Meditation Experience is Related to Alexithymia and Two Distinct Styles of Coping

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Table of Contents

List of Tables

Abstract

Alexithymia is a cognitive and affective deficit, characterized by an inability to comprehend the emotional states of oneself or others. Increased levels of alexithymia have been linked to maladaptive (avoidant) coping and a deficient relationship with adaptive (approach) coping, potentially leading to various psychological disorders and even suicidal thoughts. Meditation practice is associated with improved psychological well-being and emotion regulation, however there is limited evidence concerning the relationship of meditation with coping and alexithymia. Therefore, it is desirable to investigate the relationship of meditation experience with avoidant and approach coping, and alexithymia. Adult participants recruited from the University of Adelaide first-year onwards Psychology pool and social media participated in an online survey assessing meditation experience, alexithymia and two distinct styles of coping; avoidant and approach coping. Measures of alexithymia were positively correlated with avoidant coping and negatively correlated with approach coping. Minutes of meditation showed a significant relationship with lower avoidant coping, but not higher approach coping, and years of meditation showed a significant relationship with reduced alexithymia. Although, intervention studies are needed, meditation may be a useful tool for reducing avoidant coping strategies and encouraging approach coping strategies, ultimately reducing alexithymia.

Keywords: alexithymia, maladaptive coping, adaptive coping, meditation, emotion regulation

Declaration

This thesis contains no material which has been accepted for the award of any other degree of 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.

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Contribution Statement

In writing this thesis, my supervisor and I collaborated to generate research questions of interest and ran some of the tests for data analysis. I designed the appropriate methodology and conducted the literature search, completed the ethics application, and wrote the Qualtrics Survey. I was responsible for all participant recruitment and data collection, data analysis and thesis write-up.

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Introduction

Alexithymia (Sifneos, 1973) is a personality construct that is experienced by many age groups, yet it remains unnoticed by many affected individuals due to its hidden nature (Samur et al., 2013). Most importantly, it is associated with poorer mental health and is implicated in various psychological disorders, such as depression (Honkalampi et al., 2000), binge-eating disorders (Carano et al., 2012) and substance-abuse (Gratz & Tull, 2010), all of which could further potentially instigate suicidal ideation (Hemming et al., 2019). Thus, this necessitates the development of relevant strategies to address this issue. Current literature has explored the relationship between alexithymia, different coping styles and meditation, or mindfulness; however, limited research exists concerning alexithymia in relation to avoidant and approach (adaptive) coping, and there is no research investigating the association of meditation practice with maladaptive and adaptive coping in alexithymic individuals. The present study addresses this gap by investigating the relationship of alexithymia and meditation experience (years, frequency and minutes of meditation) with maladaptive and adaptive coping behaviours, obtained from an adult sample. This will assist in understanding how meditation practice relates to the two distinct styles of coping; avoidant coping and approach coping, and how it may potentially influence alexithymia.

1.1 Alexithymia and Types of Alexithymia

Alexithymia is a multidimensional construct, introduced by Sifneos (1973), that describes cognitive and affective deficits. Cognitive deficits are characterised by difficulties in comprehending and distinguishing one's feelings from bodily sensations of emotional arousal (Sifneos, 1973; Bermond et al., 2007; Tominaga et al., 2014). In other words, alexithymic individuals struggle to understand the link between emotions and bodily states, such as the

emotional-physiological expressions of being “heartbroken”, having “cold feet” (Nummenmaa et al., 2014), or “butterflies in my stomach”. Affective deficits are characterised by difficulties in fantasizing and emotionally connecting with inner experiences (Sifneos, 1973; Bermond et al., 2007; Tominaga et al., 2014).

Freyberger (1977) categorised alexithymia into two types: primary (trait) alexithymia and secondary (state) alexithymia. Primary alexithymia is regarded as a stable personality trait or dispositional factor (Lesser, 1981), which may develop over time as a consequence of childhood trauma (Krystal, 1979), negative interactions with primary caregivers (Wearden et al., 2003) or genetic influences (Kano et al., 2012). Hence, primary alexithymia is a developmental phenomenon, emerging throughout childhood and early adult years (Messina et al., 2014; Allen & Heaton, 2010). The findings of many authors suggest that alexithymia is usually continuous in nature. For instance, Salminen et al. (1994) administered the Toronto Alexithymia Scale (TAS-20; Bagby et al., 1994b) to assess alexithymia at the time of set up and again 1 year later. They revealed that although there was a decrease in psychological stress, there was no significant difference in alexithymia scores (Salminen et al., 1994). For similar reasons, several literatures have regarded alexithymia as a comparatively stable and dimensional personality trait (de Gucht, 2003; Mikolajczak & Luminet, 2006; Parker et al., 2008).

