parents' Data

	Variables for Oreo (branded food) and apple (non-branded food) SEMs		Variables for less healthy non-branded foods SEM			
Variables:	<i>Experimental group</i>	Acceptable distribution	<i>Control group</i>	Acceptable distribution	<i>Experimental and control groups</i>	Acceptable distribution
<i>Parents' nutritional knowledge</i>	Mean=16.04 Standard deviation=3.90 Skewness=-0.40 Kurtosis=-0.04 Q-Q plot: 	✓	Mean=15.53 Standard deviation=3.99 Skewness=-0.60 Kurtosis=-0.21 Q-Q plot: 	✓	Mean=15.78 Standard deviation=3.95 Skewness=-0.50 Kurtosis=-0.11 Q-Q plot: 	✓
<i>I try to explain to my child the difference between good foods and bad foods</i>	Mean=4.17 Standard deviation=0.84 Skewness=-1.16 Kurtosis=1.47 Q-Q plot: 	✓	Mean=4.10 Standard deviation=1.00 Skewness=-1.19 Kurtosis=0.85 Q-Q plot: 	✓	Mean=4.13 Standard deviation=0.92 Skewness=-1.20 Kurtosis=1.19 Q-Q plot: 	✓
<i>When my child sees a food advertisement I try to explain the motives behind the advertisement</i>	Mean=3.29 Standard deviation=1.28 Skewness=-0.15 Kurtosis=-1.27 Q-Q plot: 	✓	Mean=3.23 Standard deviation=1.27 Skewness=-0.10 Kurtosis=-1.27 Q-Q plot: 	✓	Mean=3.26 Standard deviation=1.28 Skewness=-0.13 Kurtosis=-1.27 Q-Q plot: 	✓

					
<p><i>I explain the motives behind food advertisements to my child even when s/he does not see many advertisements</i></p>	<p>Mean=2.86 Standard deviation=1.37 Skewness=0.15 Kurtosis=-1.26 Q-Q plot:</p> 	✓	<p>Mean=2.98 Standard deviation=1.43 Skewness=0.57 Kurtosis=-1.37 Q-Q plot:</p> 	✓	<p>Mean=2.92 Standard deviation=1.40 Skewness=0.05 Kurtosis=-1.33 Q-Q plot:</p> 
<p><i>I try to help my child understand what s/he sees on TV</i></p>	<p>Mean=3.89 Standard deviation=1.08 Skewness=-0.94 Kurtosis=0.08 Q-Q plot:</p> 	✓	<p>Mean=3.92 Standard deviation=1.01 Skewness=-0.87 Kurtosis=0.11 Q-Q plot:</p> 	✓	<p>Mean=3.90 Standard deviation=1.05 Skewness=-0.90 Kurtosis=0.10 Q-Q plot:</p> 
<p><i>I try to help my child understand the difference between advertisements</i></p>	<p>Mean=3.62 Standard deviation=1.34 Skewness=-0.79 Kurtosis=-0.61 Q-Q plot:</p> 	✓	<p>Mean=3.53 Standard deviation=1.33 Skewness=-0.64 Kurtosis=-0.82 Q-Q plot:</p> 	✓	<p>Mean=3.58 Standard deviation=1.33 Skewness=-0.71 Kurtosis=-0.73 Q-Q plot:</p> 

<p>and programs</p> 			
<p>Members of my family/ extended family eat fast food at least once per week</p>	<p>Mean=2.97 Standard deviation=1.78 Skewness=0.01 Kurtosis=-1.83 Q-Q plot:</p> 	<p>✓</p> <p>Mean=2.89 Standard deviation=1.77 Skewness=C Kurtosis=-1 Q-Q plot:</p> 	<p>✓</p> <p>Mean=2.93 Standard deviation=1.77 Skewness=0.07 Kurtosis=-1.81 Q-Q plot:</p> 
<p>My friends eat fast food at least once per week</p>	<p>Mean=3.06 Standard deviation=1.43 Skewness=-.10 Kurtosis=-1.34 Q-Q plot:</p> 	<p>✓</p> <p>Mean=3.15 Standard deviation=1.47 Skewness=-0.07 Kurtosis=-1.40 Q-Q plot:</p> 	<p>✓</p> <p>Mean=3.10 Standard deviation=1.45 Skewness=-0.08 Kurtosis=-1.36 Q-Q plot:</p> 
<p>People who live in my neighbourhood eat fast food at least once per week</p>	<p>Mean=3.10 Standard deviation=1.26 Skewness=-0.01 Kurtosis=-0.85 Q-Q plot:</p> 	<p>✓</p> <p>Mean=3.07 Standard deviation=1.27 Skewness=0.08 Kurtosis=-.080 Q-Q plot:</p> 	<p>✓</p> <p>Mean=3.09 Standard deviation=1.26 Skewness=0.04 Kurtosis=-0.83 Q-Q plot:</p> 

						
<p><i>On average, how often do you think you see snacks and fast foods advertised? (including TV, magazines, Internet or billboards) ?</i></p>	<p>Mean=4.34 Standard deviation=0.75 Skewness=-1.31 Kurtosis=2.58 Q-Q plot:</p> 	<p>X</p> <p>Recoding: 1 → 1 2 → 1 ("Low exposure") 3 → 1 4 → 2 ("Medium exposure") 5 → 3 ("High exposure")</p> <p>See section C of this appendix for more detail</p>	<p>Mean=4.37 Standard deviation=0.71 Skewness=-1.24 Kurtosis=2.63 Q-Q plot:</p> 	<p>X</p> <p>Recoding: 1 → 1 2 → 1 ("Low exposure") 3 → 1 4 → 2 ("Medium exposure") 5 → 3 ("High exposure")</p> <p>See section C of this appendix for more detail</p>	<p>Mean=4.35 Standard deviation=0.73 Skewness=-1.28 Kurtosis=2.57 Q-Q plot:</p> 	<p>X</p> <p>Recoding: 1 → 1 2 → 1 ("Low exposure") 3 → 1 4 → 2 ("Medium exposure") 5 → 3 ("High exposure")</p> <p>See section C of this appendix for more detail</p>
<p><i>Parents' education</i></p>	<p>Mean=5.53 Standard deviation=1.25 Skewness=-0.72 Kurtosis=0.04 Q-Q plot:</p> 	<p>X</p> <p>Recoding: 1 → 1 2 → 1 3 → 1 4 → 2 5 → 3 6 → 4</p> <p>See section C of this appendix for more detail</p>	<p>Mean=5.43 Standard deviation=1.30 Skewness=-0.49 Kurtosis=-0.88 Q-Q plot:</p> 	<p>X</p> <p>Recoding: 1 → 1 2 → 1 3 → 1 4 → 2 5 → 3 6 → 4</p> <p>See section C of this appendix for more detail</p>	<p>Mean=5.48 Standard deviation=1.28 Skewness=-0.59 Kurtosis=-0.48 Q-Q plot:</p> 	<p>X</p> <p>Recoding: 1 → 1 2 → 1 3 → 1 4 → 2 5 → 3 6 → 4</p> <p>See section C of this appendix for more detail</p>
<p><i>Socio-economic status (Index of Education and Occupation)</i></p>	<p>Mean=5.30 Standard deviation=2.82 Skewness=0.06 Kurtosis=-1.15 Q-Q plot:</p> 	<p>✓</p>	<p>Mean=4.91 Standard deviation=2.77 Skewness=0.20 Kurtosis=-1.12 Q-Q plot:</p> 	<p>✓</p>	<p>Mean=5.10 Standard deviation=2.79 Skewness=0.13 Kurtosis=-1.15 Q-Q plot:</p> 	<p>✓</p>



C. Frequencies for Recoded Variables

Variables:	Variables for Oreo (branded food) and apple (non-branded food) SEMs				Variables for less healthy non-branded foods SEM	
	Experimental group (N=175)		Control group (N=179)		Experimental and control groups (N=354)	
	N	Valid percent	N	Valid percent	N	Valid percent
Children's data						
Do you think this food is funny? (Apple):						
1 ("No")	67	38.3%	80	44.9%	-	-
2 ("Not at all")	70	40%	58	32.6%	-	-
3 ("Not sure")	25	14.3%	25	14%	-	-
4 ("Yes")	13	7.4%	15	8.4%	-	-
Total	175	100%	178	100%	-	-
Do you think this food is tasty? (Apple):						
1 ("No")	25	14.3%	24	13.5%	-	-
2 ("Yes")	73	41.7%	86	48.3%	-	-
3 ("Definitely")	77	44%	68	38.2%	-	-
Total	175	100%	178	100%	-	-
Do you think this food is healthy? (Apple):						
1 ("No")	6	3.4%	8	4.5%	-	-
2 ("Yes")	36	20.6%	35	19.7%	-	-
3 ("Definitely")	133	76%	135	75.8%	-	-
Total	175	100%	178	100%	-	-
Do you think this food is healthy? (Oreo):						
1 ("No")	66	37.9%	83	46.4%	-	-
2 ("Not at all")	91	52.3%	77	43%	-	-
3 ("Not sure")	11	6.3%	16	8.9%	-	-
4 ("Yes")	6	3.4%	3	1.7%	-	-
Total	174	100%	179	100%	-	-
Social acceptability (Apple):						
1 ("low acceptability")	39	22.3%	47	26.3%	86	24.4%
0 ("high acceptability") reference category	136	77.7%	132	73.7%	268	75.7%
Total	175	100%	179	100%	354	100%
Social acceptability (Bread and vegetables):						
1 ("low acceptability")	-	-	-	-	125	35.4%
0 ("high acceptability") reference category	-	-	-	-	228	64.6%
Total	-	-	-	-	353	100%
Social acceptability (Broccoli):						
1 ("low acceptability")	-	-	-	-	140	39.7%
0 ("high acceptability") reference category	-	-	-	-	213	60.3%
Total	-	-	-	-	353	100%
Do you think this food is funny? (burger, French fries, and soft drink) :						
1 ("No")	-	-	-	-	126	35.6%
2 ("Not at all")	-	-	-	-	157	44.4%
3 ("Not sure")	-	-	-	-	49	13.8%
4 ("Yes")	-	-	-	-	22	6.2%
Total	-	-	-	-	354	100%
Do you think this food is healthy? (burger, French fries, and soft drink) :						
1 ("No")	-	-	-	-	241	68.1%
2 ("Not at all")	-	-	-	-	85	24%
3 ("Not sure")	-	-	-	-	8	2.3%
4 ("Yes")	-	-	-	-	20	5.6%
Total	-	-	-	-	354	100%
How often do you eat fast food from restaurants such as McDonald's, KFC or Pizza Hut?						
1 ("Never")	-	-	-	-	42	11.9%
2 ("Once a month")	-	-	-	-	195	55.2%
3 ("Once a week")	-	-	-	-	79	22.4%
4 ("Twice a week or more")	-	-	-	-	37	10.5%
Total	-	-	-	-	353	100%
Parents' data						
Fast food is bad/good:						
1 ("Bad")	-	-	89	49.7%	-	-
2 ("Less bad")	-	-	66	36.9%	-	-
3 ("Good")	-	-	24	13.4%	-	-
Total	-	-	179	100%	-	-
Fast food is inconvenient/convenient:						
1 ("Bad")	--	--	28	15.6%	60	16.9%
2 ("Less bad")	-	-	57	31.8%	117	33.1%

3 ("Good")	-	-	94	52.5%	177	50%
Total	-	-	179	100%	354	100%
Education:						
Primary/secondary school	36	20.6%	46	25.7%	82	23.2%
Some tertiary education (university, TAFE, or college)	38	21.7%	33	18.4%	71	20.1%
Finished tertiary education	57	32.6%	57	31.8%	114	32.2%
Higher degree or higher diploma	44	25.1%	43	24.0%	87	24.6%
Total	175	100%	179	100%	354	100%
Exposure to fast food advertising						
Low exposure	16	9.2%	15	8.5%	31	8.9%
Medium exposure	77	44.3%	78	44.3%	155	44.3%
High exposure	81	46.6%	83	47.2%	164	46.9%
Total	174	100%	176	100%	350	100%

Notes:

Due to some missing data only valid percentages are reported in the table.

Appendix 52: Detailed Descriptive Statistics

A) Variables for Oreo (Branded Food) and Apple (Non-Branded Food) SEMs

Variables:	Experimental group (N=175)								Control group (N=179)							
	7 to10 years				11 to 13 years				7 to10 years				11 to 13 years			
	Females (N=48) ²		Males (N=43) ²		Females (N=42) ²		Males (N=42) ²		Females (N=52) ²		Males (N=44) ²		Females (N=48) ²		Males (N=35) ²	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Preference for Oreo	3.33	1.21	3.46	1.08	3.26	1.27	3.69	1.07	3.33	1.25	3.36	1.28	3.81	1.06	3.60	1.12
Preference for apple ¹	2.08	0.77	1.93	0.74	2.19	0.77	1.95	0.70	2.25	0.78	2.09	0.67	1.87	0.76	2.14	0.69
Friends' preference:																
Oreo	3.67	1	3.56	0.96	3.74	1.23	3.71	0.86	3.69	1.16	3.70	1.15	4.15	0.92	3.94	1.06
Apple	3.73	1.16	3.53	1.18	4.00	0.88	3.60	0.90	3.62	1.19	3.75	1.12	3.52	1.03	3.57	1.11
Evaluations:																
Do you think Oreo is funny?	1.92	1.09	2.12	1.12	1.88	0.99	2.02	1.14	1.77	0.85	1.95	1.12	1.94	0.88	2.23	1.26
Do you think Oreo is tasty?	3.64	1.15	3.67	1.13	3.60	1.17	3.71	1.08	3.63	1.19	3.75	1.18	3.94	0.95	3.74	1.07
Do you think Oreo is healthy?	1.68 ¹	0.69 ¹	2.05 ¹	0.84 ¹	1.57 ¹	0.59 ¹	1.71 ¹	0.67 ¹	1.61 ¹	0.72 ¹	1.79 ¹	0.88 ¹	1.62 ¹	0.60 ¹	1.60 ¹	0.60 ¹
Do you think Oreo could make you popular with other children?	2.32	1.18	2.79	1.23	2.86	1.28	2.52	1.27	2.58	1.26	2.84	1.31	2.83	1.15	2.71	1.43
Do you think apple is funny?	1.81 ¹	0.82 ¹	1.95 ¹	1.04 ¹	1.90 ¹	0.82 ¹	1.97 ¹	0.95	1.67	0.83	2.02	1.34	1.88	0.87	2.06	1.05
Do you think apple is tasty?	2.29 ¹	0.71 ¹	2.19 ¹	0.76 ¹	2.52 ¹	0.67 ¹	2.19 ¹	0.63 ¹	2.35 ¹	0.68 ¹	2.30 ¹	0.67 ¹	2.04 ¹	0.71 ¹	2.31 ¹	0.58 ¹
Do you think apple is healthy?	2.75 ¹	0.44 ¹	2.70 ¹	0.60 ¹	2.78 ¹	0.51 ¹	2.67 ¹	0.52 ¹	2.63 ¹	0.56 ¹	2.70 ¹	0.64 ¹	2.81 ¹	0.44 ¹	2.71 ¹	0.52 ¹
Do you think apple could make you popular with other children?	2.48	1.29	2.74	1.33	2.74	1.11	2.69	1.16	2.75	1.13	3.05	1.29	2.44	0.94	2.46	1.07
Social acceptability: ³																
Oreo	3.10	1.28	3.23	1.11	3.05	1.08	3.07	1.00	2.92	1.03	2.86	1.23	3.35	0.91	3.09	0.95
Advertising literacy:																
Special deal	14.99	6.48	15.17	4.75	16.39	4.49	16.33	4.53	14.47	6.00	15.31	5.39	17.04	3.37	17.74	3.57
New product/character	17.41	6.65	18.06	5.95	19.23	5.66	18.04	6.05	16.34	6.85	18.65	5.59	18.91	4.42	19.31	4.29
Toys sale	15.82	6.44	16.71	3.77	17.69	3.92	16.34	4.56	15.98	4.77	15.90	5.53	16.97	4.13	17.41	3.55
Oreo	15.74	6.45	16.66	4.26	17.28	3.96	16.55	4.46	15.67	4.87	15.46	5.60	17.49	3.72	16.94	4.50
Nutritional knowledge	2.30	1.08	2.12	1.15	3	1.08	2.45	1.16	2.13	1.40	1.77	1.06	2.89	0.95	2.95	0.91

Notes:

¹ – Descriptive statistics are reported for transformed variables. For more information see Appendix 51.

