

**Parenting as a Predictor of Child Development: The Association between Parenting
Styles in Childhood and Adolescent Internalising and Externalising Problems**

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Abstract

Parenting factors are important to early experiences in childhood. Empirical evidence suggests parenting style can have a significant impact to child development, however there is little known evidence that specific parenting styles have a long-lasting effect on adolescent mental health problems. Many studies have focused on child outcomes, with few considering later adolescent internalising and externalising emotional and behavioural outcomes. The aim of this thesis is to examine the strength of the association between two parenting styles (angry parenting and parental warmth) when children were aged 4/5 and its effect on adolescent internalising and externalising problems when children were aged 16/17. Participants were mothers and children (n = 4983) who participated in the Longitudinal Study of Australian Children (LSAC) (2004-2018). A complete case sample of 806 participants were recruited, each of whom participated in all relevant measures. These were children who had completed the Strengths and Difficulties Questionnaire (SDQ) at age 16/17 and parents who had completed the Angry Parenting Scale and Parental Warmth Scale at age 4/5 and the SDQ at age 16/17. Bivariate and multivariate analyses were conducted to assess the strength of the association between parenting styles and adolescent internalising and externalising problems amongst other variables. The results of the study found no statistically significant results to support parenting style at age 4/5 was associated with adolescent internalising and externalising problems at age 16/17. Future studies should conduct post-hoc analysis testing to determine at what age parenting style effects child internalising and externalising development.

Declaration

This thesis contains no material which has been accepted for the award of any other degree or diploma in any University, and, to the best of my knowledge, this thesis contains no material previously published except where due reference is made. I give permission for the digital version of this thesis to be made available on the web, via the University of Adelaide's digital thesis repository, the Library Search and through web search engines, unless permission has been granted by the School to restrict access for a period of time.

29th September 2020

Contribution Statement

In writing this thesis, my supervisor Alyssa Sawyer, co-supervisor Michael Sawyer and I collaborated to generate research questions of interest and design the appropriate methodology using pre-collected data from the Longitudinal Study of Australian Children (2002). I conducted the literature search and was responsible for all data analysis and the thesis write-up.

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1.0 Overview

One of the most critical time periods in child development is from birth to five years old (Bayer et al, 2012). Early experiences of children during this time provides the base for development and functioning throughout childhood and adolescence. Parenting style plays a significant role in childhood and is a key contributor to child development (Bayer et al, 2006). For example, parental warmth can encourage positive emotional and behavioural development, including pro-social skills, successful peer relationships and emotional regulation (Moran, Turiano & Gentzler, 2018). In contrast, excessive parental anger contributes to negative development of child temperament and aggression. Although brief periods of parental anger are both common and natural amongst parents, the anger discussed in the present study is above average anger. This form of angry parenting involves being chronically angry with the child which in effect harms their health and well-being. In recent years, there has been a significant emphasis on effective parenting styles that influence positive child development throughout their childhood into adolescence (Lomanowska, Boivin, Hertzman & Fleming, 2017). Extensive attention has been focused on internalising and externalising emotional and behavioural problems occurring from parenting style in childhood and how these issues extend into adolescence. The aim of the present study was to examine the effect of parenting styles in early life (age 4 years) on internalising and externalising problems in adolescence (age 16 years).

1.0.1 Parenting Style and Child Internalising and Externalising Problems

Parenting style and parent-child relationships in early childhood have seen reported effects on children's internalising and externalising emotional and behavioural development (Bayer et al, 2006). Evidence is emerging from cross-sectional studies that parenting style can have a significant impact to child development, however there is little known evidence that specific parenting styles in childhood may have a long-lasting effect on adolescent mental

health problems. Studies that have investigated the possible association observed child outcomes from the ages of 4-10, and thus there is a lack of research investigating adolescent outcomes around the age of 16 (Bayer et al, 2006; Waylen, Stallard & Stewart-Brown, 2008; Daryanani, Hamilton, Abramason & Alloy, 2016). For example, a group of 14,541 mothers and children were assessed through retrospectively reported measures. Waylen and colleagues (2008) predicted the parent-child relationship when children were aged between 0-4 years would predict child mental health at age 7-9. The authors reported that children who experienced poor mental health at age 7-9 had increased exposure to parental hostility and resentment between the ages of 2-4 (Waylen, Stallard & Stewart-Brown, 2008). Furthermore, Belsky and colleagues (2006) in a cohort study of 1041 mothers and their children found poor parent-child relationships at the age of 4 were a determinant of poor child mental health at the age of 6 (Belsky et al, 2006). However, Waylen and colleagues study uses retrospective measures which do not control for exposure or outcome assessments, and instead must rely on participants for accurate recordkeeping. The present study uses self-report measures to avoid the issue of shared method variance where the predictor and outcome may be associated because the parent is reporting both the parent and child measures. Furthermore, both studies fail to look at the long-term effect of early parenting, therefore this study aims to investigate if parenting style has a long-lasting impact into adolescence.

1.1 Parenting Style

Research on parenting style has conceptualised parenting behaviour as characterised by either negligent behaviour, punitive and strict action or a combination of warmth and control (Baumrind, 1966). Baumrind's Parenting Styles is a frequently employed approach that describes parenting style (Baumrind, 1966). Baumrind (1966) identified three types; permissive, authoritarian and authoritative (Baumrind, 1966). The majority of studies thus use Baumrind's research as a foundation to describe forms of parenting.

The permissive parent avoids exercising control and is characterised by low demand and high responsiveness (Baumrind, 1966; Henry & Hubbs-Tait, 2013). Permissive parents exert love and warmth yet provide minimal guidelines for the child. Authoritarian parenting is characterised by high demands and low responsiveness (Baumrind, 1966; Henry & Hubbs-Tait, 2013). An authoritarian parent has high expectations yet provides minimal feedback and nurturance, they lack warmth and engage in punitive discipline. The authoritative parent consists of high responsiveness and high demands (Baumrind, 1966; Henry & Hubbs-Tait, 2013). Whilst having high standards for the child, they are responsive to the child's emotional needs. Research on both permissive and authoritarian parenting found maladaptive outcomes for children including low self-esteem and aggression (Baumrind, 1966; Morris, Cui & Steinberg; 2013) whereas authoritative parenting was found to increase emotional and socialisation skills (Baumrind, 1966; Morris, Cui & Steinberg; 2013). Several studies found authoritative parenting resulted in positive child development due to its balance of demandingness and responsiveness, warmth and control (Baumrind, 1966; Lamborn, Mounts, Steinberg & Sanford, 1991; Morris, Cui & Steinberg; 2013). Warmth in particular has been found to increase positive wellbeing and mental health (Lamborn, Mounts, Steinberg & Dornbusch, 1991; McKay, Fanning, Paleg & Landis, 1996). These conclusions received significant attention, leading researchers to look further into the characteristics of parenting style.

In more recent research, other parental characteristics are more broadly looked at as opposed to Baumrind's parenting styles (Henry & Hubbs-Tait, 2013; Morris, Cui & Steinberg, 2013). A more recent conceptualisation of Baumrind's parenting styles was created by Henry and Hubbs-Tait (2013) who focused on the constructs of responsiveness and demandingness, warmth and control. These constructs are used significantly to define key

aspects of parenting that influence child emotional and behavioural outcomes. In the present study, parental warmth and angry parenting are the key parenting styles investigated.

1.1.1 Parental Warmth

Parental warmth is defined by responsive and supportive parenting (Sellers et al, 2014; Moran, Turiano & Gentzler, 2018). More specifically, characteristics include nurturance, reciprocity, acceptance, affection and attentiveness towards the child. These parental behaviours are related to better parent-child relationships and overall wellbeing (Contreras, Kerns, Weimer, Gentzler & Tomich, 2000; Moran, Turiano & Gentzler, 2018). A study by Waller and colleagues (2014) examined the presence of unemotional behaviour in children aged 2-3 measured through naturalistic observation. Findings suggested that parental warmth when children were aged 2-3 was associated with fewer behaviour problems in early childhood (Waller et al, 2014). Unemotional behaviour was highly displayed by children who had poor parent-child relationship quality (Waller et al, 2014). However, this study has been limited by its methodology of naturalistic observation. Data collected from observation at a single timepoint is less reliable as other variables cannot be controlled for and test re-test reliability is low. The current study will assess the association between parental warmth and adolescent internalising and externalising development using a longitudinal design to gather data across two timepoints.