In contrast, secondary alexithymia occurs after childhood, as a consequence of psychological stress, chronic disease or neurological trauma (e.g. stroke) (Taylor et al., 1997; Messina et al., 2014). Some studies have expanded on this and suggested that alexithymia may develop in response to overwhelming stress, so that individuals are able to avoid experiencing unendurable emotions (Krystal, 1982; Zeitlin et al., 1993). Moreover, some authors have claimed to have found a decrease in alexithymia scores in relation to improved clinical symptomatology,

across various clinical groups such as substance use disorders (De Haan et al., 2012), along with other mental disorders (Fukunshi et al., 1997). As such, this evidence suggests that alexithymia can also be secondary to increased distress associated with mental disorders.

However, for the purpose of this study, alexithymia will be regarded as a trait or dispositional factor, considering the relevant measure used in this study, TAS-20, is a continuous measure of alexithymia severity and regards alexithymia as a multidimensional personality trait (Bagby et al., 1994a, b).

1.2 Alexithymia, Interpersonal Relationships and Mental Health

A recent study has revealed that some individuals suffering from alexithymia may contradict the defined characteristics as they could be experiencing chronic dysphoria or sudden outbursts of crying or rage (Goerlich, 2018). However, thorough interviewing of the individual generally reveals their incapability to describe their feelings, which is a core feature of alexithymia, especially since they often appear confused when asked to recount the specifics of feelings (Taylor et al., 1997, p. 29). In other words, alexithymic individuals display a noticeable dysfunction in their emotional responsiveness, social attachment and interpersonal relationships (Meganck et al., 2009; Kooiman et al., 2000).

Furthermore, individuals suffering from alexithymia often experience difficulty in discerning and appreciating other people's emotions, leading to apathetic and futile emotional responding (FeldmanHall et al., 2013; Darrow & Follette, 2014). This is eventually followed by problems in maintaining relationships, considering those involved with alexithymic individuals struggle to understand them in many ways (FeldmanHall et al., 2013; Darrow & Follette, 2014). As a result, individuals with high levels of alexithymia are associated with a reduction in seeking

psychosocial support (Kooiman et al., 2000; Tominaga et al., 2014), subsequently causing significant psychological distress.

Alexithymia has repeatedly been shown to be associated with a decline in positive mental health and has shown associations with a number of psychological conditions, particularly depression (Honkalampi et al., 2000), and alexithymia is often followed by suicidal ideation (Izci et al., 2015). Several studies have claimed that alexithymia and depression are two different disorders, but they are closely related constructs (Hintikka et al., 2001; Parker et al., 1991; Marchesi et al., 2000). In support of this, two studies in particular found moderate correlations between alexithymia and depression (Parker et al., 1991; Li et al., 2015). While, other studies also revealed that alexithymia may be a significant predictor of depression (Gilanifar & Delavar, 2016; Günther et al., 2016). Furthermore, several studies have revealed a strong association between alexithymia and suicidal ideation (Hintikka et al., 2004; Sayar et al., 2003) and this association is also present in a variety of clinical samples, especially in those suffering from depression (Izci et al., 2015).