² – For missing values see Appendix 45.

³ – The descriptive for dichotomised variables are available in Appendix 51C.

B) Variables for Less Healthy Non-Branded Foods SEM

Variables:	<i>Experimental and control groups (N=354)</i>							
	7 to 10 years				11 to 13 years			
	Females (N=100 ²)		Males (N=86 ²)		Females (N=90 ²)		Males (N=77 ²)	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Consumption of less healthy non-branded foods								
How often do you eat fast food from restaurants such as McDonald's/KFC/Pizza Hut?	2.43 ¹	1 ¹	2.62 ¹	1.50 ¹	2.10 ¹	0.73 ¹	2.36 ¹	0.94 ¹
How often do you eat treats and lollies?	3.17	1.31	3.52	1.31	3.23	1.25	3.14	1.10
How often do you have soft drink?	3.03	1.37	3.22	1.43	2.82	1.34	3.08	1.18
Friends' preference:								
Sausage and bread	2.60	1.03	3.10	1.16	2.64	1	3.17	1.12
French fries	3.64	1.30	3.75	1.25	3.61	1.16	3.78	1.22
Burger, French fries, and soft drink	3.04	1.41	3.36	1.49	3.27	1.25	3.68	1.30
Evaluations:								
Do you think burger, French fries, and soft drink is funny?	1.90 ¹	0.86 ¹	2.11 ¹	0.97 ¹	1.88 ¹	0.75 ¹	1.83 ¹	0.85 ¹
Do you think burger, French fries, and soft drink is tasty?	3.54	1.18	3.95	1.20	3.57	1.12	4.00	0.93
Do you think burger, French fries, and soft drink is healthy?	1.45 ¹	0.71 ¹	1.71 ¹	1.02 ¹	1.33 ¹	0.70 ¹	1.31 ¹	0.63 ¹
Do you think burger, French fries, and soft drink could make you popular with other children?	2.28	1.33	2.76	1.44	2.11	1.10	2.32	1.31
Social acceptability:³								
Pizza	2.57	0.92	2.66	0.97	2.43	0.70	2.45	0.73
Burger, French fries, and soft drink	2.38	1.01	2.61	1.02	2.33	0.97	2.30	0.84
Advertising literacy:								
Special deal	14.72	6.20	15.24	5.05	16.73	3.92	16.97	4.15
New product/character	16.65	6.74	18.35	5.75	19.06	5.02	18.61	5.32
Toys sale	15.90	5.61	16.31	4.72	17.31	4.03	16.83	4.14
Nutritional knowledge	2.22	1.25	1.95	1.11	2.94	1.01	2.68	1.07
Exposure to fast food advertising								
I see advertising for treats, lollies, soft drink or fast food	3.98	1.74	4.36	1.60	4.82	1.19	4.66	1.45
Our local fast food restaurants have special deals, like family packs and meal deals	2.64	1.48	3.19	1.63	2.81	1.53	2.96	1.36

Notes:

¹ – Descriptive statistics are reported for transformed variables. For more information see Appendix 51.

² – For missing values see Appendix 45.

³ – The descriptive for dichotomised variables are available in Appendix 51C.

Appendix 53: Children's Preferences for Oreo Biscuits (Model 1)

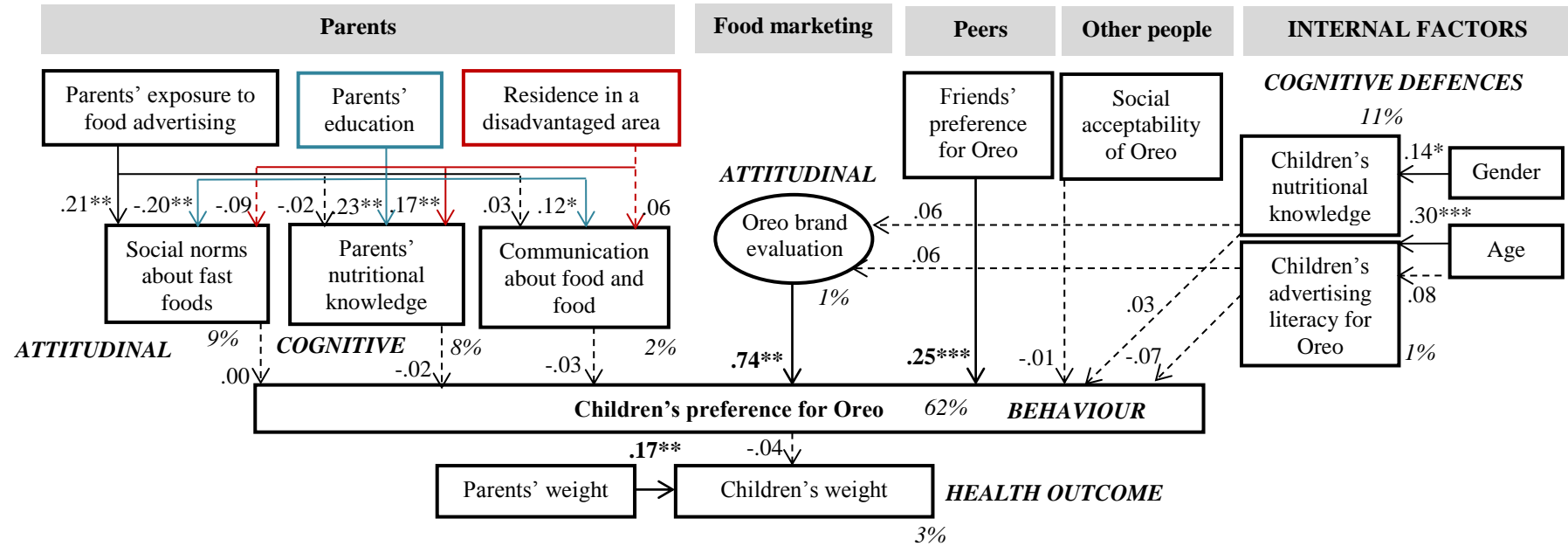
Structural model		Unstandardised regression weights	Standardised regression weights	t value	p
Parents' exposure to food advertising → parents' social norms about fast foods		.260	.208	2.306	.021
Parents' exposure to food advertising → parents' nutritional knowledge		-.140	-.023	-.313	.754
Parents' exposure to food advertising → communication about food and food advertising		.039	.032	.405	.686
Parents' education → parents' social norms about fast foods		-.150	-.200	-2.226	.026
Parents' education → parents' nutritional knowledge		.939	.233	3.111	.002
Parents' education → communication about food and food advertising		.088	.120	1.498	.134
Residing in a disadvantaged area → parents' social norms about fast foods		-.026	-.090	-1.027	.305
Residing in a disadvantaged area → parents' nutritional knowledge		.233	.169	2.259	.024
Residing in a disadvantaged area → communication about food and food advertising		.017	.059	.743	.458
Parents' social norms about fast foods → children's preference for Oreo (DV ₁)		.000	.000	-.003	.997
Parents' nutritional knowledge → children's preference for Oreo (DV ₁)		-.007	-.024	-.392	.695
Communication about food and food advertising → children's preference for Oreo (DV ₁)		-.046	-.033	-.517	.605
Children's Oreo brand evaluation → children's preference for Oreo (DV ₁)		4.394 ¹	.742	2.760	.006
Friends' preference for Oreo → children's preference for Oreo (DV ₁)		.268	.246	4.140	.000
Children's age → children's nutritional knowledge		.203	.303	4.233	.000
Children's age → children's advertising literacy for Oreo		.223	.078	1.030	.303
Children's gender → children's nutritional knowledge		.320	.139	1.940	.052
Children's nutritional knowledge → children's Oreo brand evaluation		.010	.063	.621	.534
Children's nutritional knowledge → children's preference for Oreo (DV ₁)		.024	.026	.377	.706
Children's advertising literacy for Oreo → children's Oreo brand evaluation		.002	.059	.581	.561
Children's advertising literacy for Oreo → children's preference for Oreo (DV ₁)		-.016	-.072	-1.065	.287
Children's preference for Oreo → children's weight (DV ₂)		-.018	-.044	-.565	.572
Parents' weight → children's weight (DV ₂)		.157	.173	2.205	.027
Social acceptability of Oreo → children's preference for Oreo (DV ₁)		-.014	-.014	-.232	.817
Measurement model					
Parents' social norms about fast foods	Members of my family/extended family eat fast food at least once per week	1.380	.624	5.614	.000
	My friends eat fast food at least once per week	1.288	.727	5.612	.000
	People who live in my neighbourhood eat fast food at least once per week	1.000 ¹	.638	--	--
Communication about food and food advertising	I try to help my child understand what s/he sees on TV	1.000 ¹	.727	--	--
	I try to help my child understand the difference between advertisements and programs	1.150	.680	11.004	.000
	I try to explain to my child the difference between good foods and bad foods	.427	.400	4.910	.000
	When my child sees a food advertisement I try to explain the motives behind the advertisement	1.477	.908	10.624	.000
	I explain the motives behind food advertisements to my child even when s/he does not see many advertisements	1.436	.826	10.174	.000
Children's Oreo brand evaluation	Do you think Oreo is funny?	1.196	.206	1.863	.062
	Do you think Oreo is tasty?	1.000 ¹	.258	--	--
	Do you think Oreo is healthy?	4.446	.735	2.798	.005
	Do you think Oreo is could make you popular with other children?	1.922	.287	2.235	.025

Notes:

¹ – Factor loading constrained to 1 to set the scale for the latent construct. Hence, the p was not calculated.

N=175

EXTERNAL FACTORS



Model fit:

χ^2	DF	χ^2/DF	p	CFI	NFI	TLI	RMSEA
398.381	262	1.521	.000	.817	.628	.773	.055

Legend:

- ← Significant path
- ←--- Non-significant path
- Exogenous latent constructs
- Manifest exogenous variables or manifest dependent variable

Notes:

- Standardised regressions weights are reported (β)
- *. Correlation is significant at the .06 level (2-tailed)
- **. Correlation is significant at the .05 level (2-tailed)
- ***. Correlation is significant at the .01 level (2-tailed)
- N=175

Appendix 54: Internal Validity Assessment of the Data

A) Children's Food Preferences by Weight

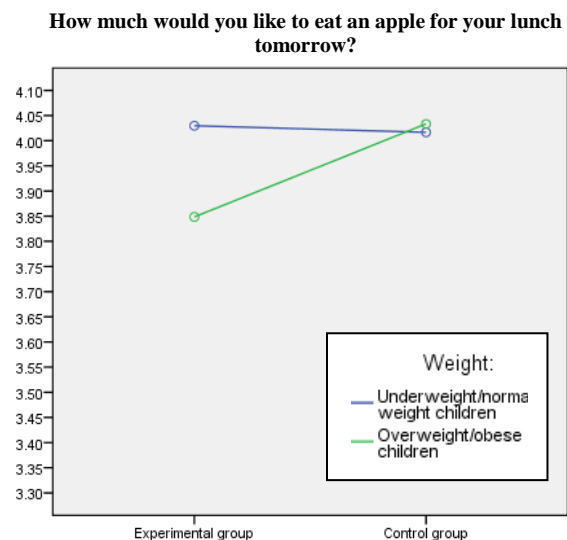
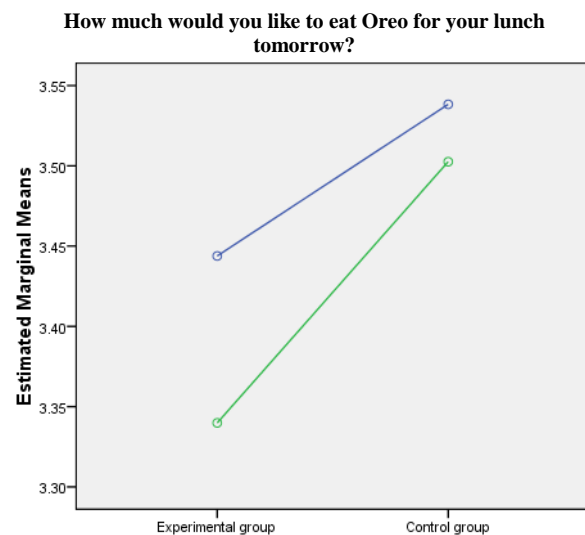
Results of Three-Way ANOVAs						
	Type III Sum of Squares	df	Mean Square	F	p	Effect size (Partial Eta Squared) ¹
How much would you like to eat Oreo for your lunch tomorrow?						
Corrected Model	13.866 ^a	7	1.981	1.468	.178	.031
Intercept	3207.94	1	3207.94	2377.543	.000	.881
Age (younger vs. older children)	2.146	1	2.146	1.59	.208	.005
Type of exposure (experimental vs. control group)	1.11	1	1.11	0.823	.365	.003
Weight (overweight/obese vs. underweight/normal weight)	0.328	1	0.328	0.243	.622	.001
Type of exposure*Age	2.146	1	2.146	1.591	.208	.005
Age*Weight	4.111	1	4.111	3.047	.082	.009
Type of exposure*Weight	0.078	1	0.078	0.058	.810	.000
Type of exposure*Weight*Age	0.099	1	0.099	0.073	.787	.000
Error	431.765	320	1.349			
Total	4387	328				
Corrected Total	445.631	327				
How much would you like to eat an apple for your lunch tomorrow?						
Corrected Model	3.800 ^b	7	.543	.658	.708	.014
Intercept	4258.503	1	4258.503	5158.154	.000	.942
Age (younger vs. older children)	.018	1	.018	.022	.882	.000
Type of exposure (experimental vs. control group)	.495	1	.495	.600	.439	.002
Weight (overweight/obese vs. underweight/normal weight)	.454	1	.454	.550	.459	.002
Type of exposure*Age	1.197	1	1.197	1.449	.230	.005
Age*Weight	.019	1	.019	.023	.879	.000
Type of exposure*Weight	.656	1	.656	.795	.373	.002
Type of exposure*Weight*Age	.296	1	.296	.359	.550	.001
Error	264.188	320	.826			
Total	5532.000	328				
Corrected Total	267.988	327				

Notes:

^a – R Squared=.03 (Adjusted R Squared=.010).

^b – R Squared=.01 (Adjusted R Squared=.007).

¹ – The coefficients around .01 indicate small effect size, that 1% of variance is explained by the independent variable. Coefficients equal to .06 (6%) designate medium effect size and .136 (13.6%) suggest large effect size (Cohen 1988).



B) Children's Self-Reported Consumption of Less Healthy Foods by Weight Status

Independent Samples T-Test for Variables Used in Model 4										
Variables:	Weight status	N	Mean	Std. Dev.	Std. Error Mean	Levene's Test for Equality of Variances ¹		t-test for Equality of Means		
						F	Sig.	t	df	p (2-tailed)
How often do you eat fast food from restaurants such as McDonald's, KFC or Pizza Hut? ¹	Overweigh t/obese	100	2.55	1.058	.106	9.467	.002	-2.211	163	.028
	Normal weight	227	2.28	.892	.059					
How often do you eat treats and lollies? ²	Overweigh t/obese	100	3.32	1.294	.129	.918	.339	-.823	325	.411
	Normal weight	227	3.20	1.205	.080					
How often do you have soft drink? ²	Overweigh t/obese	100	3.15	1.381	.138	.536	.464	-1.138	325	.256
	Normal weight	227	2.97	1.298	.086					

Notes:

¹ – Equal variance not assumed.

² – Equal variance assumed.

C) Correlations between Children's Self-Reported Consumption of Less Healthy Foods and Parents' Estimate of Their Children's Consumption of Fast Foods/Consumption of Fast Foods as a Family

Parents' data:		Children's data:		
		How often do you eat fast food from restaurants such as McDonald's, KFC or Pizza Hut? ²	How often do you eat treats and lollies? ²	How often do you have soft drink? ²
How often does your child/do your children who take part in our study eat fast foods (including take-away and fast food restaurants)? ¹	Experimental group	.386***	.176**	.175***
	Control group	.169**	.142*	.162**
	Combined sample	.320***	.160***	.254***
	Younger children (seven to 10 years) (Combined sample)	.169*	.119	.129
	Older children (11 to 13 years) (Combined sample)	.426**	.217**	.225**
How often do you eat fast food as a family? ¹	Experimental group	.428***	.194**	.261***
	Control group	.236***	.125	.248***
	Combined sample	.263***	.159***	.168***
	Younger children (seven to 10 years) (Combined sample)	.275**	.167*	.186*
	Older children (11 to 13 years) (Combined sample)	.366**	.135	.344**

Notes:

*. Correlation is significant at the .06 level (2-tailed).