There has been consistent evidence that early parental warmth has long-term effects that increase levels of high self-esteem, academic success, problem-solving skills and proactivity (Contreras, Kerns, Weimer, Gentzler & Tomich, 2000; Moran, Turiano & Gentzler, 2018). This indicates the importance of childhood experiences that include positive parenting style to influence adolescent emotional and behavioural development. The present study further aims to identify if the age of 4/5 is of particular importance for parental warmth to influence adolescent development.

1.1.2 Parental Anger

Whilst control that sets boundaries can be healthy in the parent-child relationship (Henry & Hubbs-Tait, 2013), control that asserts hostility and excessive anger has been found to have detrimental effects on adolescent development (Nix et al, 1999; Sellers et al, 2014). Angry parenting is characterised by anger, punitive punishment, aggression, negativity and disapproval towards to the child (Sellers et al, 2014; Nelson, East, Delva, Lozoff & Gahagan, 2019). There is evidence to suggest that angry and harsh parenting has an effect on children's emotional and behavioural development (Nix et al, 1999; Bayer et al, 2011). For example, in a study of 277 families of children aged 4, Nix and colleagues (1999) examined the association between harsh discipline practices and children's externalising behaviours using a longitudinal design. The authors reported that parents' aversive discipline practices and hostile attributions at age 4 predicted children's future externalising behaviour problems at the age of 6 (Nix et al, 1999). Furthermore, Healy and colleagues in a study of 98 mothers and children, assessed at ages 18 months and 5 years, found parental hostile attributions when children were aged 18 months directly influenced child behavioural problems of aggression at 5 years (Healy, 2015). However, these studies were limited by small sample sizes. The present study aims to extend the generalisability and representativeness of results by increasing the sample size. Furthermore, both studies investigated early childhood years therefore this study aims to investigate whether the effects of parenting style have a long-lasting effect into adolescence.

Unlike parental warmth which has clear positive outcomes including high self-esteem and well-being (Lamborn, Mounts, Steinberg & Dornbusch, 1991; McKay, Fanning, Paleg & Landis, 1996), less is known about the level of angry parenting and the strength of the association on development. For this reason, angry parenting has greater focus in the present

study as it aims to investigate if there is a stronger effect between angry parenting style and adolescent outcomes.

1.2 Internalising and Externalising Emotional and Behavioural Problems

At a broad level mental health issues can be divided into two groups, commonly labelled internalising problems and externalising problems (Bayer et al, 2012). Internalising problems include over-inhibited or internally focused emotional symptoms such as anxiety, fear, depression and social withdrawal (Willner, Gatzke-Kopp & Bray, 2016). In adolescence, internalising problems are associated with social and school dysfunction with increased risks of suicide ideation, alcohol use and depression (Scaini, Palmieri & Caputi, 2018).

Externalising problems involve disinhibited or externally focused behavioural symptoms including aggression, conduct problems, hyperactivity and attention problems (Willner, Gatzke-Kopp & Bray, 2016). Untreated externalising behaviours are associated with negative outcomes that often last into adulthood including substance abuse, poor relationships and unstable employment (Champion, Goodall & Rutter, 1995; McKee, Colletti, Rakow, Jones & Forehand, 2008). There is empirical evidence which suggests one of the most consistent predictors of child mental health problems is family contextual risks (Kessler et al, 2005; Bayer et al, 2012). Several risk factors are identified in the development and transmission of internalising and externalising problems for children, including poor parent-child relationship quality and lack of warmth and nurturance (Nix et al, 1999; Waller et al, 2014). One area needing more research is parenting style as there are promising findings that link early parenting style to poor child mental health (Waller et al, 2014). Parenting style in childhood may be a crucial element that effects internalising and externalising problems however majority of studies to date have examined the effect of parenting cross-sectionally on children's mental health problems and so little is known about the long term impact of

parenting style in early life on children's levels of mental health that extends into adolescence (Bayer et al, 2006; Scaini, Palmieri & Caputi, 2018).

There is evidence to suggest that different parenting styles are associated with child developmental outcomes. Studies have found links between harsh parenting styles and externalising problems (Lee & Gotlieb, 1991; Shaw et al, 1998; McKee, Colletti, Rakow, Jones & Forehand, 2008). McKee and colleagues (2008) conducted a meta-analytic review of 17 studies on the association of three parenting behaviours (parental warmth, hostility and control) in contrast with child internalising and externalising problems. Of the 17 included studies, 12 were cross-sectional study designs between parenting behaviours and child outcomes at the age of 3-5. The authors found that lower levels of parental warmth and control, and higher levels of parental hostility were associated with higher levels of both internalising and externalising problems in children (McKee, Colletti, Rakow, Jones & Forehand, 2008). The other 5 studies were longitudinal designs assessing parenting behaviours at the age of 3-5 and its effect on children's mental health at age 13/14. It was found 65% of internalising problems and 90% of externalising problems were correlated with negative parenting styles at age 3-5 (McKee, Colletti, Rakow, Jones & Forehand, 2008). However, it is necessary to outline the limitations of the studies used in the meta-analysis. Twelve studies were cross-sectional designs which fail to provide information about directionality, and where there are long-term effects of early parenting on children's levels of mental health problems. Consequently, there was an initiative to use a longitudinal design in the present study to provide opportunity to examine whether parenting style is a predictor of child behaviour from one time point to the next and whether there are lasting long term effects of parenting in early childhood on later levels of mental health problems. Furthermore, demographic variables within the review were not examined as other theoretically relevant variables were not controlled for. In order to address the limitations of previous research the

present study aims to investigate if angry parenting is associated with internalising and externalising problems in adolescence, whilst controlling for potential variables (McKee, Colletti, Rakow, Jones & Forehand, 2008; Saritas, Grusec & Gencoz, 2013).

1.3 Single Parent Status

Children living in single-parent families has attracted much concern in fear that they may fare less well in terms of their emotional and behavioural development due to the external stressors single parents encounter. Single parents experiencing high levels of stress have been found to report engaging in negatively controlling behaviours and exerting hostility and anger more so than cohabiting parents (Lipman, Boyle, Dooley & Offord, 2002). There are a number of risk factors that increase the difficulty for parents to provide parenting characterised by high warmth and low anger, including single parenting. Parents who are the sole carers for their children experience single income and excessive parenting responsibilities, which increases the risk of parenting styles characterised by low warmth and high anger. A study by Jackson and Scheines (2005) reported that among single parents, low wage employment and depression were significant contributors to negative parenting style (Jackson & Scheines, 2005). However, less is known particularly about the association between parenting style and later mental health problems for children of single parents. Therefore, the present study will examine the association between parenting style at age 4/5 and adolescent internalising and externalising problems at age 16/17 whilst adjusting for single parent or two parent family status, to identify if single parent status has a greater effect on adolescent internalising and externalising problems.

Currently 15% of children of the Australian population live in single parent families but by the year 2040 this is expected to increase to approximately 43-65% of children (ABS, 2019). The predicted increased rates of single-parent households have raised much concern due to substantial evidence suggesting children living in single-parent families are at greater

risk for poorer internalising and externalising outcomes (Lipman, Boyle, Dooley & Offord, 2002; Daryanani, Hamilton, Abramson & Alloy, 2016). In a study of 9398 children aged 6-11 years, Lipman and colleagues (2002) examined the strength of the association between single-parent family status and children's mental health problems. The authors reported that children in single-parent families, where angry and hostile parenting was present at age 6, had an increased risk of developing clinically significant internalising and externalising problems by age 11 (Lipman et al, 2002). A limitation of this study was the use of a selected sample. All participants were from a low socioeconomic status, which could be a potential mediator to parenting style. The present study uses a community-based sample to account for potential variables that could influence parenting style.

1.4 Gender Differences

There is evidence to suggest that there is difference in the types of mental health problems by gender, but also that parenting style may have a different impact on development depending on the gender of the child (Braza et al, 2013; Demmer, Puccio, Stokes, McGillivray & Hooley, 2018). In a study of 89 children, Braza and colleagues (2013) examined the association between authoritarian parenting style when children were aged 5/6 and the child's internalising and externalising problems at age 8/9. The authors reported that authoritarian parenting at age 5/6 resulted in a positive association with both male and female externalising problems, and females internalising problems at age 8/9 (Braza et al, 2013). Few studies to date have examined the potential differences in the association between angry and warm parenting styles and later adolescent mental health. It is likely that this association may differ by gender because studies have reported that females are more likely to acquire anxiety disorders which typically results in withdrawal, loneliness and depression whereas males are more likely to display impulsive behaviour leading to temperament and aggression (Eaton et al, 2011; Demmer, Puccio, Stokes, McGillivray & Hooley, 2018). Studies that have

researched parenting style and the effects on male and female adolescents have found a strong influence on adolescent depressive symptoms for females (Daryanani, Hamilton, Abramson & Alloy 2016) and greater risks for developing behaviour problems for males (Florsheim, Tolan & Gorman-Smith, 1998). The present study aims to discover what internalising and externalising problems are caused by parenting style on male and female adolescents.