**. Correlation is significant at the .05 level (2-tailed).

***. Correlation is significant at the .01 level (2-tailed).

¹ – Answer options: 1) "never;" 2) "less than once a week;" 3) "one or two times a week;" 4) "three or four times a week;" and 5) "more than four times a week."

² – Answer options: 1) "never;" 2) "once a month;" 3) "once a week;" 4) "twice a week;" 5) "once a day;" and 6) "twice a day."

Experimental group: N=175.

Control group: N=178.

Combined sample: N=353.

References:

- ABS. (2007). National Health Survey: User's guide 4363.0.55.001, Australian Bureau of Statistics, Canberra, pp. 4-162.
- ABS. (2008). Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia - Data only 2006. Australian Bureau of Statistics, Canberra. Retrieved from <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/2033.0.55.0012006?OpenDocument>.
- ABS. (2009a). Australian Social Trends, September 2009. Australian Bureau of Statistics, Canberra. Retrieved August 14, 2010 from <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Main+Features20Sep+2009#ENDNOTES>.
- ABS. (2009b). Children Who Are Overweight or Obese. National Health Survey: Summary of Results, 2007-2008. Australian Bureau of Statistics, Canberra. Retrieved August 13, 2010, from <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Main+Features20Sep+2009>.
- ABS. (2009c). National Health Survey: Summary of Results, 2007-2008. Table 17: Measured Body Mass Index-2007-08 and 1995. Australian Bureau of Statistics, Canberra. Retrieved from <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4364.02007-2008%20%28Reissue%29?OpenDocument>.
- Access Economics. (2008). The Cost of Obesity in 2008: Three Years on. Canberra.
- Aitken, R. J., Allman-Farinelli, M. A., King, L. A., and Bauman, A. E. (2009). Current and Future Costs of Cancer, Heart Disease and Stroke Attributable to Obesity in Australia – A Comparison of Two Birth Cohorts. *Asia Pacific Journal of Clinical Nutrition*, 18, 63–70.
- Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Ajzen, I. and Fishbein, M. (1980). *Understanding Attitudes and Predicting Social Behavior* London: Prentice-Hall International Inc.
- Allman-Farinelli, M., Chey, T., Bauman, A., Gill, T., and James, W. (2008). Age, Period and Birth Cohort Effects on Prevalence of Overweight and Obesity in Australian Adults from 1990 to 2000. *European Journal of Clinical Nutrition*, 62(7), 898-907.
- Allport, W. G. (1935). Attitudes. In C. Murchison (Ed.), *Handbook of Social Psychology* (pp. 798-845). Worcester, Mass: Clark University Press.

- Alrecht, T. L., Johnson, G. M., and Walther, J. B. (1993). Understanding Communication Processes in Focus Groups. In D. L. Morgan (Ed.), *Successful Focus Groups: Advancing the State of the Art* (pp. 51-64). Newbury Park, CA: Sage.
- Ambler, T. (2006). Does UK Promotion of Food and Drink to Children Contribute to Their Obesity? *International Journal of Advertising*, 25(2), 137-156.
- Ambrosini, G. L., Oddy, W. H., Robinson, M., O'Sullivan, T. A., Hands, B. P., de Klerk, N. H., Silburn, S. R., Zubrick, S. R., Kendall, G. E., Stanley, F. J., and Beilin, L. J. (2009). Adolescent Dietary Patterns are Associated with Lifestyle and Family Psycho-Social Factors. *Public Health Nutrition*, 12(10), 1807-1815.
- Andersen, L., Tufle, B., Rasmussen, J., and Chan, K. (2008). The Tweens Market and Responses to Advertising in Denmark and Hong Kong. *Young Consumers: Insights and Ideas for Responsible Marketers*, 9(3), 189-200.
- Andersen, R. E., Crespo, C. J., Bartlett, S. J., Cheskin, L. J., and Pratt, M. (1998). Relationship of Physical Activity and Television Watching with Body Weight and Level of Fatness among Children: Results from the Third National Health and Nutrition Examination Survey. *Journal of the American Medical Association*, 279(12), 938-942.
- Anderson, D. R. and Gerbing, D. W. (1988). Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach. *Psychological Bulletin*, 103, 311-423.
- Andreyeva, T., Kelly, I. R., and Harris, J. L. (2011). Exposure to Food Advertising on Television: Associations with Children's Fast Food and Soft Drink Consumption and Obesity. *Economics and Human Biology*, 9(3), 221-233.
- Austin, E. W. and Johnson, K. K. (1997). Immediate and Delayed Effects of Media Literacy Training on Third Grader's Decision Making for Alcohol. *Health Communication*, 9(4), 323-349.
- Axelson, M. L., Federline, T. L., and Brinberg, D. (1985). A Meta-Analysis of Food- and Nutrition-Related Research. *Journal of Nutrition Education*, 17(2), 51-54.
- Bachmann, G. R., John, D. R., and Rao, A. R. (1993). Children's Susceptibility to Peer Group Purchase Influence: An Exploratory Investigation. *Advances in Consumer Research*, 20, 463-468.
- Bagozzi, R. P. (1977). Structural Equation Models in Experimental Research. *Journal of Marketing Research*, 14(2), 209-226.
- Bagozzi, R. P., Gurhan-Canli, Z., and Priester, J. R. (2002). *The Social Psychology of Consumer Behaviour*. Buckingham: Philadelphia: Open University Press.
- Baker, W. C., Little, T., and Brownell, K. (2003). Predicting Adolescent Eating and Activity Behaviors: The Role of Social Norms and Personal Agency. *Health Psychology*, 22(2), 189-198.

- Banach, A., Wade, T. J., Cairney, J., Hay, J. A., Faight, B. E., and O'Leary, D. D. (2007). Comparison of Anthropometry and Parent-Reported Height and Weight among Nine Year Olds. *Canadian Journal of Public Health*, 98(4), 251-253.
- Bandini, L. G., Schoeller, D. A., Cyr, H. N., and Dietz, W. H. (1990). Validity of Reported Energy Intake in Obese and Nonobese Adolescents. *American Journal of Clinical Nutrition*, 52, 421-425.
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, N. J. : Prentice Hall.
- Bandura, A. (1986). *Social Foundations of Thought and Action: A Social Cognitive Theory*: Englewood Cliffs, N.J: Prentice-Hall.
- Bandura, A. (2002). Social Cognitive Theory of Mass Communication. In J. Bryant and D. Zillman (Eds.), *Media Effects: Advances in Theory and Research* (pp. 121-155). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Bandyopadhyay, S., Kindra, G., and Sharp, L. (2001). Is Television Advertising Food for Children? Areas of Concern and Policy Implications. *International Journal of Advertising*, 20(1), 89-116.
- Barrey, S., Baudrin, M., and Cochoy, F. (2012). From Fun Foods to Fun Stores. *Young Consumers: Insight and Ideas for Responsible Marketers*, 11(2), 138-147.
- Bartrina, J. A. and Perez-Rodrigo, C. (2006). Resources for a Healthy Diet: School Meals. *British Journal of Nutrition*, 96(1), S78-S81.
- Bassett, R., Chapman, G. E., and Beagan, B. L. (2008). Autonomy and Control: The Co-Construction of Adolescent Food Choice. *Appetite*, 50, 325-332.
- Bauer, K. W., Larson, N. I., Nelson, M. C., Story, M., and Neumark-Sztainer, D. (2009). Socioenvironmental, Personal and Behavioural Predictors of Fastfood Intake among Adolescents. *Public Health Nutrition*, 12(10), 1767-1774.
- Baxter, J., Breitlow, K. K., French, S. A., Hannan, P., Jeffery, R. W., and Snyder, D. J. (1999). Cognitive and Demographic Correlates of Low-Fat Vending Snack Choices among Adolescents and Adults. *Journal of the American Dietetic Association*, 99(4), 471.
- Bearden, W. O., NeteMeyer, R. G., and Teel, J. E. (1989). Measurement of Consumer Susceptibility to Interpersonal Influence. *Journal of Consumer Research*, 15, 473-481.
- Beaudoin, P. and Lachance, M. J. (2006). Determinants of Adolescents' Brand Sensitivity to Clothing. *Family and Consumer Sciences Research Journal*, 34(4), 312-331.
- Bech-Larsen, T., Jensen, B. B., and Pedersen, S. (2010). An Exploration of Adolescent Snacking Conventions and Dilemmas. *Young Consumers: Insight and Ideas for Responsible Marketers*, 11(4), 253-263.

- Benton, D. (2004). Role of Parents in the Determination of the Food Preferences of Children and the Development of Obesity. *International Journal of Obesity*, 28, 858-869.
- Bere, E. and Klepp, K.-I. (2004). Correlates of Fruit and Vegetable Intake among Norwegian Schoolchildren: Parental and Self-Reports. *Public Health Nutrition*, 7(8), 991-998.
- Berg, B. L. (2001). *Qualitative research methods for the social sciences*. Boston: Allyn & Bacon.
- Bernard, L., Lavalley, C., Graydonald, K., and Delisle, H. (1995). Overweight in Cree Schoolchildren and Adolescents Associated with Diet, Low Physical Activity, and High Television Viewing. *Journal of the American Dietetic Association*, 95(7), 800-802.
- Bijmolt, T. H. A., Claasen, W., and Bruss, B. (1998). Children's Understanding of TV Advertising: Effects of Age, Gender, and Parental Influence. *Journal of Consumer Policy*, 21, 171-194.
- Birch, L. L. (1980). Effects of Peer Models' Food Choices and Eating Behaviors on Preschoolers' Food Preferences. *Child Development*, 51(2), 489-496.
- Birch, L. L. (1999). Development of Food Preferences. *Annual Review of Nutrition*, 19, 41-62.
- Birch, L. L. and Davison, K. K. (2001). Family Environmental Factors Influencing the Developing Behavioral Controls of Food Intake and Childhood Overweight. *Childhood and Adolescent Obesity*, 48(4), 893-907.
- Birch, L. L. and Fisher, J. O. (1998). Development of Eating Behaviours among Children and Adolescents. *Pediatrics*, 101(3), 539-549.
- Blatt, J., Spencer, I., and Ward, S. (1972). A Cognitive Developmental Study of Children's Reactions to Television Advertising. In E. A. Rubinstein, G. A. Comstock and J. P. Murray (Eds.), *Television and Social Behavior* (pp. 452-467). Washington, D.C.: Government Printing Office.
- Blaxter, L., Hughes, C., and Tight, M. (2010). *How to Research* (4th ed.). New York: Open University Press, McGraw-Hill Education.
- Block, J. P., Scribner, R. A., and DeSalvo, K. B. (2004). Fast Food, Race/Ethnicity, and Income A Geographic Analysis. *American Journal of Preventive Medicine*, 27(3), 211-217.
- Bollars, C., Boyland, E., Breda, J., Gapanenko, K., Halford, J., Klepp, K. I., Lobstein, T., and Xuereb, G. (2013). Marketing of Foods High in Fat, Salt and Sugar to Children: Update 2012–2013.
- Bolton, R. N. (1983). Modeling the Impact of Television Food Advertising on Children's Diet. In J. H. Leigh and C. R. Martin (Eds.), *Current Issues and Research in Advertising*

- (pp. 173-199). Ann Arbor: Division of Research, Graduate School of Business Administration, University of Michigan.
- Booth, M., Denney-Wilson, E., and Okely, A. (2006). NSW Schools Physical Activity and Nutrition Survey (SPANS) 2004: Summary Report. Sydney: NSW Department of Health. Retrieved from http://www.google.com/url?sa=t&source=web&ct=res&cd=3&ved=0CBIOFjAC&url=http%3A%2F%2Fwww.coo.health.usyd.edu.au%2Fpdf%2Fspans_report.pdf&ei=djnAS5OFAZLg7AP_tJzFCQ&usg=AFQjCNEpCy4N7TpOaArUH1OK9K8XmaGYCA&sig2=anb4zD1i7-uVlo-d2PiFIA.
- Booth, M., Dobbins, T., Aitken, R., Denny-Wilson, E., Hardy, L., Okely, A., George, J., Sullivan, D., and Cowell, C. T. (2009). Costs of Managing Conditions Associated with Obesity among Australian Teenagers. *Journal of Paediatrics and Child Health*, 45, 448-456.
- Booth, M., Dobbins, T., Okely, A. D., Denney-Wilson, E., and Hardy, L. L. (2007). Trends in the Prevalence of Overweight and Obesity among Young Australians, 1985, 1997, and 2004. *Obesity*, 15(5), 1089-1095.
- Booth, M. L., Wake, M., Armstrong, T., Chey, T., Hesketh, K., and Mathur, S. (2001). The Epidemiology of Overweight and Obesity among Australian Children and Adolescents, 1995-97. *Australian and New Zealand Journal of Public Health*, 25(2), 162-169.
- Borzekowski, D. L. and Robinson, T. N. (2001). The 30-Second Effect: An Experiment Revealing the Impact of Television Commercials on Food Preferences of Preschoolers. *Journal of American Dietetic Association*, 101, 42-46.
- Boush, D. M., Friestad, M., and Rose, G. M. (1994). Adolescent Skepticism toward TV Advertising and Knowledge of Advertiser Tactics. *Journal of Consumer Research*, 21(June), 165-175.
- Boynton-Jarrett, R., Thomas, T. N., Peterson, K. E., Wiecha, J., Sobol, A. M., and Gortmaker, S. L. (2003). Impact of Television Viewing Patterns on Fruit and Vegetable Consumption among Adolescents. *Pediatrics*, 112(6), 1321-1326.
- Brand, J. E. (2007). Television Advertising to Children: Australian Communications and Media Authority.
- Branen, L. and Fletcher, J. (1999). Comparison of College Students' Current Eating Habits and Recollections of Their Childhood Food Practices. *Journal of Nutrition Education*, 31(6), 304-310.
- Bronfenbrenner, U. (1979). *The Ecology of Human Development*. Cambridge, Massachusetts: Harvard University Press.
- Brown, R. and Ogden, J. (2004). Children's Eating Attitudes and Behaviour: A Study of the Modelling and Control Theories of Parental Influence. *Health Education Research*, 19(3), 261-271.

- Buijzen, M. (2009). The Effectiveness of Parental Communication in Modifying the Relation between Food Advertising And Children's Consumption Behaviour. *British Journal of Developmental Psychology*, 27, 105-121.
- Buijzen, M., Schuurman, J., and Bomhof, E. (2008). Association between Children's Television Advertising Exposure and Their Food Consumption Patterns: A Household Diary-Survey Study. *Appetite*, 50, 231-239.
- Bulmer, S. (2001). *Children's Perceptions of Advertising*. Working Paper Series. Department of Commerce, Massey University. Auckland, New Zealand.
- Burke, V., Beilin, L. J., and Dunbar, D. (2001). Family Lifestyle and Parental Body Mass Index as Predictors of Body Mass Index in Australian Children: A Longitudinal Study. *International Journal of Obesity*, 25(2), 147-157.
- Byrd-Bredbenner, C. (2002). Saturday Morning Children's Television Advertising: A Longitudinal Content Analysis. *Family and Consumer Sciences Research Journal*, 30(3), 382-403.
- Cairns, G., Angus, K., and Hastings, G. (2009). The Extent, Nature and Effects of Food Promotion to Children: A Review of the Evidence to December 2008: Institute for Social Marketing, University of Stirling and the Open University, United Kingdom.
- Cairns, G., Angus, K., Hastings, G., and Caraher, M. (2013). Systematic Reviews of the Evidence on the Nature, Extent and Effects of Food Marketing to Children. A Retrospective Summary. *Appetite*, 62(March), 209-215.
- Calder, B. J., Robertson, T. S., and Rossiter, J. R. (1975). Children's Consumer Information Processing. *Communication Research*, 2(July), 307-316.
- Calvert, S. L. (2008). Children as Consumers: Advertising and Marketing. *The Future of Children*, 18(1), 205-234.
- Cameron, A. J., Welborn, T. A., Zimmet, P. Z., Dunstan, D. W., Owen, N., Salmon, J., and Jolley, D. (2003). Overweight and Obesity in Australia: The 1999–2000 Australian Diabetes, Obesity and Lifestyle Study (AusDiab). *The Medical Journal of Australia*, 178(427-432).
- Campbell, E. Q. (1969). Adolescent Socialisation. In D. A. Goslin (Ed.), *Handbook of Socialisation Theory and Research*. Chicago: Rand McNally.
- Cantor, J. (1981). Modifying Children's Eating Habits through Television Ads: Effects of Humorous Appeals in a Field Setting. *Journal of Broadcasting*, 25(1), 37-47.
- Carlson, L., Laczniak, R. N., and Walsh, A. (2001). Socializing Children about Television: An Intergenerational Study. *Journal of the Academy of Marketing Science*, 29, 277-289.
- Caroli, M., Argentieri, L., Cardone, M., and Masi, A. (2004). Role of Television in Childhood Obesity Prevention. *International Journal of Obesity*, 28, S104-S108.