1.5 The Current Study

The aim of this study is to identify the strength of the association between two parenting styles experienced by four-year old children and the level of the child's internalising and externalising problems when aged sixteen years. Specifically, it is hypothesised that children who experience higher levels of 'angry parenting' (Nix et al, 1999; Lipman, Boyle, Dooley & Offord, 2002) at age four will have higher levels of internalising and externalising problems at sixteen years than children who experience lower levels of angry parenting at age four. As well, children who experience higher levels of parental warmth at age four will have lower levels of internalising and externalising problems at sixteen years than children who experience lower levels of parental warmth at age four.

Further, it is hypothesised that the strength of these associations will be greater for four year old children living in single-parent families than those living in two-parent families, and that females will experience higher levels of internalising problems at sixteen years compared to males who will experience higher levels of externalising problems at sixteen years.

It is hypothesised:

1. Higher levels of angry parenting when children are four years old are associated with higher levels of adolescent internalising and externalising problems when children are sixteen years old.

2. Higher levels of parental warmth when children are four years old are associated with lower levels of adolescent internalising and externalising problems when children are sixteen years old.

3. Higher levels of angry parenting experienced by four-year-old children living in single-parent families will have a stronger association with the level of internalising and externalising behavioural problems at sixteen years, as compared to four-year olds living in two-parent families.

4. Higher levels of angry parenting when female children are four years old will have a stronger association with internalising problems at sixteen years, as compared to four-year-old males who will have a stronger association with the level of externalising problems at sixteen years.

Method

2.0 Participants

Data was used from the Longitudinal Study of Australian Children (LSAC) (Australian Institute of Family Studies, 2002), a study assessing the development of young children and their families. This is a large, representative sample of children from across Australia. Multiple respondents were utilised in LSAC including children, parents and carers/teachers. Children and the primary parent are the key respondents in the present study, and the primary parent is defined as the parent who knows the child best.

The recruitment of children into LSAC is reported elsewhere (Sanson et al, 2002), briefly the sampling frame was the Medicare Australian database, the most comprehensive database of Australia's population, particularly for young children. An initial sample in 2003 of 18,500 children was taken from the Medicare database and a random sample of children were selected from 330 postcodes within Australia (Sanson et al, 2002). Children and their families within these postcodes were then randomly selected to be a part of the study. To ensure that the number of children in each state and territory were proportionate to the population of children in each area, a process of stratification was undertaken (Sanson et al, 2002). Overall, the study recruited a total of 10,090 children and their parents at the first wave, with 5,107 in cohort B and 4,983 in cohort K (Sanson et al, 2002). The present study made use of data available for the K cohort collect when children were aged 4/5 years in 2004, and subsequent data collected when children were aged 16/17 years in 2016 (n = 3089). Inclusion criteria for the present study were that children were aged 4/5 at the beginning of the study and had data available for the variables of interest at age 16/17. A complete case sample of 806 children and parents had data available for all relevant measures for the present study (parent scales and child scales). The large loss of participants resulted from missing data. The response rates of participants significantly decreased by 38% from when children

were aged 4/5 years to 16/17 years in cohort K predominately due to participants being non-contactable and for refusing to participate. To avoid any complications, all missing data were removed. Potential implications that may result from removing large amounts of data include the potential reduction in statistical power which may inhibit the significance of results and the representativeness of the sample. Table 1 demonstrates that despite having a smaller case sample drawn from the overall response sample, participants still have similar demographics to the original sample.

In LSAC parents of the child are categorised into one of three groups: parent 1 (P1) defined as the parent who knows the most about the child (also known as the primary parent); parent 2 (P2) defined as another person in the household with a parental relationship to the child or the partner of parent 1; and parent living elsewhere (PLE), a parent who lives away from parent 1 but still has contact with the child. Parent 1 is the key respondent participating in the present study. Most often parent 1 was the biological mother however 0.7% of primary parents were either a biological father, foster mother, adoptive mother or grandparent (Sanson et al, 2002). Parent 1 was the respondent utilised in the present study, as it is possible that the relationship between a biological mother and biological child would differ from that of a biological father, grandparent or guardian.

2.1 Data Screening

2.1.1 Missing Data

Before analyses were conducted, missing values were identified on the variables of interest to the study. The characteristics of the response sample (those with information on any of the variables of interest) were compared to the demographic characteristics of the complete case sample (those with complete information on all required variables). The characteristics on the response sample are shown in Table 1. There were 806 individuals with

data on all variables required for the present study. The majority of the loss to follow up was due to participants opting out of the study by the age of 16/17 therefore a large proportion did not have data.

2.1.2 Assessing Normality

Normality was checked by assessing the kurtosis and skewness of each variable in order to meet the assumptions for statistical analyses. Both parenting styles were found to be not normally distributed (see appendix 1). Parental warmth ($M = 26$, $SD = 2.69$) when children were aged 4/5 was found to be negatively skewed and platykurtic ($-.568$, $-.008$). Angry parenting ($M = 13.22$, $SD = 2.54$) when children were aged 4/5 was found to be positively skewed and leptokurtic ($.925$, 3.46). Some limitations exist for these measures. It is likely a high social desirability effect is present for both parenting measures. For example, an item from the Angry Parenting Scale, '*how often do you feel you have problems managing your child*' is likely to cause social desirability bias as respondents will avoid reporting an undesirable response. Hence, parents may be inclined to rate themselves as overly warm and less angry than they truly are. As the distribution for parenting style was non-normal, both angry parenting and parental warmth were dichotomised into low versus high categories using a median split. For the Angry Parenting Scale, the possible range of scores was 6 – 23 with high scores representing higher anger. The 'low' angry category had a range of scores from 6 to 11, while the 'high' angry category had scores ranging from 12-23. For the Parental Warmth Scale, the possible range of scores was 0 – 30 with high scores representing higher warmth. The 'low' warmth category had a range of scores from 17 to 26, while the 'high' warmth category had scores ranging from 27-30.

2.2 Measures

2.2.1 Measurement of Demographic Variables

Demographic variables were measured for both the child and parent in this study. The sex of child participants was categorised as male or female. This information was collected from the parent questionnaires when children were aged 4/5.

Parent demographic variables included: parent 1 status, relationship to the child, family type and employment status. All variables for parents were collected from parent questionnaires at age 4/5. Parent 1 status was categorised as father or mother. Relationship to the child was based upon the question “what is your relationship to the study child”, with twenty-seven options to which 99.3% answered, ‘biological parent’. Family type was measured under the construct ‘type of family’. Parents were asked to answer what the current living relationship was with the study child to which they were given five options; *1 = two biological parents, 2 = one biological parent (P1) and one non-biological parent, 3 = one biological parent, 4 = two non-biological parents and 5 = 1 non-biological parent*. Answers were categorised into ‘two-parent family’ and ‘single-parent family’ as option 1 and 3 were 100% of the responses. Employment status was categorised into employed, unemployed or other. The inclusion criteria for ‘other’ included volunteer work and not in the labour force. Full demographic variables for the present sample are reported in table 1.

2.2.2 Measurement of Parenting Style

2.2.2.1 The Angry Parenting Scale

Angry parenting style was measured by the Angry Parenting Scale in LSAC. Items in this scale were adapted from the National Longitudinal Study of Children and Youth (NLSCY) ‘Parenting Scale’. The Parenting Scale measured parenting with the inclusion of items that measured both positive and negative aspects of parenting. Items that portrayed negative angry parenting were taken from the Parenting Scale and used in the Angry Parenting Scale. The Angry Parenting Scale measures parents’ use of aversive or harsh

discipline via items regarding feelings of anger or frustration that are excessive towards the child (e.g., “how often are you angry when you punish this child?”). Many studies that have used the Parenting scale have reported valid and reliable results (Cronbach’s $\alpha = .66 - .68$) (NLSCY, 2000; Kim, Connolly, Rotondi & Tamim, 2018). Measures of the proportion of variance were recommended by Hancock and Mueller (2006) to account for underlying factors in LSAC, therefore H correlations were used as an indicator of scale reliability. Magnitudes of H correlations of $>.80$ were considered desirable with respect to scale reliability (Hancock & Mueller, 2006). The Angry Parenting scale was deemed acceptable ($H = .081$). High scores on the Angry Parenting Scale indicate higher levels of angry parenting. Initial item set for angry parenting was introduced at ages 4/5 to be completed by parents. It comprised of a 4-item self-report scale with a range of 6-20.