- Carter, O. B. (2006). The Weighty Issue of Australian Television Food Advertising and Childhood Obesity. *Health Promotion Journal of Australia*, 17(1), 5-11.
- Carter, O. B. J., Patterson, L. J., Donovan, R. J., Ewing, M. T., and Roberts, C. M. (2011). Children's Understanding of the Selling versus Persuasive Intent of Junk Food Advertising: Implications for Regulation. *Social Science and Medicine*, 72(6), 962-968.
- Chapman, K., Nicholas, P., Banovic, D., and Supramaniam, R. (2006). The Extent and Nature of Food Promotion Directed to Children in Australian Supermarkets. *Health Promotion International*, 21(4), 331-339.
- Chapman, K., Nicholas, P., and Supramaniam, R. (2006). How Much Food Advertising Is There on Australian Television? *Health Promotion International*, 21(3), 172-180.
- Chernin, A. (2008). The Effects of Food Marketing on Children's Preferences: Testing the Moderating Roles of Age and Gender. *Annals of the American Academy of Political and Social Science*, January, 102-118.
- Chestnut, R. W. (1979). Television Advertising and Young Children: Piaget Reconsidered. *Current Issues and Research in Advertising*, 2(1), 5-15.
- Chinese University of Hon Kong (n. d.). Sample Size for Comparing Event Rates between Two Independent Cohorts. Retrieved from http://department.obg.cuhk.edu.hk/researchsupport/Sample_size_Comp2Prop.asp.
- Churchill, G. A. (1979). A Paradigm for Developing Better Measures of Marketing Constructs. *Journal of Marketing Research*, 16, February(1), 64-73.
- Clark, H. R., Goy, E., Bissell, P., Blank, L., and Peters, J. (2007). How Do Parents' Child-Feeding Behaviours Influence Child Weight? Implications for Child Obesity Policy. *Journal of Public Health*, 29(2), 132-141.
- Coakes, S. J. and Steed, L. (2007). *SPSS: Analysis without Anguish. Version 14.0 for Windows*. Singapore: Fabulous Printers Pte Ltd.
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. Hillsdale, NJ.: Lawrence Erlbaum Associates.
- Cohen, J. (1992). Power primer. *Quantitative Methods in Psychology*, 112(1), 155-159.
- Cole, T. J., Bellizzi, M. C., Flegal, K. M., and Dietz, W. H. (2000). Establishing a Standard Definition for Child Overweight and Obesity Worldwide: International Survey. *BMJ*, 320(1240), 1-6.
- Cole, T. J., Flegal, K. M., Nicholls, D., and Jackson, A. A. (2007). Body Mass Index Cut Offs to Define Thinness in Children and Adolescents: International Survey. *BMJ*, 335, 194-197.

- Contento, I. (1981). Children's Thinking about Food and Eating? A Piagetian Based Study. *Journal of Nutrition Education*, 13(1), S86-90.
- Contento, I. R., Basch, C., Shea, S., Gutin, B., Zybert, P., Michela, J. L., and Rips, J. (1993). Relationship of Mothers Food Choice with Food Intake of Preschool Children: Identification of Family Subgroups. *Health Education Quarterly*, 20, 243-259.
- Cook, D. T. (2000). The Rise of "the Toddler" as Subject and as Merchandising Category in the 1930s. In M. Gottdiener (Ed.), *New Forms of Consumption: Consumers, Culture, and Commodification*. Rowman & Littlefield Publishers, Inc.
- Cooke, L. J. and Wardle, J. (2005). Age and Gender Differences in Children's Food Preferences. *British Journal of Nutrition*, 93, 741-746.
- Coon, K. A., Goldberg, J., Rogers, B. L., and L., T. K. (2001). Relationships between Use of Television during Meals and Children's Food Consumption Patterns. *Pediatrics*, 107(7).
- Cooper, D. R. and Schindler, P. S. (2006). *Business Research Methods*. Boston Burr Ridge, IL Dubuque: McGraw Hill.
- Crespo, C. J., Smit, E., Troiano, R. P., Bartlett, S. J., Macera, C. A., and Andersen, R. E. (2001). Television Watching, Energy Intake, and Obesity in US Children. Results from the Third National Health and Nutrition Examination Survey, 1988-1994. *Archives of Pediatrics & Adolescent Medicine*, 155(3), 360-365.
- Creswell, J. W. and Clark, V. L. (2007). *Designing and Conducting Mixed Methods Research*. London, New Delhi: Sage Publications.
- Croll, J. K., Neumark-Sztainer, D., and Story, M. (2001). Healthy eating: What Does It Mean to Adolescents? *Journal of Nutrition Education*, 33, 193-198.
- Cullen, K. W., Baranowski, T., Owens, E., Marsh, T., Rittenberry, L., and de Moor, C. (2003). Availability, Accessibility, and Preferences for Fruit, 100% Fruit Juice, and Vegetables Influence Children's Dietary Behavior. *Health Education & Behavior*, 30, 615-626.
- Cullen, K. W., Baranowski, T., Rittenberry, L., Cosart, C., Hebert, D., and de Moor, C. (2001). Child-Reported Family and Peer Influence on Fruit, Juice and Vegetable Consumption: Reliability and Validity of Measures. *Health Education Research*, 16(2), 187-200.
- CSPI (2003). *Pestering Parents: How Food Companies Market Obesity to Children*. Center for Science in the Public Interest.
- D'Alessio, M., Laghi, F., and Baiocco, B. (2009). Attitudes toward TV Advertising: A Measure for Children. *Journal of Applied Developmental Psychology*, 30, 409-418.
- Davison, K. K. and Birch, L. (2002). Obesigenic Families: Parents' Physical Activity and Dietary Intake Patterns Predict Girls' Risk of Overweight. *International Journal of Obesity and Related Metabolic Disorders*, 26, 1186-1193.

- Davison, K. K. and Birch, L. L. (2001). Childhood Overweight: A Contextual Model and Recommendations for Future Research. *Obesity Reviews*, 2(3), 159-171.
- De Castro, J. M. (1991). Weekly Rhythms of Spontaneous Nutrient Intake and Meal Pattern of Humans. *Physiology & Behavior*, 50(4), 729-738.
- de la Haye, K., Robins, G., Mohr, P., and Wilson, C. (2011). Homophily and Contagion as Explanations for Weight Similarities among Adolescent Friends. *Journal of Adolescent Health*, 49, 421–427.
- de la Ville, V.-I., Brougère, G., and Boireau, N. (2010). How Can Food Become Fun? Exploring and Testing Possibilities. *Young Consumers: Insight and Ideas for Responsible Marketers*, 11(2), 117-130.
- Dennison, B. A., Erb, T. A., and Jenkins, P. L. (2002). Television Viewing and Television in Bedroom Associated with Overweight Risk among Low-Income Preschool Children. *Pediatrics*, 109, 1028-1035.
- Dennison, C. M. and Shepherd, R. (1995). Adolescent Food Choice: An Application of the Theory of Planned Behaviour. *Journal of Human Nutrition and Dietetics*, 8(1), 9 - 23.
- Desrochers, D. M. and Holt, D. J. (2007). Children's Exposure to Television Advertising: Implications for Childhood Obesity. *Journal of Public Policy & Marketing*, 26(2), 182-201.
- DeVellis, R. F. (2003). *Scale Development: Theory and Applications*. London, New Delhi: SAGE Publications.
- Dhar, T. and Baylis, K. (2011). Fast-Food Consumption and the Ban on Advertising Targeting Children: The Quebec Experience. *Journal of Marketing Research*, XLVIII(October), 799-813.
- Diamantopoulos, A. (2000). *Introducing LISREL: A Guide for an Uninitiated*. London: Sage Publications.
- Dibb, S. (1996). Spoonful of Sugar. Television Food Advertising Aimed at Children: An International Comparative Survey. *Consumers International*.
- Dietz, W. H. and Gortmaker, S. L. (1985). Do We Fatten Our Children At The Television Set? Obesity and Television Viewing in Children and Adolescents. *Pediatrics*, 75(5), 807-812.
- Dixon, H., M., S., Wakefield, M., Kelly, B., Chapman, K., and Donovan, R. (2011). Parent's Response to Nutrient Claims and Sports Celebrity Endorsement on Energy-Dense and Nutrient-Poor Foods: An Experimental Study. *Public Health Nutrition*, 10, 1-9.
- Dixon, H. G., Scully, M. L., Wakefield, M. A., White, V. M., and Crawford, D. A. (2007). The Effects of Television Advertisements for Junk Food versus Nutritious Food on Children's Food Attitudes and Preferences *Social Science and Medicine*, 65, 1311-1323.

- Drewnowski, A. (1997). Taste Preferences and Food Intake. *Annual Review of Nutrition*, 17, 237-253.
- Duff, R. (2004). What Advertising Means to Children. *Young Consumers: Insights and Ideas for Responsible Marketers*, 5(2), 41-50.
- Duffey, K. J., Gordon-Larsen, P., Jacobs, D. R., Williams, D. O., and Popkin, B. M. (2007). Differential Associations of Fast Food and Restaurant Food Consumption with 3-y Change in Body Mass Index: The Coronary Artery Risk Development in Young Adults Study *American Journal of Clinical Nutrition*, 85(1), 201-208.
- Dumanovsky, T., Nonas, C. A., Huang, C. Y., Silver, L. D., and Bassett, M. T. (2009). What People Buy from Fast-Food Restaurants: Caloric Content and Menu Item Selection, New York city 2007. *Obesity*, 17(7), 1369-1374.
- DuRant, R. H., Baranowski, T., Johnson, M., and Thompson, W. O. (1994). The Relationship among Television Watching, Physical Activity, and Body Composition of Young Children. *Pediatrics*, 94, 449-455.
- Eagly, A. H. and Chaiken, S. (1993). *The Psychology of Attitudes*. Fort Worth, TX: Harcourt Brace Janovich College Publishers.
- Eisenmann, J. C., Bartee, R. T., and Wang, M. Q. (2002). Physical Activity, TV Viewing, and Weight in U.S. Youth: 1999 Youth Risk Behavior Survey. *Obesity Research*, 10(5), 379-385.
- Elvin, C. (2003). Test Item Analysis Using Microsoft Excel Spreadsheet Program. Retrieved June 5, 2011, from <http://www.eflclub.com/elvin/publications/2003/itemanalysis.html>.
- Epstein, L. H., Wing, R. R., and Valoski, A. (1985). Childhood Obesity. *Pediatric Clinics of North America*, 32, 363-379.
- Feunekes, G. I. J., de Graaf, C., Meyboom, S., and van Staveren, W. A. (1998). Food Choice and Fat Intake of Adolescents and Adults: Associations of Intakes within Social Networks. *Preventive Medicine*, 27(5), 645-656.
- Finnerty, T., Reeves, S., Dabinett, J., Jeanes, Y. M., and Vögele, C. (2009). Effects of Peer Influence on Dietary Intake and Physical Activity in Schoolchildren. *Public Health Nutrition*, 13(3), 376-383.
- Fischer, P. M., Schwartz, M. P., Richards, J. W., Goldstein, A. O., and Rojas, T. H. (1991). Brand Logo Recognition by Children Aged 3 to 6 Years: Mickey Mouse and Old Joe the Camel. *Journal of American Medical Association*, 266(22), 3145-3148.
- Fishbein, M. and Ajzen, I. (1975). *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research Reading*. MA: Addison-Wesley.
- Fisher, J. O. and Birch, L. L. (1999a). Restricting Access to a Palatable Food Affects Children's Behavioral Response, Food Selection and Intake. *American Journal of Clinical Nutrition*, 69(6), 1264-1272.

- Fisher, J. O. and Birch, L. L. (1999b). Restricting Access to Foods and Children's Eating. *Appetite*, 32, 405-419.
- Fisher, J. O. and Birch, L. L. (2000). Parents' Restrictive Feeding Practices Are Associated with Young Girls' Negative Self-Evaluation of Eating. *Journal of the American Dietetic Association*, 100(11), 141-1346.
- Fisher, J. O. and Birch, L. L. (2002). Eating in the Absence of Hunger and Overweight in Girls from 5 to 7 y of Age. *American Journal of Clinical Nutrition*, 76(1), 226-231.
- Fisher, J. O., Johnson, R. K., Lindquist, C., Birch, L. L., and Goran, M. I. (2000). Influence of Body Composition on the Accuracy of Reported Energy Intake in Children. *Obesity Research*, 8(8), 597-603.
- Fitzgerald, A., Heary, C., Nixon, E., and Kelly, C. (2010). Factors Influencing the Food Choices of Irish Children and Adolescents: A Qualitative Investigation. *Health Promotion International*, 25(3), 289-298.
- Flavell, J. H. (1985). *Cognitive Development*. Englewood Cliffs, N.J. : Prentice-Hall.
- Folta, S. C., Goldberg, J. P., Economos, C., Bell, R., and Meltzer, R. (2006). Food Advertising Targeted at School-Age Children: A Content Analysis. *Journal of Nutrition Education and Behavior*, 38, 244-248.
- Fornell, C. and Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39-50.
- Francis, L. A., Hofer, S. M., and Birch, L. L. (2001). Predictors of Maternal Child-Feeding Style: Maternal and Child Characteristics. *Appetite*, 37(3), 231-243.
- Francis, L. A., Lee, Y., and Birch, L. L. (2003). Parental Weight Status and Girls' Television Viewing, Snacking, and Body Mass Indexes. *Obesity Research*, 11(1), 143-151.
- French, S. A., Harnack, L., and Jeffery, R. W. (2000). Fast Food Restaurant Use among Women in the Pound of Prevention Study: Dietary, Behavioral and Demographic Correlates. *International Journal of Obesity*, 24(10), 1353-1359.
- French, S. A., Story, M., Neumark-Sztainer, D., Fulkerson, J. A., and Hannan, P. (2001). Fast Food Restaurant Use among Adolescents: Associations with Nutrient Intake, Food Choices and Behavioral and Psychosocial Variables. *International Journal of Obesity*, 25, 1823-1833.
- Friestad, M. and Wright, P. (1994). The Persuasion Knowledge Model: How People Cope with Persuasion Attempts. *Journal of Consumer Research*, 21(June), 1-31.
- Fulkerson, J. A., French, S. A., and Story, M. (2004). Adolescents' Attitudes about and Consumption of Low-Fat Foods: Associations with Sex and Weight-Control Behaviors. *Journal of American Dietetic Association*, 104, 233-237.