Initial scale testing in the present study found the Angry Parenting Scale to have low internal consistency reliability with a Cronbach’s alpha of 0.496. However, due to having only four items in the scale, the mean inter-item correlation presented a more appropriate reliability test as recommended by Briggs and Cheek (1986). The recommended optimal range for the inter-item correlation is between 0.2 – 0.4 (Briggs and Cheek, 1986). The corrected item-total correlation value indicated that each item in the Angry Parenting Scale correlated with the total score ($>.3$) excluding item four ($<.2$). The fourth item, “*of all the times you talk to this child about his or her behaviour, how often is this praise*” showed high item error variance (66-91%). The alpha value (0.496) was compared with the alpha if removed value which found item four to be much higher (.732), suggesting complete removal of item four. Before being removed from the scale, this item was reverse coded in order to be aligned with the intent of measuring parental anger. Once reverse coded to, “*of all the times you talk to this child about his or her behaviour, how often is this disapproval*” internal consistency reliability improved in the present study showing a Cronbach’s alpha of .732 for

the scale. The Angry Parenting Scale was administered to parents when children were aged 4/5 in order to measure the level of angry parenting on children.

2.2.2.2 Parental Warmth Scale

Parental warmth was measured by parent report using the Parental Warmth Scale in LSAC adapted from the Child Rearing Questionnaire (Paterson & Sanson, 1999). The original Child Rearing Questionnaire measures different aspects of parenting behaviours including reasoning, punishment, obedience, expectations and warmth. The Parental Warmth scale in LSAC comprises of five warmth items from the Child Rearing Questionnaire (e.g., “how often do you have warm, close times together with this child?”). Questions were rated on a 5-point Likert scale of 1=never/almost never to 5=always/almost always. The Parental Warmth Scale had high scale reliability in LSAC ($H = .095$). In the present study Cronbach’s alpha demonstrated high internal consistency reliability (0.823) for the warmth items. To ascertain the reliability due to the small number of items, the mean inter-item correlation value was measured. A mean of 0.441 with values ranging from 0.303 - 0.584 was found suggesting a strong relationship among items. The range of this measure was 17-30. Both the original scale and Parental warmth scale have been validated as a reliable measure of parental warmth (Paterson & Sanson, 1999; Zubrick, Lucas, Westrupp & Nicholson, 2014). The Parental Warmth scale was administered to parents when children were aged 4/5 in order to measure the level of parental warmth on children.

2.1.3 Measurement of Emotional and Behavioural Development

2.2.3.1 The Strengths and Difficulties Questionnaire

To measure participants emotional and behavioural problems, parent-report and youth-report versions of the Strengths and Difficulties Questionnaire (SDQ) were used at age 16/17 years. The SDQ is a widely used and extensively validated measure that screens

for emotional and behavioural problems in children and adolescents aged 4-17 (Goodman, 1997). It contains 25 items that are split into 5 subscales; emotional problems, conduct problems, peer problems, hyperactivity-inattention and prosocial skills which assesses both positive and negative attributes. The SDQ is scored on a 3-point Likert scale of, '*0 = not true*', '*1 = somewhat true*' and '*2 = certainly true*' with a range of 0-10 for each subscale. A total difficulties score is calculated from the four problem subscales. By summing the scores of the emotional problems and peer problems subscales an internalising problems score is generated, and by summing the conduct problems and hyperactivity-inattention subscale an externalising problems score is generated (Goodman, 2001).

The SDQ is a widely used method to assess emotional and behavioural problems in children and adolescents (Goodman, 2001). Previous studies have reported moderate to good internal consistency for the self- and parent-report version of the SDQ, which were both used in the current study (Goodman, 2001). A Cronbach's alpha ranging from 0.84 - 0.88 for emotional problems and hyperactivity-inattention shows high internal reliability (Goodman, 2001; Heuvel et al, 2017) whereas conduct problems and peer problems reported low to moderate internal reliability ranging from 0.44 – 0.52 (Goodman, 2001; Heuvel et al, 2017). Consistent with the literature, conduct problems and peer problems are notably lower in reliability in the present study with a Cronbach's alpha for conduct problems and peer problems of 0.67 and 0.56 respectively. Cronbach's alpha for emotional problems and hyperactivity were not as high as reported in previous research but still had moderate to good internal consistency at 0.73 and 0.68. Studies have also confirmed the SDQ to have acceptable test-retest reliability (Mellor, 2004) and concurrent validity (Goodman, 1997; Muris, Meesters & Van Den Berg, 2003).

To determine participant's classification into clinical categories, the three-tier clinical group structure proposed by Goodman was used (Goodman, 2001). This structure categorises

participants into 'normal', 'borderline' and 'abnormal' categories, based on their subscale scores and total difficulty score. A specified cut off score are used to classify individuals as in the normal (80%), borderline (10%) or abnormal (10%) range. A four-band categorisation option was later proposed to assess participants as being in a clinical group, however the three-tier structure appears to be the most commonly used in Australian samples (Goodman, 2001).

2.3 Procedure

In LSAC participants were followed using a multiple cohort longitudinal design which allowed for the assessment of developmental outcomes from infancy until adolescence. Due to the large and longitudinal nature of LSAC, multi-source data collection occurred. Data was collected via face to face interviews; mail-out questionnaires; online questionnaires; telephone interviews; computer assisted telephone interviews; and observational methods. Face to face interviews were the principal method of data collection. To avoid missing information, supplementary mail-out questionnaires were also given to respondents. If face to face interviews were not applicable, phone interviews or mail-out questionnaires were conducted. Children were also observed and assessed in their living environment during the face to face interviews. In the present study, data was used to compare parent self-report measures and child self-report measures. In order to access the required data for the present study, a confidentiality deed and data form were attained. Once access to the data was permitted, scores from the Angry Parenting Scale and Parental Warmth Scale were collected when children were aged 4/5 and SDQ measures were collected when children were aged 16/17.

2.4 Statistical Analyses

Data was analysed using a Statistical Package for the Social Science (SPSS) Version 26.0 (IBM Corp., 2017). Firstly, the distribution of parent and child measures were checked for normality. It was found that the Angry Parenting Scale and Parental Warmth Scale were

not normally distributed (see appendix 1). Due to the highly skewed nature of the parenting scales, these variables were categorised into two groups using a median split and are referred to as 'high' and 'low' defined as scoring above and below the median score. The distribution of scores was split at 4-8 for the low group (n=306) and 9-20 for the high group (n=500) for angry parenting and 17-26 (n=398) for the low group and 27-30 (n=408) for the high group for parental warmth. Initially the percentage of children scoring in the normal, borderline, and abnormal range was examined for the two parenting style variables, and the pattern of effect examined clinical classifications of the SDQ subscales. Means and standard deviations were assessed for differences in scores for high or low angry parenting and high or low parental warmth at age 4/5 on youth-report SDQ scores at age 16/17. Parent-report SDQ scores at age 16/17 were then compared with both parenting styles at age 4/5 to examine if parenting scores, as well as youth scores, could determine the effect of parenting style at age 16/17 and if parent and youth scores were related. Next, to assess the strength of the association between parenting styles at age 4/5 with adolescent internalising and externalising problems at age 16/17 bivariate and multivariate regression was used. Further analyses adjusted for covariates that were previously identified as important predictors of adolescent development including single-parent families and employment.

2.5 Ethical Considerations

LSAC was reviewed and approved by the Australian Institute of Family Studies Ethics Committee, a Human Research Ethics Committee registered with the National Health and Medical Research Council (NHMRC). All ethical standards outlined in the NHMRC regarding ethical conduct in research involving humans was met in LSAC (Australian Institute of Family Studies, 2002).

Respondents are de-identified by the use of ID numbers and all information collected is kept strictly confidential. There are two levels at which LSAC data can be accessed: the general release and restricted release. The general release includes data from which more sensitive information has been removed including postal codes and dates of birth whereas the restricted release includes data from which more sensitive information is given. Due to this, access to the restricted release is more rigorous. The present study was approved access to the general release as sensitive information were not required.