- Gable, S. and Lutz, S. (2000). Household, Parent, and Child Contributions to Childhood Obesity. *Family Relations*, 49(3), 293-300.
- Gable, S. and Lutz, S. (2001). Nutrition Socialization Experiences of Children in the Head Start Program. *Journal of the American Dietetic Association*, 101(5), 572-577.
- Galst, J. P. (1980). Television Food Commercials and Pro-Nutrition Public Service Announcements as Determinants of Young Children's Snack Choice. *Child Development*, 51, 935-938.
- Gerrits, J. H., Ridder, D. T. D., de Wit, J. B. F., and Kuijer, R. G. (2009). Cool and Independent or Foolish and Undisciplined? Adolescents' Prototypes of (Un)healthy Eaters and Their Association with Eating Behaviour. *Appetite*, 53, 407-413.
- Ghani, N. (2004). Television Viewing and Consumer Behavior. *Young Consumers: Insights and Ideas for Responsible Marketers*, 6(1), 66-74.
- Gibson, E. L., Wardle, J., and Watts, C. J. (1998). Fruit and Vegetable Consumption, Nutritional Knowledge and Beliefs in Mothers and Children. *Appetite*, 31(2), 205-228.
- Gibson, L. Y., Byrne, S. M., Davis, E. A., Blair, E., Jacoby, P., and Zubrick, S. R. (2007). The Role of Family and Maternal Factors in Childhood Obesity. *Medical Journal of Australia*, 186(11), 591-595.
- Gillman, M. W., Rifas-Shiman, S. L., Frazier, A. L., Rockett, H. R. H., Camargo, C. A., Field, A. E., Berkey, C. S., and Colditz, G. A. (2000). Family Dinner and Diet Quality among Older Children and Adolescents. *Archives of Family Medicine*, 9(3), 235-240.
- Ginsburg, H. and Opper, S. (1979). *Piaget's Theory of Intellectual Development*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.
- Glanz, K., Basil, M., Maibach, E., Goldberg, J., and Snyder, D. (1998). Why Americans Eat What They Do: Taste, Nutrition, Cost, Convenience, and Weight Control Concerns as Influences on Food Consumption. *Journal of American Dietetic Association*, 98(10), 1118-1126.
- Golan, M. and Crow, S. (2004). Parents are Key Players in The Prevention and Treatment of Weight-Related Problems. *Nutrition Reviews*, 62(1), 39-50.
- Goldberg, M. E., Gorn, G. J., and Gibson, W. (1978). TV Messages for Snack and Breakfast Foods: Do They Influence Children's Preferences? *Journal of Consumer Research*, 5(2), 73-81.
- Gorn, G. J. and Goldberg, M. E. (1982). Behavioral Evidence of the Effects of Televised Food Messages on Children. *Journal of Consumer Research*, 9(2), 200-205.
- Gortmaker, S., Peterson, K., Wiecha, J., Sobol, A., Dixit, S., Fox, M. K., and Laird, N. (1999). Reducing Obesity via a School-Based Interdisciplinary Intervention among Youth. *Archives of Pediatrics & Adolescent Medicine*, 153(April), 409-418.

- Gracey, D., Stanley, N., Burke, V., Corti, B., and Beilin, L. J. (1996). Nutritional Knowledge, Beliefs and Behaviours in Teenage School Students. *Health Education Research*, 11(2), 187-204.
- Grier, S. A., Mensinger, J., Huang, S. H., Kumanyika, S. K., and Nicolas, N. (2007). Fast-Food Marketing and Children's Fast-Food Consumption: Exploring Parents' Influences in an Ethnically Diverse Sample *Journal of Public Policy & Marketing*, 26(2), 221-235.
- Grimm, G. C., Harnack, L., and Story, M. (2004). Factors Associated with Soft Drink Consumption in School-Aged Children. *Journal of the American Dietetic Association*, 104(8), 1244-1249.
- Grossnickle, J. and Raskin, O. (2001). *Handbook of Online Marketing Research*. New York: McGraw-Hill, Inc.
- Guneri, B., Yurt, O., Kaplan, M., and Delen, M. (2009). The Influence of Children on Family Purchasing Decision in Turkey. *Asian Journal of Marketing*, 2(20-32).
- Haby, M. M., Vos, T., Carter, R., Moodie, M., Markwick, A., Magnus, A., Tay-Teo, K-S., and Swinburn, B. (2006). New Approach to Assessing the Health Benefit from Obesity Interventions in Children and Adolescents: The Assessing Cost-Effectiveness in Obesity Project. *International Journal of Obesity*, 30, 1463-1475.
- Hair, J. F., Black, W. C., Babin, B. J., and Anderson, R. E. (2010). *Multivariate Data Analysis* (7th ed. ed.). Upper Saddle River, N.J: Prentice Hall.
- Halford, J. C., Boyland, E. J., Cooper, G. D., Dovey, T. M., Smith, C. J., Williams, N., Lawton, C. L., and Blundell, J. E. (2008). Children's Food Preferences: Effects of Weight Status, Food Type, Branding and Television Food Advertisements (Commercials). *International Journal of Pediatric Obesity*, 3, 31-38.
- Halford, J. C., Boyland, E. J., Hughes, G., Oliveira, L. P., and Dovey, T. M. (2007). Beyond-Brand Effect of Television Food Advertisements/Commercials on Caloric Intake and Food Choice Of 5-7-Year-Old Children. *Appetite*, 49, 263-267.
- Halford, J. C., Boyland, E. J., Hughes, G. M., Stacey, L., McKean, S., and Dovey, T. M. (2007). Beyond-Brand Effect of Television Food Advertisements on Food Choice in Children: The Effects Of Weight Status. *Public Health Nutrition*, 11(9), 897-904.
- Halford, J. C. G., Gillespie, J., Brown, V., Pontin, E. E., and Dovey, T. M. (2004). Effect of Television Advertisements for Foods on Food Consumption in Children. *Appetite*, 42(2), 221-225.
- Harold, S. (1986). A Synthesis of 1043 Effects of Television on Social Behaviour. In G. Comstock (Ed.), *Public Communications and Behaviour* (Vol. 1, pp. 65-133). New York: Academic Press.

- Harris, J. K., French, S. A., Jeffery, R. W., McGovern, P. G., and Wing, R. R. (1994). Dietary and Physical Activity Correlates of Long-Term Weight Loss. *Obesity Research*, 2(4), 307-313.
- Harris, J. K. and Graff, S. K. (2011). Protecting Children From Harmful Food Marketing: Options for Local Government to Make a Difference. *Preventing Chronic Disease: Public Health Research, Practice, and Policy*, 8(5).
- Harris, J. L., Brownell, K. D., and Bargh, J. A. (2009). The Food Marketing Defense Model: Integrating Psychological Research to Protect Youth and Inform Public Policy. *Social Issues and Policy Review*, 3(1), 211-271.
- Harris, J. L. and Graff, S. K. (2012). Protecting Young People From Junk Food Advertising: Implications of Psychological Research for First Amendment Law. *American Journal of Public Health*, 102(2), 214-222.
- Harris, J. L., Schwartz, M. B., Brownell, K. D., Sarda, V., Ustjanauskas, A., Javadizadeh, J., Weinberg, M., Munsell, C., Speers, S., Bukofzer, E., Cheyne, A., Gonzalez, P., Reshetnyak, J., Agnew, H., and Ohri-Vachaspati, P. (2010). Fast Food Facts: Evaluating Fast Food Nutrition and Marketing to Youth: Yale University, Rudd Center for Food Policy and Obesity. Retrieved from <http://www.fastfoodmarketing.org>.
- Hastings, G., McDermott, L., Angus, K., Stead, M., and Thomson, S. (2006). The Extent, Nature and Effects of Food Promotion to Children: A Review of the Evidence: World Health Organization.
- Hastings, G., Stead, M., McDermott, L., Forsyth, A., MacKintosh, A. M., Rayner, M., Godfrey, C., Caraher, M., and Angus, K. (2003). Review of Research on the Effects of Food Promotion to Children. Glasgow: Centre for Social Marketing.
- Hawkes, C. (2007). Marketing Food to Children: Changes in the Global Regulatory Environment 2004-2006. Geneva: World Health Organizations.
- Hawkins, R. P. and Pingree, S. (1982). Television's Influence on Social Reality. In D. Pearl, L. Bouthilet and J. Lazar (Eds.), *Television and Behavior: Ten Years of Scientific Progress and Implications for the Eighties* (Vol. 2, pp. 224-247). Rockville, MD: National Institute of Mental Health.
- Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical Mediation Analysis in the New Millennium. *Communication Monographs*, 76(4), 408-420.
- Hebden, L., Chey, T., and Allman-Farinelli, M. (2012). Lifestyle Intervention for Preventing Weight Gain in Young Adults: A Systematic Review and Meta-Analysis of RCT. *Obesity Reviews*, 13, 692-710.
- Hebden, L., King, L., Kelly, B., Chapman, K., Innes-Hughes, C., and Gunatillaka, N. (2010). Regulating the Types of Foods and Beverages Marketed to Australian Children: How Useful Are Food Industry Comments? *Nutrition and Dietetics*, 67, 258-266.

- Hebden, L. A., King, L., Kelly, B., and Chapman, K. (2011). Advertising of Fast Food to Children on Australian Television: The Impact of Industry Self-Regulation. *The Medical Journal of Australia*, 195, 20-24.
- Heck, R. H. (1998). Factor Analysis: Exploratory and Confirmatory Approaches. In G. A. Marcoulides (Ed.), *Modern Methods for Business Research* (pp. 177-217). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Hémar-Nicolas, V. and Gollety, M. (2012). Using Brand Character When Targeting Children: What for? An Exploration of Managers' and Children's Viewpoints. *Young Consumers: Insight and Ideas for Responsible Marketers*, 13(1), 20-29.
- Hendrie, G. A., Coveney, J., and Cox, D. (2008). Exploring Nutrition Knowledge and the Demographic Variation in Knowledge Levels in an Australian Community Sample. *Public Health Nutrition*, 11(2), 1365-1371.
- Hendrie, G. A., Cox, D., and Coveney, J. (2008). Validation of the General Nutrition Knowledge Questionnaire in an Australian community sample. *Nutrition and Dietetics*, 63, 72-77.
- Hesketh, K., Ball, K., Crawford, D., Campbell, K., and Salmon, J. (2008). Mediators of the Relationship between Maternal Education and Children's TV Viewing. *American Journal of Preventive Medicine*, 33(1), 41-47.
- Heslop, L. A. and Ryans, A. B. (1980). A Second Look at Children and the Advertising of Premiums. *Journal of Consumer Research*, 6(4), 414-420.
- Hill, J., Wyatt, H. R., G., and Peters, J. (2003). Obesity and the Environment: Where Do We Go from Here? . *Science*, 203, 853-856.
- Hill, J. M. and Radimer, K. L. (1997). A Content Analysis of Food Advertisements in Television for Australian Children. *Australian Journal of Nutrition & Dietetics*, 54(4), 174-181.
- Hill, J. O., Wyatt, H. R., and Melanson, E. L. (2000). Genetic and Environmental Contributions to Obesity. *Medical Clinics of North America*, 84(2).
- Hill, L. H., Casswell, S., Maskill, C., Jones, S., and Wyllie, A. (1998). Fruit and Vegetables as Adolescent Food Choices in New Zealand. *Health Promotion International*, 13(1), 55-65.
- Hinkin, T. R. (1995). A Review of Scale Development Practices in the Study of Organizations. *Journal of Management in Medicine*, 21(5), 967-988.
- Hite, C. F. and Hite, R. E. (1995). Reliance on Brand by Young Children. *Journal of the Market Research Society*, 37(2), 185-193.
- HJKF. (2007). Food for Thought: Television Food Advertising to Children in the United States, Henry J. Kaiser Foundation, pp. 1-55.

- Hoek, J. and Gendall, P. (2006). Advertising and Obesity: A Behavioral Perspective. *Journal of Health Communication, 11*(4), 409-423.
- Hooper, D., Coughlan, J., and Mullen, M. (2008). Structural Equation Modelling: Guidelines for Determining Model Fit. *Electronic Journal of Business Research Methods, 6*(1), 53-60.
- Horner, S. D. (2000). Using Focus Group Methods with Middle School Children. *Research in Nursing and Health, 23*, 510-517.
- Horst, v. d. K., Oenema, A., Ferreira, I., Wendel-Vos, W., Giskes, K., Lenthe, v. F., and Brug, J. (2007). A Systematic Review of Environmental Correlates of Obesity-Related Dietary Behaviors in Youth. *Health Education Research, 22*(2), 203-226.
- Hota, M. and McGuiggan, R. (2005). The Relative Influence of Consumer Socialization Agents on Children and Adolescents: Examining the Past and Modeling the Future. In K. M. Ekstrom and H. Brembeck (Eds.), *European Advances in Consumer Research* (Vol. 7, pp. 119-124). Goteborg, Sweden: Association for Consumer Research.
- Hoyle, R. H. (1995). *Structural Equation Modeling: Concepts, Issues, and Applications*. London: SAGE Publications Ltd.
- Hughner, R. S. and Maher, K. (2006). Factors that Influence Parental Food Purchases for Children: Implications for Dietary Health. *Journal of Marketing Management, 22*(9), 929-954.
- Hungry Jack's (2011). Nutrition Guide. Retrieved December 2011 from <http://www.hungryjacks.com.au/images/pdf/NutriGuide.pdf>.
- Iacobucci, D. (2010). Structural Equations Modeling: Fit Indices, Sample Size, and Advanced Topics. *Journal of Consumer Psychology, 20*, 90-98.
- IOM. (2006). *Food Marketing to Children and Youth: Threat or Opportunity?* Institute of Medicine, Washington, DC: The National Academies Science.
- Jackson, D. M., Djafarian, K., Stewart, J., and Speakman, J. R. (2009). Increased Television Viewing Is Associated with Elevated Body Fatness but not with Lower Total Energy Expenditure in Children. *American Journal of Clinical Nutrition, 89*, 1031-1036.
- Jago, R., Baranowski, T., Baranowski, J. C., Thompson, D., and Greaves, K. A. (2005). BMI from 3–6 y of Age Is Predicted by TV Viewing and Physical Activity, not Diet. *International Journal of Obesity, 29*, 557–564.
- Jakicic, J. M. (2009). The Effect of Physical Activity on Body Weight. *Obesity, 17*(Suppl 3), S34–S38.
- Jeffery, R. W., Baxter, J., McGuire, M., and Linde, J. (2006). Are Fast Food Restaurants an Environmental Risk Factor for Obesity? *International Journal of Behavioral Nutrition and Physical Activity, 3*(35).

- Jeffery, R. W. and French, S. A. (1999). Preventing Weight Gain in Adults: The Pound of Prevention Study. *American Journal of Public Health*, 89.
- Jenkins, H. M. and Michael, M. M. (1986). Using and Interpreting Item Analysis Data. *Nurse Education*, 11(1), 10-14.
- John, D. R. (1999a). Consumer Socialization of Children: A Retrospective Look at Twenty-Five Years of Research. *Journal of Consumer Research*, 26, 183-213.
- John, D. R. (1999b). Through the Eyes of a Child: Children's Knowledge and Understanding of Advertising. In M. C. Macklin and L. Carlson (Eds.), *Advertising to Children - Concepts and Controversies*. Thousands Oaks, CA.
- Johnson, S. L. (2000). Improving Preschoolers' Self-Regulation of Energy Intake. *Pediatrics*, 106(6), 1429-1435.
- Johnson, S. L. and Birch, L. L. (1994). Parents' and Children's Adiposity and Eating Style. *Pediatrics*, 94, 653-661.
- Jolly, R. (2011). Marketing Obesity? Junk Food, Advertising and Kids. Canberra: Parliament of Australia Department of Parliamentary Services.
- Jones, R. A., Okely, A. D., Gregory, P., and Cliff, D. P. (2009). Relationships between Weight Status and Child, Parent and Community Characteristics in Preschool Children. *International Journal of Pediatric Obesity*, 4(1), 54-60.
- Jones, S., Phillipson, L., McVie, D., Reid, A., Lynch, A., Fabrianesi, B., and Luebcke, M. (2007). Food Marketing to Children in Australia (pp. 3-47): Centre for Health Initiatives, University of Wollongong. Retrieved from <http://www.cancer.org.au/File/PolicyPublications/FoodMarketingtoChildreninAustralia.pdf>.
- Jones, S. C. and Fabrianesi, B. (2007). Gross for Kids but Good for Parents: Differing Messages in Advertisements for the Same Products. [Article]. *Public Health Nutrition*, 11(6), 588-595.
- Jones, S. C. and Kervin, L. (2010). An Experimental Study on the Effects of Exposure to Magazine Advertising on Children's Food Choices. *Public Health Nutrition*.
- Kaufman, L. and Sandman, P. M. (1984). *Countering Children's Sugared Food Commercials: Do Rebuttals Help?* Paper presented at the Annual meeting of the International Communication Association, San Francisco, CA.
- Kaur, H., Choi, W. S., Mayo, M. S., and Harris, K. J. (2003). Duration of Television Watching Is Associated with Increased Body Mass Index. *Journal of Pediatrics*, 143(4), 506-511.
- Kaur, H., Li, C. Y., Nazir, N., Choi, W. S., Resnicow, K., Birch, L. L., and Ahluwalia, J. S. (2006). Confirmatory Factor Analysis of the Child-Feeding Questionnaire among Parents of Adolescents. *Appetite*, 47(1), 36-45.

- Kaur, P. and Singh, R. (2006). Children in Family Purchase Decision Making in India and the West: A Review. *Academy of Marketing Science Review*, 8, 1-30.
- Keeves, J. and Alagumalai, S. (1999). New Approaches in Measurement. In G. N. Masters and J. Keeves (Eds.), *Advances in Measurement in Education Research and Assessment* (pp. 23-40). Amsterdam, Lausanne, New York, Oxford, Shannon, Singapore, Tokyo: Pergamon.
- Kelly, B., Bochynska, K., Kornman, K., and Chapman, K. (2008). Internet Food Marketing on Popular Children's Websites and Food Product Websites in Australia. *Public Health Nutrition*, 11(11), 1180-1187.
- Kelly, B. and Chapman, K. (2007). Food References and Marketing to Children in Australian Magazines: A Content Analysis. *Health Promotion International*, 22(4), 284-291.
- Kelly, B., Chapman, K., Hardy, L. L., King, L., and Farrell, L. (2009). Parental Awareness and Attitudes of Food Marketing to Children: A Community Attitudes Survey of Parents in New South Wales, Australia. *Journal of Paediatrics and Child Health*, 45(9), 493-497.
- Kelly, B., Cretikos, M., Rogers, K., and King, L. (2008). The Commercial Food Landscape: Outdoor Food Advertising around Primary Schools in Australia. *Australian and New Zealand Journal of Public Health*, 32(6), 522-528.
- Kelly, B., Hattersley, L., King, L., and Flood, V. (2008). Persuasive Food Marketing to Children: Use of Cartoons and Competitions in Australian Commercial Television Advertisements. *Health Promotion International*, 23(4), 337-344.
- Kelly, P. J. (1974). The Effect of Cognitive Development on Children's Response to Television Advertising. *Journal of Business Research*, 2, 409-419.
- Kelly, T., Yang, W., Chen, C. S., Reynolds, K., and He, J. (2008). Global Burden of Obesity in 2005 and Projections to 2030. *International Journal of Obesity*, 32, 1431-1437.
- Kenny, D. A. and McCoach, B. D. (2003). Effect of the Number of Variables on Measures of Fit in Structural Equation Modeling. *Structural Equation Modeling*, 10(3), 333-351.
- Kersting, M., Sichert-Hellert, W., Vereecken, C. A., Diehl, J., Beghin, L., De Henauw, S., Grammatikaki, E., Manios, Y., Mesana, M. I., Papadaki, A., Phillipp, K., Plada, M., Poortvliet, E., Sette, S., and Helena Study Group. (2008). Food and Nutrient Intake, Nutritional Knowledge and Diet-Related Attitudes in European Adolescents. *International Journal of Obesity*, 32, S35-S41.
- Khan, J. (2011). Validation in Marketing Experiments Revisited. *Journal of Business Research*, 64, 687-692.
- Kilmer, J. R., Walker, D. D., Lee, C. M., Palmer, R. S., Mallett, K. A., Fabiano, P., and Larimer, M. E. (2006). Misperceptions of College Student Marijuana Use: Implications for Prevention. *Journal of Studies on Alcohol and Drugs*, 67, 277-281.

- Kopelman, C. A., Roberts, L. M., and Adab, P. (2007). Advertising of Food to Children: Is Brand Logo Recognition Related to Their Food Knowledge, Eating Behaviours and Food Preferences? *Journal of Public Health*, 29(4), 358-367.
- Kraak, V. and Pelletier, D. L. (1998). How Marketers Reach Young Consumers: Implications for Nutrition Education and Health Promotion Campaigns. *Family Economics and Nutrition Review*, 11(4), 31-41.
- Kratt, P., Reynolds, K., and Shewchuk, R. (2000). The Role of Availability as a Moderator of Family Fruit and Vegetable Consumption. *Health Education & Behavior*, 27, 471-482.
- Kretsch, M. J., Fong, A. K., and Green, M. W. (1999). Behavioral and Body Size Correlates of Energy Intake Underreporting by Obese and Normal-Weight Women. *Journal of the American Dietetic Association*, 99, 300-306.
- Lally, P., Bartle, N., and Wardle, J. (2011). Social Norms and Diet in Adolescents. *Appetite*, 57, 623-627.
- Lally, P., Cooke, L., McGowan, L., Croker, H., Bartle, N., and Wardle, J. (2012). Parents' Misperceptions of Social Norms for Preschool Children's Snacking Behaviour. *Public Health Nutrition*.
- Larson, N., Neumark-Sztainer, D., Laska, M. N., and Story, M. (2011). Young Adults and Eating Away from Home: Associations with Dietary Intake Patterns and Weight Status Differ by Choice of Restaurant. *Journal of American Dietetic Association*, 111, 1696-1703.
- Larson, N. I., Neumark-Sztainer, D., Story, M. T., Wall, M. M., Harnack, L. J., and Eisenberg, M. E. (2008). Fast Food Intake: Longitudinal Trends during the Transition to Young Adulthood and Correlates of Intake. *Journal of Adolescent Health*, 43, 79-86.
- Laska, M. N., Murray, D. M., Lytle, L. A., and Harnack, L. J. (2012). Longitudinal Associations Between Key Dietary Behaviors and Weight Gain Over Time: Transitions Through the Adolescent Years. *Obesity*, 20, 118-125.
- Lazarevic, V. (2012). Encouraging Brand Loyalty in Fickle Generation Y Consumers. *Young Consumers: Insight and Ideas for Responsible Marketers*, 13(1), 45-61.
- Lee, Y., Mitchell, D. C., Smiciklas-Wright, H., and Birch, L. L. (2001). Diet Quality, Nutrient Intake, Weight Status, and Feeding Environments of Girls Meeting or Exceeding Recommendations for Total Dietary Fat of the American Academy of Pediatrics. *Pediatrics*, 107(6).
- Lewis, L. B., Sloane, D. C., Nascimento, L. M., Diamant, A. L., Guinyard, J. J., Yancey, A. K., and Flynn, G. (2005). African Americans' Access to Healthy Food Options in South Los Angeles Restaurants. *American Journal of Public Health*, 95(4), 668-673.

- Lewis, M. K. and Hill, A. J. (1998). Food Advertising on British Children's Television: A Content Analysis and Experimental Study with Nine-Year-Olds. *International Journal of Obesity*, 22, 206-214.
- Lin, J. and Peng, W. (2010). *An Advertising Literacy Workshop to Enhance Young Adolescents' Understanding of Traditional and Emerging Advertising of Food*. Paper presented at the Annual Meeting of the International Communication Association, Suntec Singapore International Convention & Exhibition Centre, Suntec City, Singapore. Retrieved from http://www.allacademic.com/meta/p403722_index.html.
- Lindsay, A. C., Sussner, K. M., Kim, J., and Gortmaker, S. (2006). The Role of Parents in Preventing Childhood Obesity. *Future of Children*, 16(1), 169-186.
- Lindstrom, M. and Seybold, P. (2003). *Brandchild: Remarkable Insights into the Minds of Today's Global Kids and Their Relationship with Brands*. London: Kogan Page Publishers.
- Linn, S. E. (2004). Food Marketing to Children in the Context of a Marketing Maelstrom. *Journal of Public Health Policy*, 25(3-4), 367-378.
- Livingstone, S. (2004). A Commentary on the Research Evidence Regarding the Effects of Food Promotion on Children: Research Department of the Office of Communications.
- Livingstone, S. (2005). Assessing the Research Base for the Policy Debate over the Effects of Food Advertising to Children. *International Journal of Advertising*, 24(3), 273-296.
- Livingstone, S. (2006). Does TV Advertising Make Children Fat? *Public Policy Research*, 13(1), 54-61.
- Livingstone, S. (2007). Assessing the Research Base for the Policy Debate over the Effects of Food Advertising to Children. *LSE Research Online*, 24(3), 273-296.
- Livingstone, S. and Helsper, E. (2004). Advertising Foods to Children: Understanding Promotion in the Context of Children's Daily Lives (pp. 1-53), Research Department of the Office of Communications.
- Livingstone, S. and Helsper, E. (2006). Does Advertising Literacy Mediate the Effects of Advertising on Children? A Critical Examination of Two Linked Research Literatures in Relation to Obesity and Food Choice. *Journal of Communication*, 56, 560-584.
- Lobstein, T., Baur, L., and Uauy, R. (2004). Obesity in Children and Young People: A Crisis in Public Health. *Obesity Reviews*, 5(s1), 4-85.
- Lobstein, T. and Dobb, S. (2005). Evidence of a Possible Link between obesogenic Food Advertising and Child Overweight. *Obesity Reviews*, 6, 203-208.
- Lowry, R., Wechsler, H., Galuska, D. A., Fulton, J. E., and Kann, L. (2002). Television Viewing and Its Associations with Overweight, Sedentary Lifestyle, and Insufficient Consumption of Fruits and Vegetables among US high School Students: Differences by Race, Ethnicity, and Gender. *Journal of School Health*, 72(10), 413-421.

- Lytle, L., Eldridge, A. L., Kotz, K., Piper, J., Williams, S., and Kalina, B. (1997). Children's Interpretation of Nutrition Messages. *Journal of Nutrition Education*, 29, 128-136.
- Mackenzie, S. B. (2001). Opportunities for Improving Consumer Research through Latent Variable Structural Equation Modeling. *Journal of Consumer Research*, 28(1), 159-166.
- Macklin, C. M. (1983). Do Children Understand TV Ads? *Journal of Advertising Research*, 23(1), 63-70.
- Macklin, M. C. (1987). Preschoolers' Understanding of the Informational Function of Television Advertising. *Journal of Consumer Research*, 14(2, September), 229-239.
- Macklin, M. C. and Machleit, K. A. (1989). Measuring Preschool Children's Attitude. *Marketing Letters*, 1(3), 253-265.
- Maes, H. H. M., Neale, M. C., and Eaves, L. J. (1997). Genetic and Environmental Factors in Relative Body Weight and Human Adiposity. *Behavior Genetics*, 27(4), 325-351.
- Magarey, A. M., Daniels, L. A., and Boulton, T. J. (2001). Prevalence of Overweight and Obesity in Australian Children and Adolescents: Reassessment of 1985 and 1995 Data against New Standard International Definitions. *Medical Journal of Australia*, 174(561-564).
- Magarey, A. M., Daniels, L. M., Boulton, T. J., and Cockington, R. A. (2003). Predicting Obesity in Early Adulthood from Childhood and Parental Obesity. *International Journal of Obesity*, 27(4), 505-513.
- Mallinckrodt, V. and Mizerski, D. (2007). The Effects of Playing an Advergame on Young Children's Perceptions, Preferences, and Requests. *Journal of Advertising*, 36(2), 87-100.
- Marshall, D., O'Donohoe, S., and Kline, S. (2007). Families, Food, and Pester Power: Beyond the Blame Game? *Journal of Consumer Behaviour*, 6, 164-181.
- Martin, C. and Bush, A. (2000). Do Role Models Influence Teenagers' Purchase Intentions and Behavior? *Journal of Consumer Research*, 17(5), 441-453.
- Martin, M. C. (1997). Children's Understanding of the Intent of Advertising: A Meta-Analysis. *Journal of Public Policy & Marketing*, 16(2), 205-216.
- Mathiot, L. (2010). Child Consumption of Fun Food: Between Deviating Practice and Re-Appropriating Food-Use. *Young Consumers: Insight and Ideas for Responsible Marketers*, 11(2), 108-116.
- McAlister, A. R. and Cornwell, B. T. (2009). Preschool children's Persuasion Knowledge: The Contribution of Theory of Mind. *Journal of Public Policy & Marketing*, 28(2), 175-185.

- McDougall, J. and Chantrey, D. (2004). The Making of Tomorrow's Consumer. *Young Consumers: Insights and Ideas for Responsible Marketers*, 5(4), 8-18.
- McGinnis, M. J., Gootman, J. A., and Kraak, V. I. (2006). *Food Marketing to Children and Youth: Threat or Opportunity?* Washington, DC: Institute of Medicine of the National Academies.
- McKinley, M. C., Robson, C. L., Wallace, J. M., Morrissey, M., Moran, A., and Livingstone, M. (2005). It's Good to Talk: Children's Views on Food and Nutrition. *European Journal of Nutrition*, 59, 542-551.
- McLeroy, K. R., Bibeau, D., Steckler, A., and Glanz, K. (1988). An Ecological Perspective on Health Promotion Programs. *Health Education Quarterly*, 15(4), 351-377.
- McNeal, J. (1994). *Kids as Customers: A Handbook of Marketing to Children*. New York: Lexington Books.
- McNeal, J. U. (1999). *The Kids Market: Myths and Realities*. Ithaca, NY: Paramount Market Publishing, Inc.
- McNeal, J. U. and Ji, M. F. (2003). Children's Visual Memory of Packaging. *Journal of Consumer Marketing*, 20(5), 400-427.
- Mehta, N. K. and Chang, V. W. (2008). Weight Status and Restaurant Availability A Multilevel Analysis. *American Journal of Preventive Medicine*, 34(2), 127-133.
- Meyer, T. P., Donohue, T. R., and Henke, L. L. (1978). How Black Kids See TV Commercials. *Journal of Advertising Research*, 18(5), 51-58.
- Mirmiran, P., Azadbakht, L., and Azizi, F. (2007). Dietary Behaviour of Tehranian Adolescents Does not Accord with Their Nutritional Knowledge. *Public Health Nutrition*, 10(9), 897-901.
- Mizerski, D. (1995). The Relationship between Cartoon Trade Character Recognition and Attitude toward Product Category in Young Children. *Journal of Marketing*, 59(October), 58-70.
- Monge-Rojas, R., Nunez, H. P., Garita, C., and Chen-Mok, M. (2002). Psychosocial Aspects of Costa Rican adolescents' Eating and Physical Activity Patterns. *Journal of Adolescent Health*, 31(2), 212-219.
- Moore, E. S. (2007). Perspectives on Food Marketing and Childhood Obesity: Introduction to the Special Section. *Journal of Public Policy & Marketing*, 26(2), 157-161.
- Moore, E. S. and Rideout, V. J. (2007). The Online Marketing of Food to Children: Is it Just Fun and Games? *Journal of Public Policy & Marketing*, 26(2), 202-220.
- Morgan, D. L. (1998). *The Focus Group Guidebook. Focus Group Kit 1*. London: Sage Publications, Inc.

- Morland, K., Wing, S., Roux, A. D., and Poole, C. (2002). Neighborhood Characteristics Associated with the Location of Food Stores and Food Service Places. *American Journal of Preventive Medicine*, 22(1), 23-29.
- Morton, H., Stanton, R., Zuppa, J., and Mehta, K. (2005). Food Advertising and Broadcasting Legislation-A Case of System Failure? *Nutrition and Dietetics*, 62, 26-32.
- Moschis, G. P. and Churchill, G. A. (1978). Consumer Socialization: A Theoretical and Empirical Analysis. *Journal of Marketing Research*, 15(4), 599-609.
- Moschis, G. P., Moore, R. I., and Smith, R. B. (1984). The Impact of Family Communication on Adolescent Consumer Socialization. *Advances in Consumer Research*, 11, 314-319.
- Moschis, G. P. and Moore, R. L. (1979a). Decision Making among the Young: Socialization Perspective. *Journal of Consumer Research*, 6(2), 101-112.
- Moschis, G. P. and Moore, R. L. (1979b). Family Communication and Consumer Socialization. *Advances in Consumer Research*, 6, 359-363.
- Moschis, G. P., Moore, R. L., and Stanley, F. J. (1984). An Exploratory Study of Brand Loyalty Development. *Advances in Consumer Research*, 11, 412-417.
- Moses, L. J. and Baldwin, D. A. (2005). What Can the Study of Cognitive Development Reveal about Children's Ability to Appreciate and Cope with Advertising? *Journal of Public Policy & Marketing*, 24(2), 186-201.
- Mueller, M. J., Koertringer, I., Mast, M., Languix, K., and Frunch, A. (1999). Physical Activity and Diet in 5-7 Years Old Children. *Public Health Nutrition*, 2, 443-444.
- Myers, J. L. (1972). *Fundamentals of Experimental Design* (2nd ed.). Boston: Allyn and Bacon, Inc.
- National Health and Medical Research Council , A. R. C., Australian Vice-Chancellor's Committee. (2007). *National Statement on the Ethical Conduct in Human Research*.
- Neelankavil, J. P., O'Brien, J. V., and Tashjian, R. (1985). Techniques to Obtain Market-Related Information from Very Young Children. *Journal of Advertising Research*, 25(3, June/July), 41-47.
- Nestle, M. (2002). *Food politics: How the Food Industry Influences Nutrition and Health*. Berkeley, Los Angeles: University of California Press.
- Neumark-Sztainer, D., Story, M., Perry, C., and Casey, M. A. (1999). Factors Influencing Food Choices of Adolescents: Findings from Focus-Group Discussions with Adolescents. *Journal of American Dietetic Association*, 99, 929-934.
- Neville, L., Thomas, M., and Bauman, A. (2005). Food Advertising on Australian Television: The Extent of Children's Exposure. *Health Promotion International*, 20(2), 105-112.