Results

3.0 Demographic Characteristics

3.0.1 Demographic Characteristics of the Response and Complete Case Sample

Table 1 shows the demographic characteristics of the response and complete case samples. The distribution of demographic characteristics in the complete case sample was similar to that observed in the response sample. The response sample appeared to be proportionately made up of male (51.3%) and female (48.7%) children, which is similar to the complete case sample of males (49.8%) and females (50.2%). In the response sample the majority of primary parents were mothers (97.1%), with females being the only primary parent in the complete case sample (100%). The majority of children resided in two parent families in both samples, however single parent households were similar in both the response and complete case sample (13.9%, 14.2%, respectively). The study population appeared to mostly be made of employed or working parents, however a large portion of parents (38.9% and 37.3% in the response and complete case samples respectively) were volunteers or not employed in the labour force. In summary the distribution of demographic characteristics was largely similar in the response and complete case samples, other than the loss of male primary caregivers in the complete case sample.

Table 2 displays the means and standard deviations for the response sample and complete case sample for both parent and child measures. The results suggest that there were minimal differences in the distribution of scores across both samples. A similar percentage of children in the response and complete case sample scored in the 'abnormal' range on the SDQ suggesting that children with higher levels of problems remained consistent in both samples. Across both samples, youth-report ratings on the SDQ reported a higher percentage of scores in the abnormal range for hyperactivity-inattention (22.2% response sample, 24.6% complete

case sample) and peer problems (20.0% response sample, 19.9% complete case sample). In contrast, lower abnormal scores were reported for emotional problems (13.8% response sample, 14.6% complete case sample) and conduct problems (7.4% response sample, 7.9% complete case sample). It should be noted however that the loss of data in the complete case sample are those who are missing the relevant measures and represent loss over the course of the study, as opposed to showing that SDQ scores at age 4/5 are worse than SDQ scores at age 4/5 who are still responding in the study at age 16/17 years.

Table 1

Participant demographic characteristics for the response sample and complete case sample

Characteristics	Response sample	Complete case sample
	(n = 4,983)	(n = 806)
	%	%
Child characteristics		
Age 4/5		
Sex		
Male	51.3	49.8
Female	48.7	50.2
Parent characteristics		
Age 4/5 years		
Parent 1		
Mother	97.1	100
Father	2.9	0.0
Relationship to child		
Biological parent	99.3	100
Other ¹	0.7	0.0
Family type		
Two parents	86.0	85.8
Single parent	14.0	14.2
Employment		
Employed	57.4	59.9
Unemployed	3.8	2.8

¹ Relationship to child group “other” includes grandparents, adoptive parents and foster parents

Other ²	38.9	37.3
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Note. Response sample is the number of participants who responded to all items for each outcome or predictor. Complete case sample includes respondents with complete data on all items.

Table 2

Parent and child measures for the response sample and complete case sample

Measures	Response sample	Complete case sample
	(<i>n</i> = 4,983) M (SD) or %	(<i>n</i> = 806) M (SD) or %
Parent measures		
Age 4/5 years		
Parenting styles		
Angry parenting score	9.6 (2.6)	9.5 (2.7)
Parental warmth score	26.6 (2.7)	26.4 (2.6)
Child measures		
Age 16/17		
Youth-report SDQ scores		
Total difficulties score	15.0 (5.)	12.8 (3.8)
Emotional problems	3.2 (2.5)	2.2 (2.1)
Conduct problems	2.3 (1.3)	2.4 (1.3)
Hyperactivity-Inattention	5.0 (1.9)	3.7 (1.3)
Peer problems	4.4 (1.5)	4.4 (1.4)
Youth-report SDQ abnormal range (%)		
Internalising problems		
Emotional problems	13.8	14.6
Peer problems	20.0	19.9
Externalising problems		
Conduct problems	7.4	7.9
Hyperactivity-inattention	22.2	24.6
Youth-report SDQ internalising/externalising scores		
Internalising	10.4 (2.3)	10.2 (2.3)
Externalising	5.7 (3.2)	5.9 (3.2)

² Employment group “other” includes participants who do volunteer work or do not work in the labour force.

3.1 Internalising and Externalising Problems

3.1.1 Association between Parenting Style at age 4/5 years and Internalising and Externalising Problems at age 16/17 years

Table 3 presents the percentage of adolescents scoring in the normal, borderline and abnormal range of the SDQ subscales at age 16/17 with parents who scored high or low on angry parenting and high or low on parental warmth at age 4/5. There is a higher proportion of adolescents with parents who scored high on angry parenting who scored in the normal range for emotional problems (77.2%, 95% CI: 74.3-80.0) and both externalising problems of conduct problems and hyperactivity-inattention (82.4%, 95% CI: 79.7-85.0 and 56.8%, 95% CI: 53.3-60.2) while adolescents with parents who scored high on parental warmth scored highest in the normal range for emotional problems and conduct problems (79.6%, 95% CI: 76.8-82.3 and 82.4%, 95% CI: 79.7-85.0). The number of adolescents that fell within the normal range for high angry parenting and high parental warmth was consistent for conduct problems. Peer problems had the highest proportion of adolescents scoring in the borderline range for both high and low angry parenting (62.8%, 95% CI: 59.4-66.1 and 66.3%, 95% CI: 63.0-69.5) and high and low parental warmth (63.2%, 95% CI: 59.8-66.5 and 65.1%, 95% CI: 61.8-68.3).

P-values were calculated to examine the statistical significance ($p < .05$) of the association between angry parenting and parental warmth at age 4/5 with scores in the normal, borderline or abnormal range of the SDQ at age 16/17. No statistically significant associations were found. Results showed that adolescents who scored in the normal, borderline or abnormal range of the SDQ at age 16/17 whose parents scored high or low on angry parenting and parental warmth at age 4/5 did not affect their level of internalising and externalising problems ($p > .05$) (table 3).

Table 3

Percentage of adolescents scoring in the abnormal, borderline and normal SDQ range with low versus high angry parenting and low versus high parental warmth (n = 806)

SDQ scales	Low angry parenting			High angry parenting			<i>P</i>	Low parental warmth			High parental warmth			<i>P</i>
	n	%	95%CI	n	%	95%CI		n	%	95%CI	n	%	95%CI	
Internalising problems														
Emotional problems														
Abnormal	49	6.1	4.4-7.7	69	8.6	6.6-10.5	<i>.082</i>	63	15.8	12.8-18.3	55	13.5	11.1-15.8	<i>.380</i>
Borderline	15	4.9	3.4-6.3	45	9.0	7.0-10.9		33	8.3	6.3-10.2	27	6.6	4.8-8.3	
Normal	242	79.1	76.2-81.9	386	77.2	74.3-80.0		302	75.9	72.9-78.8	326	79.6	76.8-82.3	
Peer problems														
Abnormal	57	18.6	15.9-21.2	103	20.6	17.8-23.3	<i>.596</i>	77	19.3	16.5-22.0	83	20.3	17.5-23.0	<i>.862</i>
Borderline	203	66.3	63.0-69.5	314	62.8	59.4-66.1		259	65.1	61.8-68.3	258	63.2	59.8-66.5	
Normal	46	15.0	12.5-17.4	83	16.6	14.0-19.1		62	15.6	13.0-18.1	67	16.4	13.8-18.9	
Externalising problems														
Conduct problems														
Abnormal	25	8.2	6.3-10.0	39	7.8	5.9-9.6	<i>.933</i>	30	7.5	5.6-9.3	34	8.3	6.3-10.2	<i>.734</i>
Borderline	32	10.5	8.3-12.6	49	9.8	7.7-11.8		43	10.8	8.6-12.9	38	9.3	7.2-11.3	
Normal	249	81.3	78.6-83.9	412	82.4	79.7-85.0		325	81.7	79.0-84.3	336	82.4	79.7-85.0	
Hyperactivity-inattention														
Abnormal	79	25.8	22.7-28.8	119	23.8	20.8-26.7	<i>.716</i>	92	23.1	20.1-26.0	106	26.0	22.9-29.0	<i>.630</i>
Borderline	62	20.3	17.5-23.0	97	19.4	16.6-22.1		81	20.4	17.6-23.1	78	19.1	16.3-21.8	
Normal	165	53.9	50.4-57.3	284	56.8	53.3-60.2		225	56.5	53.0-59.9	224	54.9	51.4-58.3	

Note. Angry parenting by median split; low angry parenting: n=300, high angry parenting: n=506. Parental warmth by median split; low parental warmth: n=398, high parental warmth: n=408.