- Niemeier, H. M., Raynor, H. A., Lloyd-Richardson, E. E., Rogers, M. L., and Wing, R. R. (2006). Fast Food Consumption and Breakfast Skipping: Predictors of Weight Gain from Adolescence to Adulthood in a Nationally Representative Sample. *Journal of Adolescent Health, 39*, 842-849.
- NHMRC. (2003). *Dietary Guidelines for Children and Adolescents in Australia*. National Health and Medical Research Council.
- Northstone, K. and Emmett, P. (2005). Multivariate Analysis of Diet in Children at Four and Seven Years of Age and Associations with Socio-Demographic Characteristics *European Journal of Clinical Nutrition, 59*, 751–760.
- Norton, P. A., Falciiglia, G. A., and Ricketts, C. (2000). Motivational Determinants of Food Preferences in Adolescents and Preadolescents. *Ecology of Food and Nutrition, 39*(3), 169-182.
- Nunnally, J. C. (1967). *Psychometric Theory*. New York.
- Nutrition Guide. (2011). Hungry Jack's. Retrieved from <http://www.hungryjacks.com.au/images/pdf/NutriGuide.pdf>.
- O'Brien, M., Nader, P. R., Bradley, R., Friedman, S. L., Belsky, J., and Susman, E. (2007). The Early Ecology of Childhood Overweight: A 12-Year Longitudinal Analysis. *International Journal of Obesity, 31*, 1469-1478.
- O'Dea, J. A. (2003). Differences in Overweight and Obesity among Australian Schoolchildren of Low and Middle/High Socioeconomic Status. *Medical Journal of Australia, 179*, 63.
- O'Dea, J. A. (2008). Gender, Ethnicity, Culture and Social Class Influences on Childhood Obesity among Australian Schoolchildren: Implications for Treatment, Prevention and Community Education. *Health & Social Care in the Community, 16*(3), 282-290.
- Oates, C., Blades, M., and Gunter, B. (2001). Children and Television Advertising: When Do They Understand Persuasive Intent? *Journal of Consumer Behaviour, 1*(3), 238-245.
- OfCom. (2004). Childhood Obesity-Food Advertising in Context. Office of Communications. Retrieved from http://stakeholders.ofcom.org.uk/market-data-research/other/tv-research/food_ads/.
- Ogden, C. L., Kuczmarski, R. J., Flegal, K. M., Mei, Z., Guo, S., Wei, R., Grummer-Strawn, L. M., Curtin, L. R., Roche, A. F., and Johnson, C. L. (2002). Centers for Disease Control and Prevention 2000 Growth Charts for the United States: Improvements to the 1977 National Center for Health Statistics version. *Pediatrics, 109*(1), 45-60.
- Oliveria, S. A., Ellison, R. C., Moore, L. L., Gillman, M. W., Garrahe, E. J., and Singer, M. R. (1992). Parent-Child Relationships in Nutrient Intake: The Framingham Children's Study. *The American Journal of Clinical Nutrition, 56*, 593-598.

- Owen, L. H., Lewis, C., Auty, S., and Buijzen, M. (2009). *Is Children's Understanding of Nonspot Advertising Comparable to Their Understanding of Television Advertising?* Paper Presented at the Annual Meeting of the International Communication Association, Marriott, Chicago, IL. Retrived from http://www.allacademic.com/meta/p299809_index.html.
- Owen, S., Schickler, P., and Davies, J. (1997). Food choice: How to assess attitudes of pre-adolescent children. *Nutrition and Food Science, 1*, 5-11.
- Paeratakul, S., Ferdinand, D. P., Champagne, C. M., Ryan, D. H., and Bray, G. A. (2003). Fast-Food Consumption among US Adults and Children: Dietary and Nutrient Intake Profile. *Journal of American Dietetic Association, 103*, 1332-1338.
- Page, R. M. and Brewster, A. (2007). Emotional and Rational Product Appeals in Televised Food Advertisements for Children: Analysis of Commercials Shown on US Broadcast Networks. *Journal of Child Health, 11*, 323-340.
- Pallant, J. (2007). *SPSS Survival Manual* (3rd ed.): Open University Press.
- Parmenter, K. and Wardle, J. (1999). Development of a General Nutrition Knowledge Questionnaire for Adults. *European Journal of Clinical Nutrition, 53*, 298-308.
- Parmenter, K. and Wardle, J. (2000). Evaluation and Design of Nutrition Knowledge Measures. *Journal of Nutrition Education, 32*(5), 269-277.
- Patrick, H. and Nicklas, T. A. (2005). A Review of Family and Social Determinants of Children's Eating Patterns and Diet Quality. *Journal of American College of Nutrition, 24*(2), 83-92.
- Pearson, N., Biddle, S. J., and Gorely, T. (2008). Family Correlates of Fruit and Vegetable Consumption in Children and Adolescents: A Systematic Review. *Public Health Nutrition, 12*(2), 267-283.
- Pechmann, C. and Stewart, D. J. (1988). Advertising Repetition: A Critical Review of Wearin and Wearout. *Current Issues & Research in Advertising, 11*, 285-330.
- Pereira, M. A., Kartashov, A. I., Ebbeling, C. B., van Horn, L., Slattery, M. L., Jacobs, D. R., and Ludwig, D. S. (2005). Fast-Food Habits, Weight Gain, and Insulin Resistance (the CARDIA study): 15-Year Prospective Analysis. *Lancet, 365*, 36-42.
- Perkins, H. W. (2003). *The Social Norms Approach to Preventing School and College Age Substance Abuse: A Handbook for Educators, Counselors, and Clinicians*. San Francisco, CA: Jossey-Bass.
- Perkins, H. W., Haines, M. P., and Rice, R. (2005). Misperceiving the College Drinking Norm and Related Problems: A Nationwide Study of Exposure to Prevention Information, Perceived Norms and Student Alcohol Misuse. *Journal of Studies on Alcohol and Drugs, 66*, 470-478.

- Perkins, H. W., Meilman, P. W., Leichter, J. S., Cashin, J. R., and Presley, C. A. (1999). Misperceptions of the Norms for the Frequency of Alcohol and Other Drug Use on College Campuses. *Journal of American College Health*, 47, 253-258.
- Perkins, J. M., Perkins, W., and Graig, D. W. (2010). Misperceptions of Peer Norms as a Risk Factor for Sugar-Sweetened Beverage Consumption among Secondary School Students. *Journal of American Dietetic Association*, 110, 1916-1921.
- Pescud, M., Pettigrew, S., Donovan, R. J., Cowie, S., and Fielder, L. (2012). Australian Children's Food and Drink Preferences: Implications for Health Professionals. *Nutrition & Dietetics*.
- Pettigrew, S. and Roberts, M. (2007). Mothers' Perceptions of Their Control over Their Children's Diets. *Advances in Consumer Research*, 34, 306-311.
- Pettigrew, S., Roberts, M., Quester, P., Tarabashkina, L., Chapman, K., and Miller, C. (2011). Investigating the Indirect Effects of Food Promotion on Children's Diets. University of Adelaide, Cancer Council of New South Wales, Cancer Council of South Australia.
- Pettigrew, S., Tarabashkina, L., Roberts, M., Quester, P., Chapman, K., and Miller, C. (2013). The Effects of Television and Internet Food Advertising on Parents and Children. *Public Health Nutrition*, 1-8.
- Petty, E. R. and Cacioppo, J. T. (1982). *Attitudes and Persuasion: Classic and Contemporary Approaches*. Dubuque, Iowa : W.C. : Brown Co. Publishers.
- Phipps, S., Burton, P., Lethbridge, L., and Osberg, L. (2004). Measuring Obesity in Young Children. *Canadian Public Policy/Analyse De Politiques*, 30(4), 349-364.
- Piaget, J. (1952). *The Origins of Intelligence in Children*. New York: International Universities Press, Inc.
- Pich, J., Ballester, L., Thomàs, M., Canals, R., and Tur, J. A. (2010). Assimilating and Following through with Nutritional Recommendations by Adolescents. *Health Education Journal*, 20(10), 1-11.
- Pink, B. (2006). An Introduction to Socio-Economic Indexes for Areas (SEIFA) *Information Paper 2039.0* (pp. 4-44). Canberra: Australian Bureau of Statistics.
- Powell, L. M., Auld, M. C., Chaloupka, F. J., O'Malley, P. M., and Johnston, L. D. (2007). Associations Between Access to Food Stores and Adolescent Body Mass Index. *American Journal of Preventive Medicine*, 33(4S), S301-S307.
- Powell, L. M., Chaloupka, F. J., and Bao, Y. (2007). The Availability of Fast-Food and Full-Service Restaurants in the United States Associations with Neighborhood Characteristics. *American Journal of Preventive Medicine*, 33(4S), S240-S245.
- Powell, L. M., Szczypka, G., and Chaloupka, F. J. (2007). Exposure to Food Advertising on Television among US Children. *Archives of Pediatrics & Adolescent Medicine*, 161, 553-560.

- Preacher, K. J. and Hayes, A. F. (2004). SPSS and SAS Procedures for Estimating Indirect Effects in Simple Mediation Models. *Behavior Research Methods, Instruments, & Computers*, 36(4), 717-731.
- Preacher, K. J. and Hayes, A. F. (2008). Asymptotic and Resampling Strategies for Assessing and Comparing Indirect Effects in Multiple Mediator Models. *Behavior Research Methods*, 40, 879-891.
- Primack, B. A., Gold, M. A., Land, S. R., and Fine, M. J. (2006). Association of Cigarette Smoking and Media Literacy about Smoking among Adolescents. *Journal of Adolescent Health*, 39, 465-472.
- Proctor, M. H., Moore, L. L., Gao, D., Cupples, L. A., Bradlee, M. L., Hood, M. Y., and Ellison, R. C. (2003). Television Viewing and Change in Body Fat from Preschool to Early Adolescence: The Framingham Children's Study. *International Journal of Obesity*, 27(7), 827-833.
- Raju, P. S. and Lonial, S. C. (1990). Advertising to Children: Findings and Implications *Current Issues and Research in Advertising*, 12, 231-274.
- Rappoport, L. (2003). *How We Eat: Appetite, Culture, and the Psychology of Food*. Toronto: ECW Press.
- Rasanen, M., Keskinen, S., Niinikoski, H., Heino, T., Simell, O., Ronnema, T., Helenius, H., and Viikari, J. (2004). Impact of Nutrition Counselling on Nutrition Knowledge and Nutrient Intake Of 7-to 9-y-Old Children in an Atherosclerosis Prevention Project. *European Journal of Clinical Nutrition*, 58(1), 162-172.
- Rasmussen, M., Krølner, R., Klepp, K.-I., Lytle, L., Brug, J., Bere, E., and Due, P. (2006). Determinants of Fruit and Vegetable Consumption among Children and Adolescents: A Review of the Literature. Part I: Quantitative Studies *International Journal of Behavioral Nutrition and Physical Activity*, 3(22).
- Rasnake, L. K., Laube, E., Lewis, M., and Linscheid, T. R. (2005). Children's Nutritional Judgements: Relation to Eating Attitudes and Body Image. *Health Communication*, 18(3), 275-289.
- Read, J. C., MacFarlane, S. J., and Casey, C. (2002). Endurability, Engagement and Expectations: Measuring Children's Fun. In *Procs Interaction Design and Children* (pp. 189-198): Eindhoven: Shaker Publishing.
- Reinehr, T., Kersting, M., Chahda, C., and Andler, W. (2003). Nutritional Knowledge of Obese Compared to Non Obese Children. *Nutrition Research*, 23(5), 645-649.
- Reisch, L. A. and Gwozdz, W. (2011). Chubby Cheeks and Climate Change: Childhood Obesity as a Sustainable Development Issue. *International Journal of Consumer Studies*, 35, 3-9.
- Resnik, A. and Stern, B. L. (1977). Children's Television Advertising and Brand Choice: A Laboratory Experiment. *Journal of Advertising*, 6, 11-17.

- Reynolds, K. D., Hinton, A. W., Shewchuk, R. M., and Hickey, C. A. (1999). Social Cognitive Model of Fruit and Vegetable Consumption in Elementary School Children. *Journal of Nutrition Education*, 31(1), 23-30.
- Rich, M. and Bar-on, M. (2001). Child Health in the Information Age: Media Education of Pediatricians. *Pediatrics*, 107(1), 156-162.
- Roberts, B. P., Blinkhorn, A. S., and Duxbury, J. T. (2003). The Power of Children over Adults When Obtaining Sweet Snacks. *International Journal of Paediatric Dentistry*(13), 76-84.
- Roberts, D. F. (1983). Children and Commercials: Issues, Evidence, Interventions. In J. Sprafkin, C. Swift and R. Hess (Eds.), *Rx Television: Enhancing the Preventing Impact of TV* (pp. 19-36). New York: Haworth Press.
- Roberts, M. (2005). Parenting in an Obesogenic Environment. *Journal of Research for Consumers* 9.
- Roberts, M. and Pettigrew, S. (2007). A Thematic Content Analysis of Children's Food Advertising. *International Journal of Advertising*, 26(3), 357-367.
- Robertson, T. S. and Rossiter, J. R. (1974). Children and Commercial Persuasion: An Attribution Theory Analysis. *Journal Of Consumer Research*, 1(June), 13-20.
- Robinson, T. N. (2001). Television Viewing and Childhood Obesity. *Pediatric Clinics of North America*, 48(4), 1017-1025.
- Robinson, T. N., Borzekowski, D. L., Matheson, D. M., and Kraemer, H. C. (2007). Effects of Fast Food Branding on Young Children's Taste Preference. *Archives of Pediatrics & Adolescent Medicine*, 161(8), 792-797.
- Robinson, T. N., Hammer, L. D., Wilson, D. M., Killen, J. D., Kraemer, H. C., Hayward, C., and Taylor, C. B. (1993). Does Television Viewing Increase Obesity And Reduce Physical Activity? Cross-Sectional And Longitudinal Analyses among Adolescent Girls. *Pediatrics*, 91, 273-280.
- Robinson, T. N., Kiernan, M., Matheson, D. M., and Haydel, F. (2001). Is Parental Control over Children's Eating Associated with Childhood Obesity? Results from a Population-Based Sample of Third Graders. *Obesity Research*, 9(5), 306-312.
- Rodríguez, G., Sjöberg, A., Lissner, L., and Moreno, L. A. (2011). Food Patterns and Nutrient Intake in Relation to Childhood Obesity. In L. A. Moreno, P. Iris and A. Wolfgang (Eds.), *Epidemiology of Obesity in Children and Adolescents* (Vol. 2, pp. 329-346): Springer.
- Roedder, D. L. (1981). Age Differences in Children's Responses to television Advertising: An Information-Processing Approach. *Journal of Consumer Research*, 8(September), 144-153.