3.1.2 Youth and Parent-Report SDQ Scores

Table 4 and 5 compares mean Youth Self-report SDQ scores (total difficulties, internalising and externalising scores) at age 16/17 for children with low versus high angry parenting and low versus high parental warmth at age 4/5. Further analyses of the association between parenting style at age 4/5 years and internalising and externalising problems at age 16/17 years was tested to explore if there was any difference in distribution.

Results in table 4 showed the total difficulties score was slightly greater for children with high angry parenting (M=19.1, SD=4.3) compared with low angry parenting (M=18.8, SD=4.2). Low angry parenting was 0.1 standard deviations lower, suggesting children with low angry parenting had less effect on their total difficulties score however the difference was small. Scores for internalising problems showed children with high angry parenting was similar to that of low angry parenting (M=11.4, SD=2.58 and M=11.2, SD=2.6) suggesting no difference on internalising problems between high and low angry parenting. Externalising problems was slightly greater in distribution for children with high angry parenting (M=5.9, SD=3.3) compared with low angry parenting (M=5.8, SD=3.1) by 0.2 standard deviations. However, differences in standard deviation were small. Results suggests there is no effect of angry parenting on total difficulties score or internalising and externalising problems, as consistent with above results.

Table 5 shows the results for high and low parental warmth on total difficulties, internalising and externalising scores. Results show that high and low parental warmth had minimal difference in scores for total difficulties (M=18.9, SD=4.1 and M=19.1, SD=4.5), internalising scores (M=11.2, SD=2.4 and M=11.5, SD=2.6) and externalising scores (M=5.9, SD=3.2 and M=5.9, SD=3.3). Differences in standard deviations were small suggesting high or low parental warmth had no effect on adolescents scores, also consistent with prior results.

Table 4

Comparison of Youth Self-report SDQ scores (M, SD) at age 16/17 years for children with low vs high angry parenting scores at age 4-5 years (n = 806)

	Low angry parenting	High angry parenting
	M (SD), 95% CI	M (SD), 95% CI
SDQ youth-report scores		
Total difficulties score	18.8 (4.2), 18.3-19.3	19.1 (4.3), 18.8-19.5
Internalising score	11.2 (2.6), 10.9–11.5	11.4 (2.5), 11.2–11.7
Externalising score	5.8 (3.1), 5.5–6.2	5.9 (3.3) 5.6–6.2

Note. Angry parenting by median split: low angry parenting: n=300, high angry parenting: n=506.

Table 5

Comparison of Youth Self-report SDQ scores (M, SD) at age 16/17 years for children with low vs high parental warmth scores at age 4-5 years (n = 806)

	Low parental warmth	High parental warmth
	M (SD), 95% CI	M (SD), 95% CI
SDQ youth-report scores		
Total difficulties score	19.1 (4.5), 18.7-19.6	18.9 (4.1), 18.5-19.3
Internalising score	11.5 (2.6), 11.26 - 11.79	11.2 (2.4), 11.0-11.4
Externalising score	5.9 (3.3), 5.5-6.2	5.9 (3.2), 5.6- 6.2

Note. Parental warmth by median split; low parental warmth: n=398, high parental warmth: n=408.

Table 6 and 7 report Parent-report SDQ scores (total difficulties, internalising and externalising scores) when children were aged 16/17 years with low versus high angry parenting and low versus high parental warmth at age 4/5. Table 6 shows the results for high and low angry parenting on total difficulties, internalising and externalising scores. Results show that high and low angry parenting had minimal difference in scores for total difficulties (M=12.8, SD=4.3 and M=12.9, SD=4.0), internalising scores (M=10.5, SD=2.2 and M=10.4, SD=2.3) and externalising scores (M=3.7, SD=3.0 and M=3.6, SD=3.1). Consistent with youth-report scores, the total difficulties score was slightly greater (0.3 standard deviations) for high angry parenting but again differences in standard deviations were small suggesting high or low angry parenting had no effect on parent-reported scores. Different to the scores shown in the youth report, parents scored lower on the SDQ measures.

Results in table 7 showed no differences in scores. High and low parental warmth had minimal difference in scores for total difficulties (M=13.1, SD=4.3 and M=12.6 SD=4.1), internalising scores (M=10.6, SD=2.2 and M=10.4, SD=2.3) and externalising scores (M=3.8, SD=3.1 and M=3.5, SD=2.9). Differences in standard deviations were small suggesting high or low parental warmth had no effect on SDQ scores. Results suggest there is no difference in SDQ scores as reported by parents in table 6 and 7 or adolescents in table 4 and 5 at age 16/17 by parenting styles at age 4/5.

Table 6

Comparison of Parent Self-report SDQ scores (M, SD) at age 16 years for children with low vs high angry parenting scores at age 4-5 years (n = 806)

	Low angry parenting	High angry parenting
	M (SD), 95% CI	M (SD), 95% CI
SDQ parent-report scores		
Total difficulties score	13.1 (4.3), 12.6–13.5	12.6 (4.12), 12.2–13.0
Internalising score	10.6 (2.2), 10.4–10.8	10.4 (2.3), 10.1–10.6
Externalising score	3.8 (3.1), 3.5–4.1	3.5 (2.9), 3.2– 3.8

Note. Angry parenting by median split: low angry parenting: n=300, high angry parenting: n=506.

Table 7

Comparison of Parent Self-report SDQ scores (M, SD) at age 16 years for children with low vs high parental warmth scores at age 4-5 years (n = 806)

	Low parental warmth	High parental warmth
	M (SD), 95% CI	M (SD), 95% CI
SDQ parent-report scores		
Total difficulties score	12.9 (4.0), 12.4–13.3	12.8 (4.3), 12.4–13.2
Internalising score	10.4 (2.3), 10.2–10.7	10.5 (2.3), 10.3–10.7
Externalising score	3.6 (3.1), 3.3– 4.0	3.7 (3.0), 3.4–4.0

Note. Parental warmth by median split; low parental warmth: n=398, high parental warmth: n=408.

3.1.3 Adjusting for Gender, Parent Status and Employment

Bivariate and multivariate logistic regression was conducted to explore whether parenting styles at age 4/5 effected adolescent SDQ scores for internalising and externalising problems at age 16/17 (table 8) whilst adjusting for covariates. The multivariate regression adjusted for demographic variables including gender, parent status and employment.

Consistent with prior results, the bivariate regression shows no effect of parenting style at age 4/5 on adolescent internalising and externalising problems (SDQ scores) at age 16/17.

Results for angry parenting on emotional problems and hyperactivity-inattention suggests students are unlikely to be affected when adjusting for covariates. Emotional problems had a bivariate score of $-.006$ (95% CI: $-.079-.067$) which reduces to $-.002$ (95% CI $-.084-.081$) when adjusting for demographic variables. Peer problems and conduct problems showed increases when adjusting for covariates suggesting they may be affected by demographic characteristics. For example, peer problems showed a bivariate score of $-.002$ (95% CI: $-.136-.131$) which slightly increased to $.010$ (95% CI: $-.140-.160$). However, the negative CI suggests there was no statistically significant effect. Parental warmth showed increases from bivariate scores when adjusting for covariates. For example, hyperactivity-inattention showed a bivariate score of $.004$ (95% CI: $-.094-.103$) which increased to $.006$ (95% CI: $-.142-.155$). However, the CIs are negative, suggesting parental warmth has no effect on SDQ scores when adjusting for covariates.

Table 8

Bivariate and multivariate analysis (95%CI) for parenting style at age 4/5 years predicting adolescent SDQ scores at age 16/17

Parenting Styles	Internalising Problems				Externalising Problems			
	Emotional problems		Peer Problems		Conduct Problems		Hyperactivity-inattention	
	Bivariate	Multivariate	Bivariate	Multivariate	Bivariate	Multivariate	Bivariate	Multivariate
Angry Parenting	-.006 (-.079-.067)	-.002 (-.084-.081)	-.002 (-.136-.131)	.010 (-.140-.160)	-.009 (-.141-.142)	.016 (-.149-.181)	-.025 (-.125-.076)	-.031 (-.151-.088)
Parental warmth	-.0 (-.07-.066)	-.009 (-.091-.072)	.006 (-.125-.138)	.006 (-.142-.155)	.002 (-.138-.142)	.003 (.160-.166)	.004 (-.094-.103)	.006 (-.142-.155)

Note. Multivariate variables include gender, parent status and employment status.

3.1.4 Parent Status and Internalising and Externalising Problems

Table 9 demonstrates the percentage of adolescents scoring in the normal and abnormal range for internalising and externalising problems at age 16/17 who resided in a single parent or two parent family at age 4/5 with high or low angry parenting. There is a higher proportion of scores in the normal range for two parent families for emotional problems, conduct problems and hyperactivity-inattention for both low and high angry parenting. Peer problems show the highest percentage of adolescents scoring in the abnormal range for both high and low angry parenting (83.9%, 95% CI: 81.5-86.6 and 84.8%, 95% CI: 82.1-87.4) with high angry parenting reporting higher abnormal scores. Single parent status reported a higher percentage in the normal range for emotional problems and conduct problems for both high and low angry parenting, while peer problems and hyperactivity-inattention reported abnormal scores. Adolescents with single parents who scored high on angry parenting reported higher scores in the abnormal range for hyperactivity-inattention (58.1%, 95% CI: 49.1-67.0). Percentages of scores however in the normal and abnormal range are consistent across two parent and single parent families

Although there is a consistent pattern showing a high prevalence of adolescents scoring in the abnormal range for peer problems, the 95% confidence intervals (CIs) are wide and overlapping for adolescent scores with single parent status. This indicates that the precision of the estimate is low. Although some scores fall into the abnormal category with high angry parenting, there is a possibility that this finding is due to chance.

Table 9

Percentage of children with two parents versus single parent status with low versus high angry parenting at age 4/5 scoring in the normal versus abnormal range of the SDQ at age 16/17 (n = 806)

Parent status	Low angry parenting				High angry parenting			
	Normal		Abnormal		Normal		Abnormal	
	%	95%CI	%	95%CI	%	95%CI	%	95%CI
Two parent status								
Internalising problems								
Emotional problems	78.2	75.1-81.2	21.8	18.7-24.8	78.2	75.1-81.2	21.8	18.7-24.8
Peer problems	16.1	13.3-18.8	83.9	81.5-86.6	17.3	14.4-20.1	84.8	82.1-87.4
Externalising problems								
Conduct problems	80.1	77.1-83.0	19.9	16.9-22.8	83.6	80.8-86.3	16.4	13.6-19.1
Hyperactivity	54.4	50.6-58.1	45.6	41.8-49.3	56.6	52.9-60.2	43.3	39.6-46.9
Single parent status								
Internalising problems								
Emotional problems	83.7	76.9-90.4	16.3	9.5-23.0	72.6	64.4-80.7	27.4	19.2-35.5
Peer problems	9.3	4.0-14.5	90.7	85.4-95.9	11.3	5.3-17.0	88.7	82.9-94.4
Externalising problems								
Conduct problems	88.4	82.5-94.2	11.6	5.7-17.4	82.3	75.3-89.2	17.7	10.7-24.6
Hyperactivity	48.8	39.7-57.8	51.2	42.1-60.2	58.1	49.1-67.0	41.9	32.9-50.8

Note. Angry parenting by median split: low angry parenting: n=300, high angry parenting: n=506. Two parent status: n=690, single parent status: n=116.

The results from table 9 reported adolescent scores in the normal or abnormal range for internalising and externalising problems with high or low angry parenting were consistent across two parent and single parent families. Table 10 reports the percentage of two parent and single parent families scoring low or high on angry parenting to determine if there was a difference in scores due to parent status. The results demonstrate there was no difference in the prevalence of abnormal scores for two parent and single parent families as it shows no difference in the level of anger.

Table 10

Percentage of two parent and single parent families scoring low versus high on angry parenting

	Low angry parenting	High angry parenting
	%	%
Parent status		
Two parents	85.9	14.1
Single parent	85.7	14.3

Note. Angry parenting by median split: low angry parenting: $n=300$, high angry parenting: $n=506$. Two parent status: $n=690$, single parent status: $n=116$.

3.1.5 Gender and Internalising and Externalising Problems

Percentages of male and female adolescents scoring in the normal versus abnormal range of the SDQ are presented in table 11. Across both gender groups, the highest proportion of scores fell in the normal range for emotional problems, conduct problems and hyperactivity-inattention for both low and high angry parenting. For peer problems, 80.5% (95% CI: 76.6-84.3) of males scored in the abnormal range with high angry parenting, similarly to females who scored 86.2% (95% CI: 82.8-89.5). Both low and high angry parenting had higher proportions of abnormal scores for peer problems, consistent for males and females, however scores could be due to chance as the CIs are overlapping. No difference was found between males and females' level of internalising and externalising problems at age 16/17 and the level of angry parenting at age 4/5.

Table 11

Percentage of male and female adolescents scoring in the normal versus abnormal range of the SDQ at age 16/17 with low versus high angry parenting at age 4/5

Gender	Low angry parenting				High angry parenting			
	Normal		Abnormal		Normal		Abnormal	
	%	95%CI	%	95%CI	%	95%CI	%	95%CI
Males								
Internalising problems								
Emotional problems	79.4	75.4-83.3	20.6	16.6-24.5	74.8	70.5-79.0	25.2	20.9-29.4
Peer problems	19.4	15.5-23.2	80.6	76.6-84.4	19.5	15.6-23.3	80.5	76.6-84.3
Externalising problems								
Conduct problems	82.6	78.8-86.3	17.4	13.6-21.1	82.9	79.2-86.5	17.1	13.4-20.7
Hyperactivity-inattention	58.1	53.2-62.9	41.9	37.0-46.7	57.3	52.4-62.1	42.7	37.8-47.5
Females								
Internalising problems								
Emotional problems	78.8	74.8-82.7	21.1	17.1-25.0	79.5	75.5-83.4	20.5	16.5-24.4
Peer problems	10.6	7.6-13.5	89.4	86.4-92.3	13.8	10.4-17.1	86.2	82.8-89.5
Externalising problems								
Conduct problems	80.1	76.2-83.9	19.9	16.0-23.7	81.9	78.1-85.6	18.1	14.3-21.8
Hyperactivity-inattention	49.7	44.8-54.5	50.3	45.4-55.1	56.3	51.4-61.1	43.7	38.8-48.5

Note. Angry parenting by median split: low angry parenting: n=300, high angry parenting: n=506. Male: n=401, Female: n=405.

Discussion

4.0 Overview

The aim of the present study was to examine the strength of the association between two parenting styles when children were aged 4/5 and its effect on adolescent internalising and externalising problems at age 16/17, to determine if parenting style had a long-lasting effect on adolescent mental health. Specifically, it aimed to establish that there would be an association between high levels of angry parenting and low levels of parental warmth with internalising and externalising problems in adolescence. The study also aimed to determine if single parent status was associated with higher levels of angry parenting and whether the effect of angry parenting differed upon child gender. The results of the study found no statistically significant results to support the hypotheses. No evidence was found that supported parenting style at age 4/5 had an effect on adolescent internalising and externalising problems at age 16/17. Further, single parent status did not have a greater effect on adolescents' level of internalising and externalising problems, nor did the effects differ upon gender. The lack of findings suggest that parenting style may have a more proximal effect on child development, as opposed to a long-lasting impact.

4.1 Summary of Findings

The first two study hypotheses explored two parenting styles, angry parenting and parental warmth, at age 4/5 and its effect on adolescent internalising and externalising emotional and behavioural development at age 16/17. No significant association was found for angry parenting or parental warmth and scores on the SDQ subscales. These results suggest there is no long-lasting impact of parenting style on adolescent mental health. Previous research has found parenting style is associated with child internalising and externalising problems (McKee, Colletti, Rakow, Jones & Forehand, 2008), however the

difference in results may be largely due to the age of the target population. Many studies have focused on child outcomes (ages 4-10 respectively) whereas the present study was interested in adolescence (16/17 years). Although family factors and parenting style have been identified as predictors of child mental health problems (Kessler et al, 2005; Bayer et al, 2012), it is possible that other factors may have a more proximal effect on adolescent internalising and externalising problems. Social stress and bullying are some of the major causes for adolescent mental health issues (Fleisher & Schwartz, 2003; Litwiller & Brausch, 2013), suggesting social factors could be more closely related to adolescent internalising and externalising problems compared with parenting style. This is reflected in the results as the peer problems subscale had the highest proportion of adolescents scoring in the abnormal range of the SDQ. This is also in line with research that suggests adolescent internalising problems are highly associated with social and school dysfunction (Scaini, Palmieri & Caputi, 2018). Although not statistically significant, there is evidence for a pattern of effect that adolescent internalising and externalising problems may be more proximally affected by other factors as opposed to parenting style (Fleisher & Schwartz, 2003; Litwiller & Brausch, 2013).