- Roedder, D. L., Sternthal, B., and Calder, B. J. (1983). Attitude-Behaviour Consistency in Children's Responses to Television Advertising. *Journal of Marketing Research*, 20(November), 337-349.
- Ross, R. P., Campbell, T., Wright, J. C., Huston, A. C., Rice, M. L., and Turk, P. (1984). When Celebrities Talk, Children Listen: An Experimental Analysis of Children's Responses to TV as with Celebrity Edorsement. *Journal of Applied Developmental Psychology*, 5, 185-202.
- Rossiter, J. R. and Robertson, T. S. (1974). Children's TV Commercials: Testing the Defenses. *Journal of Communication*, September, 137-145.
- Rozendaal, E., Buijzen, M., and Valkenburg, P. (2009). Do Children's Cognitive Defenses Reduce Their Desire for Advertised Products? *Communication: European Journal of Communication Research*, 34(3), 287-303.
- Rozendaal, E., Buijzen, M., and Valkenburg, P. (2011). Children's Understanding of Advertisers' Persuasive Tactics. *International Journal of Advertising*, 30(2), 329-350.
- Sanft, H. (1986). The Role of Knowledge in the Effect of Television Advertising on Children. *Advances in Consumer Research*, 13, 147-152.
- Sawyer, A. G. and Ball, A. D. (1981). Statistical Power and Effect Size in Marketing Research. *Journal of Marketing Research*, 18(3, August), 275-290.
- Scaglioni, S., Salvioni, M., and Galimberti, C. (2008). Influence of Parental Attitudes in the Development of Children Eating Behaviour. *British Journal of Nutrition*, 99(1), 22-25.
- Schor, J. B. (2004). *Born to Buy: The Commercialized Child and the New Consumer Culture*. New York Scribner.
- Seiders, K. and Petty, R. D. (2007). Taming the Obesity Beast: Children, Marketing, and Public Policy Considerations. *Journal of Public Policy & Marketing*, 26(2), 236-242.
- Selman, R. L. (1980). *The Growth of Interpersonal Understanding*. New York: Academic Press.
- Shimp, T. A., Hyatt, D. J., and Snyder, D. J. (1991). A Critical Appraisal of Demand Artifacts in Consumer Research. *Journal of Consumer Research*, 18, 273-286.
- Shunk, J. A. and Birch, L. L. (2004). Girls at Risk for Overweight at Age 5 Are at Risk for Dietary Restraint, Disinhibited Overeating, Weight Concerns, and Greater Weight Gain from 5 to 9 Years. *Journal of the American Dietetic Association*, 104(7), 1120-1126.
- Signorielli, N. and Lears, M. (1992). Television and Children's Conceptions of Nutrition: Unhealthy Messages. *Heath Communication*, 4(4), 245-257.
- Signorielli, N. and Staples, J. (1997). Television and Children's Conceptions of Nutrition. *Heath Communication*, 9(4), 289-301.

- Skinner, J., Carruth, B. R., Moran, J., Houck, K., Schmidhammer, J., Reed, A., Coletta, F., Cotter, R., and Ott, D. (1998). Toddlers' Food Preferences: Concordance with Family Members' Preferences. *Journal of Nutrition Education and Behavior*, 30, 17-22.
- Snoek, H. M., van Strien, T., Janssens, J., and Engels, r. (2006). The Effect of Television Viewing on Adolescents Snacking: Individual Difference Explained by External, Restrained and Emotional Eating. *Journal of Adolescent Health*, 39, 448-451.
- Stanek, K., Abbott, D., and Cramer, S. (1990). Diet Quality and the Eating Environment of Preschool Children. *Journal of the American Dietetic Association*, 90(11), 1582-1584.
- Stevens, J. P. (1992). *Applied Multivariate Statistics for the Social Sciences* (2nd ed.). Hilledela, NJ: Erlbaum.
- Stewart, D. W. and Shamdasani, P. N. (1990). *Focus Group: Theory and Practice*. Newbury Park, London, New Delhi: Sage Publications. The International Professional Publishers.
- Stoneman, Z. and Brody, G. H. (1981). Peers as Mediators of Television Food Advertisements Aimed at Children. *Developmental Psychology*, 17(6), 853-858.
- Story, M., Neumark-Sztainer, D., and French, S. (2002). Individual and Environmental Influences on Adolescent Eating Behaviors. *Journal of the American Dietetic Association*, 102(3), S40-S51.
- Strauss, A. and Corbon, J. (1990). *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. London: Sage Publications, Ltd.
- Swaminathan, S., Thomas, T., Kurpad, A. V., and Vaz, M. (2009). Perceptions of healthy eating: A Qualitative Study of School-Going Children in South India. *Health Education Journal*, 68(2), 94-110.
- Tabachnick, B. G. and Fidell, L. S. (2007). *Using Multivariate Statistics*. Boston: Pearson.
- Thompson, N. A. (2009). Classical Item and Test Theory analysis with CITAS, White paper (pp. 1-8): Assessment Systems Corporation.
- Ticehurst, G. W. and Veal, A. J. (2000). *Business research Methods: A Managerial Approach*. Frenchs Forest, NSW: Longman.
- Tilston, C. H., Gregson, K., Neale, R. J., and Douglas, C. J. (1993). Dietary Awareness of Primary School Children. *British Food Journal*, 93(6), 25-29.
- Timperio, A., Crawford, D., Telford, A., and Salmon, J. (2004). Perceptions about the Local Neighborhood and Walking and Cycling among Children. *Preventive Medicine*, 38, 39-47.
- Tremblay, M. S. and Willms, J. D. (2003). Is the Canadian Childhood Obesity Epidemic Related to Physical Inactivity? *International Journal of Obesity*, 27, 1100-1105.

- Triches, R. M. and Giugliani, E. R. J. (2005). Obesity, Eating Habits and Nutritional Knowledge among School Children. *Revista de Saude Publica*, 39(4), 541-547.
- Utter, J., Scragg, R., and Schaaf, D. (2006). Associations between Television Viewing and Consumption of Commonly Advertised Foods among New Zealand Children and Young Adolescents. *Public Health Nutrition*, 9(5), 606-612.
- Valkenburg, P. (2000). Media and Youth Consumerism. *Journal of Adolescent Health*, 27S(2), 52-56.
- Vandewater, V. A., Shim, M., and Caplovitz, A. G. (2004). Linking Obesity and Activity Level with Children's Television And Video Game Use. *Journal of Adolescence* (1), 71-85.
- Variyam, J. N., Blaylock, J., Lin, B.-H., Ralston, K., and Smallwood, D. (1999). Mother's Nutrition Knowledge and Children's Dietary Intakes. *American Journal of Agricultural Economics*, 81(2), 373-384.
- Varma, S. (n. d.). Preliminary Item Statistics Using Poin-Biserial Correlation and P-Values. Retrieved from http://www.eddata.com/resources/publications/EDS_Point_Biserial.pdf.
- Veal, A. J. (2005). *Business Research Methods: A Managerial Approach* (2 ed.). South Melbourne: Pearson Addison Wesley.
- Venn, A. J., Thomson, R. J., Schmidt, M. D., Cleland, V. J., Curry, B. A., Gennat, H. C., and Dwyer, T. (2007). Overweight and Obesity from Childhood to Adulthood: A Follow-Up of Participants in the 1985 Australian Schools Health and Fitness Survey. *Medical Journal of Australia*, 186(9), 458-460.
- Vereecken, C. and Maes, L. (2010). Young Children's Dietary Habits and Associations with the Mothers' Nutritional Knowledge and Attitudes. *Appetite*, 54(1), 44-51.
- Videon, T. M. and Manning, C. K. (2003). Influences on Adolescent Eating Patterns: The Importance of Family Meals. *Journal of Adolescent Health*, 32(5), 365-373.
- Viner, R. M. and Cole, T. J. (2005). Television Viewing in Early Childhood Predicts Adult Body Mass Index. *Journal of Pediatrics*, 147(4), 429-435.
- Wake, M., Hardy, P., Sawyer, M., and Carlin, J. B. (2007). Overweight, Obesity and Girth of Australian Preschoolers: Prevalence and Socio-Economic Correlates. *International Journal of Obesity*, 31(7), 1044-1051.
- Wake, M., Nicholson, J. M., Hardy, P., and Smith, K. (2007). Preschooler Obesity and Parenting Styles of Mothers and Fathers: Australian National Population Study. *Pediatrics*, 120(6), E1520-E1527.
- Waling, M. U. and Larsson, C. L. (2008). Energy Intake of Swedish Overweight and Obese Children Is Underestimated Using a Diet History Interview. *Journal of Nutrition*, 139, 522-527.

- Wang, L., Fan, X., and Willson, V. L. (1996). Effects of Nonnormal Data on Parameter Estimates and Fit Indices for a Model with Latent and Manifest Variables: An Empirical Study. *Structural Equation Modeling*, 3(3), 228-247.
- Wang, Y. and Lobstein, T. (2006). Worldwide Trends in Childhood Overweight and Obesity. *International Journal of Pediatric Obesity*, 1, 11-25.
- Wang, Z., Patterson, C. M., and Hills, A. P. (2002). Association between Overweight or Obesity and Household Income and Parental Body Mass Index in Australian Youth: Analysis of the Australian National Nutrition Survey, 1995. *Asia Pacific Journal of Clinical Nutrition*, 11(3), 200-205.
- Ward, S. (1972). Children's Reactions to Commercials. *Journal of Advertising Research*, April, 37-45.
- Ward, S. (1974). Consumer Socialization. *Journal of Consumer Research*, 1(2), 1-14.
- Ward, S., Reale, G., and Levinson, D. (1972). Children's Perceptions, Explanations, and Judgments of Television Advertising: A Further Exploration. In E. A. Rubinstein, G. A. Comstock and J. P. Murray (Eds.), *Television and Social Behavior* (pp. 468-490). Washington, D.C.: Government Printing Office.
- Ward, S. and Wackman, D. B. (1973). Children's Information Processing of Television Advertising. In P. Clark (Ed.), *New models for mass communication research* (pp. 119-146). Beverly Hills: Sage Publications.
- Ward, S., Wackman, D. B., Faber, R., and Lesser, G. (1974). Effects of Television Advertising on Consumer Socialization *Marketing Science Institute Working Paper* (pp. i-48).
- Ward, S., Wackman, D. B., and Wartella, E. (1977). *How Children Learn to Buy*. Beverly Hills, London: Sage Publications.
- Wardle, J., Guthrie, C., Sanderson, S., Birch, L., and Plomin, R. (2001). Food and Activity Preferences in Children of Lean and Obese Parents. *International Journal of Obesity*, 25(7), 971-977.
- Wardle, J., Parmenter, K., and Waller, J. (2000). Nutrition Knowledge and Food Intake. *Appetite*, 34, 269-275.
- Warner, R. M. (2013). *Applied Statistics: From Bivariate Through Multivariate Techniques*. University of New Hampshire: Sage Publications, Inc.
- Warwick, J., McIlveen, H., and Strugnell, C. (1999). Food Choice of 9-17-Year Olds in Northern Ireland - Influences and Challenges. *Nutrition and Food Science*, 5, 229-236.
- Wellman, H. M. and Johnson, C. N. (1982). Children's Understanding of Food and its Functions: A Preliminary Study of the Development of Concepts of Nutrition. *Journal of Applied Developmental Psychology*, 3, 135-148.

- Wells, W. D. (1965). Communicating with Children. *Journal of Advertising Research*, 65(5), 2-14.
- Westerterp, K. R. (2010). Physical Activity, Food Intake, and Body Weight Regulation: Insights from Boubly Labeled Water Studies. *Nutrition Reviews*, 68(3), 148-154.
- Westerterp, K. R. and Goris, A. H. (2002). Validity of the Assessment of Dietary Intake: Problems of Misreporting. *Current Opinion in Clinical Nutrition and Metabolic Care*, 5, 489-493.
- WFA. (2010). WFA Analysis: What Next for Food Marketing? World Federation of Advertisers. Retrieved December 13, 2012, from <http://www.wfanet.org/en/global-news/wfa-analysis-what-next-for-food-marketing>.
- Whitaker, R. C., Wright, J. A., Pepe, M. S., Seidel, K. D., and Dietz, W. H. (1997). Predicting Obesity in Young Adulthood from Childhood and Parental Obesity. *New England Journal of Medicine*, 337(13), 869-873.
- White, L. and Davis, T. (2006). *Children and Snack Foods: Is There a Relationship between Television Viewing Habits and Nutritional Knowledge and Product Choice?* Paper presented at the Asia-Pacific Advances in Consumer Research Sydney.
- WHO. (2006a). *Marketing of Food and Non-Alcoholic Beverages to Children*. World Health Organization, Oslo, Norway: World Health Organization.
- WHO. (2006b). Obesity and Overweight. World Health Organization. Retrieved March 8, 2010, from <http://www.who.int/mediacentre/factsheets/fs311/en/>.
- WHO. (2006c). Ten Things You Need to Know about Obesity *WHO European Ministerial Conference on Counteracting Obesity: Diet and physical activity for health*. Istanbul. World Health Organization, Retrieved from http://www.euro.who.int/Document/NUT/ObesityConf_10things_Eng.pdf.
- WHO/FAO. (2003). *Diet, Nutrition and the Prevention of Chronic Diseases*: World Health Organization/Food and Agriculture Organization.
- Wiecha, J. L., Peterson, K. E., Ludwig, D. S., Kim, J., Sobol, A., and Gortmaker, S. L. (2006). When Children Eat What They Watch: Impact of Television Viewing on Dietary Intake in Youth. *Archives of Pediatrics & Adolescent Medicine*, 160(April), 436-442.
- Williams, H. M., Woodward, D. R., Ball, P. J., Cumming, F. J., Hornsby, H., and Boon, J. A. (1993). Food Perceptions and Food Consumption among Tasmanian High School Children. *Australian Journal of Nutrition and Dietetics*, 50, 156-163.
- Wiman, A. R. and Newman, L. M. (1989). Television Advertising Exposure and Children's Nutritional Awareness. *Journal of the Academy of Marketing Science*, 17(2), 179-188.

- Woodward, D. R., Cumming, F. J., Ball, P. J., Williams, H. M., Hornsby, H., and Boon, J. A. (1997). Does Television Affect Teenagers' Food Choices? *Journal of Human Nutrition and Dietetics*, 10, 229-235.
- Worsley, A. (2002). Nutrition Knowledge and Food Consumption: Can Nutrition Knowledge Change Food Behaviour? *Asia Pacific Journal of Clinical Nutrition*, 11(Suppl), S579-S585.
- Worthington, R. L. and Whittaker, T. A. (2006). Scale Development Research: A Content Analysis and Recommendations for Best Practices. *The Counseling Psychologist*, 84, 806-838.
- Wouters, E. J., Larsen, J. K., Kremers, S. P., Dagnelie, P. C., and Geenen, R. (2010). Peer Influence on Snacking Behavior in Adolescence. *Appetite*, 55, 11-17.
- Wright, B. D. and Linacre, J. M. (1994). Reasonable Mean-Square Fit Values. *Rasch Measurement Transactions*, 8(3), 370.
- Wu, M. and Adams, R. (2007). *Applying the Rasch Model to Psycho-Social Measurement: A Practical Approach*. Melbourne: Education Measurement Solutions.
- Wu, M. L., Adams, R., Wilson, M. R., and Haldane, S. A. (2007). *ACER ConQuest 2.0*: ACER Press.
- Yancey, A. K., Cole, B. L., Brown, R., Williams, J. D., Hillier, A., Kline, R. S., . . . McCarthy, W. J. (2009). A Cross-Sectional Prevalence Study of Ethnically Targeted and General Audience Outdoor Obesity-Related Advertising. *Milbank Quarterly*, 87(1), 155-184.
- YMA. (2006). Television food advertising: parent survey analysis. Young Media Australia. Retrieved March 16, 2009, from http://www.youngmedia.org.au/pdf/food-ads_full-report_Sep06.pdf.
- Young, B. (2003). Does Food Advertising Influence Children's Food Choices? A Critical Review of Some of the Recent Literature. *International Journal of Advertising*, 22(4), 441-459.
- Young, B., Webley, P., Hetherington, M., and Zeedy, S. (1996). The Role of Television Advertising in Children's Food Choice: Ministry of Agriculture Fisheries and Food.
- Young, B. M. (1990). *Television Advertising and Children*. Oxford: Clarendon Press.
- Zeinstra, G. G., Koelen, M. A., Kok, F. J., and de Graaf, C. (2007). Cognitive Development and Children's Perceptions of Fruit and Vegetables: A Qualitative Study. *International Journal of Behavioral Nutrition and Physical Activity*, 4(30).
- Zimmerman, F. J. and Bell, J. F. (2010). Associations of Television Content Type and Obesity in Children. *Research and Practice*, 100(2), 334-340.

Zive, M. M., Frank-Spohrer, G. C., Sallis, J. F., McKenzie, T. L., Elder, J. P., Berry, C. C., Broyles, S. L., and Nader, P. R. (1998). Determinants of Dietary Intake in a Sample of White and Mexican-American Children. *Journal of the American Dietetic Association*, 98(11), 1282-1289.