Inconsistent with hypothesis three, single parent status at age 4/5 did not have a greater effect on adolescent internalising and externalising problems at age 16/17. Results showed that the level of anger exerted by single parent and two parent families did not differ. Prior literature discussed children in single-parent families had clinically significant internalising and externalising problems when exposed to parental anger and hostility due to single parents' levels of stress and depression (Lipman et al, 2002). It is possible that the results may be partially attributed to numerous confounding variables that were not examined for, such as single income and parent mental health, both of which are noted as significant contributors to single-parent status which is characterised by low warmth and high anger (Jackson & Scheines, 2005). Employment was examined as a confounding characteristic of

parenting style; however, the multivariate regression showed no significant association between parent status and employment, therefore it may not be a good measure to pre-empt parenting style. For example, single income may be better a measure as it would highlight the difference between the level of angry parenting exerted between single-parent and two parent families. Furthermore, it is suggested that parent status, in conjunction with parenting style, may also have a more proximal effect on internalising and externalising problems. As no association was found between angry parenting at age 4/5 and internalising and externalising problems at age 16/17, it is thus not surprising that there was also no association for angry parenting, parent status and adolescent development.

Hypothesis 4 was not supported as results showed no difference in the strength of the association between parenting style at age 4/5 and higher levels of females internalising problems and males externalising problems at age 16/17 years. The present study found minimal differences in internalising and externalising problems based on gender, suggesting males and females do not differ. This is inconsistent with previous research, as most studies have found males are more likely externalise and females internalise (Eaton et al, 2011). It is unclear why these findings do not match with existing literature; however, a potential explanation may be attributed to participant bias. Male and female respondents may have answered in a way they thought was desired by researchers, hence the consistency between both genders.

4.2 Strengths and Limitations

Despite being unable to confirm the present study hypotheses, the study contributed to research in this area by correcting several limitations of previous research. An important strength of the present study was its use of data from the LSAC which provided a nationally representative sample of parents and their children who were followed over a long course of

time, allowing possible cause and effect relationships to be found. The use of both parent and child report measures strengthened the reliability of outcome measures, as it avoided the issue of shared method variance by which the predictor and outcome would not be associated because parents were not rating on both these measures. The present study however is not without its limitations. The issue of self-reporting can increase participants social desirability bias. Furthermore, the parenting measures, although deemed reliable, did not appropriately measure the level of anger the present study aimed for. Although no associations were found in the present study, it contributed to the literature in suggesting that parenting style may have a more proximal effect on child development for which post-hoc analysis testing should be conducted to further investigate. The details of future research are discussed further below.

The use of LSAC data largely benefited the present study by allowing possible cause and effect associations to be found by following parents and their children from the ages of 4/5 to 16/17. Prior research that has investigated the relationship between parenting and child development often used cross-sectional designs that did not consider potential long-term impacts on child internalising and externalising problems. Hence, later adolescence was under researched, to the best of our knowledge, which the present study examined. The longitudinal design made it possible to explore potential lasting impacts on adolescent mental health from one time point to the next. Although no statistically significant association was found between parenting style at age 4/5 and adolescent internalising and externalising problems at age 16/17, results suggested that parenting style may have a proximal effect to child development as opposed to long-lasting impacts. Furthermore, the use of both parent and child reports avoided the issue of shared method variance. Many previous studies have used parent reports to measure child outcomes, which can decrease the level of reliability. Previous research has shown that parents are more accurate when reporting on externalising problems, and less accurate when rating internalising problems, due to internalising symptoms being difficult to

see (Duhig, Renk, Epstein, & Phares, 2000). By using both parent and child measures, the present study was able to assess the predictor and outcome variables independently and decreased the chances of the predictor and outcome being associated because the parent was rating upon both.

There are several limitations that need to be taken into consideration for the present study. Firstly, the use of self-report measures can increase the possibility of social desirability bias. When respondents are asked to report on undesirable behaviours, such as angry parenting, it is likely that ratings on these measures are not true reflections (Zubrick, Westrupp & Nicholson, 2014). Both the Angry Parenting Scale and Parental Warmth Scale were highly skewed when tested for normality, indicating the possibility of desirability bias. Secondly, the difference observed between the results of this study and previous studies may be attributed to the parenting measures used. Other studies have used more rigorous measures of parenting which had stronger psychometric properties. In McKee and colleagues (2008) meta-analytic review, each of the studies assessing parenting and its effect on child development required parent measures to assess depressive symptomatology. This allowed the studies to clearly identify parents who exerted higher than average levels of anger, not anger that was expressed occasionally due to incidents like child misbehaviour (McKee, Colletti, Rakow, Jones & Forehand, 2008). It is possible that items in the Angry Parenting Scale or Parental Warmth Scale did not measure the level of anger or warmth discussed in previous literature that affects child emotional and behavioural development. Parental 'behaviour' or 'aggression' may be better variables to capture the parenting styles this present study aimed to investigate. Lastly, although the longitudinal nature of the study assessed potential long-term impacts by assessing parenting at age 4/5 and adolescent internalising and externalising development at age 16/17, it is worth noting that parenting style nor child development was assessed in-between the two time points in this study. Thus, there could

have been variation in child developmental outcomes that were at their peak risk level before the age of 16/17. Moreover, it could be that exposure to parenting style had different consequences for children at different developmental periods. It is possible, that with increasing age and capabilities, children become more adaptive to their parents parenting style and thus again suggest a more proximal effect of parenting style on child development.

4.3 Implications and Future Research

As discussed, there are considerable concerns for parenting factors negatively effecting children's internalising and externalising emotional and behavioural development. The effect on young children's development has been confirmed, however this study addressed whether the effects were long-lasting into adolescence. Whilst the results of the study do not point toward any statistically significant associations, it does suggest that parenting may have a more proximal effect on child development, as opposed to a long-lasting impact. Future studies that replicate the study and find significant results should further conduct post-hoc analysis testing. Post-hoc analysis testing will allow researchers to identify at what time point or age parenting has the most effect on child development. Furthermore, as the present study had 100% of primary parents as mothers, future research should examine the association between fathers and adolescent emotional and behavioural development to determine whether negative parenting effects extends to both mothers and fathers.

4.4 Conclusion

The present study has contributed valuable research to the literature, suggesting there may be a proximal effect of parenting styles effecting child internalising and externalising emotional and behavioural development. The results of the study suggest further research is required to confirm this suggestion in other representative samples. Post-hoc analysis testing

is encouraged for future research to confirm at what age parenting effects child internalising and externalising problems.

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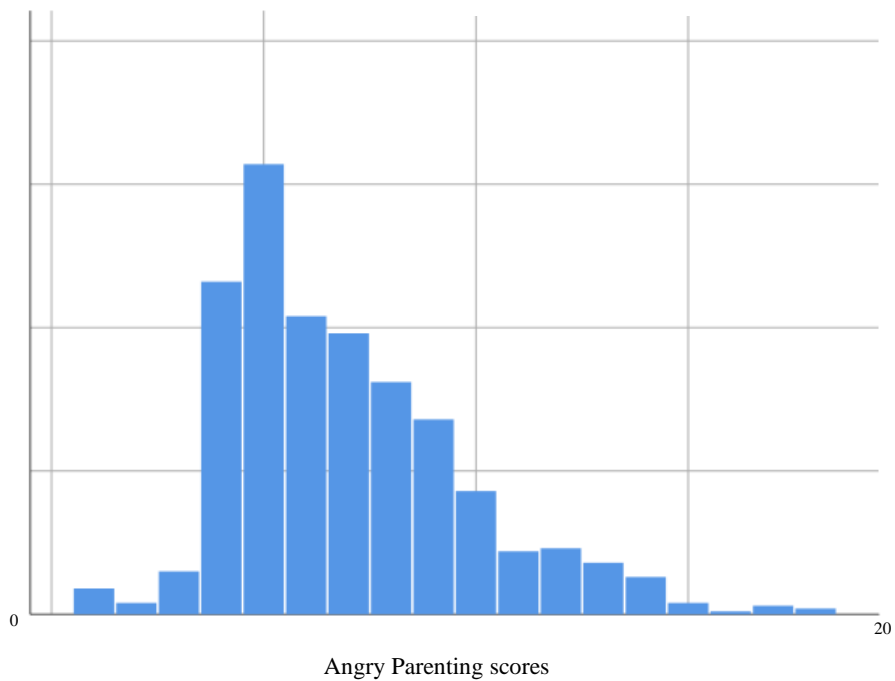
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Appendices

Appendix 1: Distribution of parenting scales

Distribution of Angry Parenting Scale Scores



Distribution of Parental Warmth Scale Scores