1.3 Measuring Alexithymia

Bermond et al. (2015) identified multiple alexithymia measures, some of which included the Rorschach Alexithymia Scale (RAS; Porcelli & Mihura, 2010), Psychological Treatment Inventory - Alexithymia Scale (PTI-AS; Gori et al., 2012), Alexithymia Observation Scale for Children (AOSC; Fukunishi et al., 1998) and the Observation Alexithymia Scale (OAS; Haviland et al., 2000). Studies that have administered some of these measures have often discovered inconsistent findings in terms of their research, due to problems concerning their concurrent validities (Bermond et al., 2015). In other words, many of these scales were found to measure different domains of the alexithymia construct (Bermond et al., 2015). It is also important to note

that some of these measures are usually difficult to be understood by non-professionals due to technical language and often require the expertise of clinical professionals, further weakening the relevant studies' methodologies and thus limiting their use (Bermond et al., 2015). Compared to other measures the OAS (Haviland et al., 2000) is more widely used as it uses ordinary language that can be understood by both non-professionals and professionals (Bermond et al., 2015). However, many items of the OAS (Haviland et al., 2000) may be unreliable, as it is an observer-rated measure of alexithymia. In other words, it obtains information through close relations of the patient being assessed and is therefore more predisposed to misspecifications and unreliable assessments of alexithymia (McGillivray, 2015).

By comparison, the TAS-20 (Bagby et al., 1994b) presents adequate reliability and validity (Bermond et al., 2015). Furthermore, it can be used by non-professionals and does not require expertise, due to its ordinary language (Bermond et al., 2015). Additionally, several studies have also shown that the TAS-20 (Bagby et al., 1994b) is significantly correlated with alexithymia and this is evident in various populations across the globe (Maroti et al., 2018; Colombarolli et al., 2019; Li et al., 2015). More importantly, this scale specifically measures trait alexithymia, which is the main focus of this study. Therefore, the TAS-20 (Bagby et al., 1994b) is an appropriate scale for measuring alexithymia in this study.

1.4 Alexithymia and Coping

Coping refers to the cognitive and behavioural attempts of an individual, in order to manage the physical, emotional and psychological burden when confronted with stressful life events (Lazarus & Folkman, 1984; Synder & Dinoff, 1999). Based on past literature, coping has been categorised into three comprehensive higher order functioning types: problem-focused or task-oriented coping, emotion-focused coping, and avoidance-focused coping (Krohne, 1993;

Parker & Endler, 1996). Problem-focused coping refers to when an individual consciously carries out a behaviour with the intention to gain information, in order to reduce stressful demands by dealing with the event or problem itself (Stone, 2005; Besharat, 2010). Examples of problem-focused coping strategies include positive reframing, using emotional support or actively seeking out information, consequently helping to manage or solve the problem at hand (Carroll, 2013). Problem-focused coping suggests positive affect and an adaptive way of coping, as it increases the individual's awareness, knowledge, and various behavioural and cognitive coping options (Lovallo, 1997). Emotion-focused coping refers to when an individual consciously carries out a behaviour with the intention to manage or reduce their negative emotions (e.g. fear, anxiety, aggression, depression, humiliation), which have occurred in response to a stressful situation (Stone, 2005; Besharat, 2010). Examples of emotion-focused coping may include strategies such as avoidance and denial (Synder & Dinoff, 1999; Stanton et al., 1994). Avoidance-focused coping refers to when an individual consciously carries out a behaviour with the intention to disengage from a stressful situation (e.g. distraction or social diversion) (Krohne, 1993; Parker et al., 1998). As such, emotion- and avoidance-focused coping strategies are similar, since they both suggest negative affect and a maladaptive way of coping (Higgins & Endler, 1995). On the other hand, problem-focused coping and approach-focused coping strategies are similar, since they both suggest positive affect and an adaptive way of coping (Higgins & Endler, 1995; Baker & Berenbaum, 2007).

Previous research has revealed that emotion-focused coping strategies usually result in negative consequences on mental health, such as anxiety, depression and substance-abuse, which is why it is generally regarded as a form of maladaptive coping (Higgins & Endler, 1995; Jensen et al., 1991; Carver et al., 1989). Similar to the emotion-focused coping strategy, Higgins and

Endler (1995) further revealed that avoidance-focused coping could also be generally regarded as a maladaptive coping strategy, because it has been found that avoiding stress by engaging in activities that are distracting, often leads to psychosomatic symptoms. As opposed to emotion- and avoidance-focused coping, problem-focused coping was deemed more effective in lessening the impact of stressful life events on an individual's mental and physical health, which is why it is generally regarded as a form of adaptive coping (Higgins & Endler, 1995; Baker & Berenbaum, 2007).

Past studies, while limited, have empirically examined the relationships between alexithymia and coping. For instance, Vingerhoets et al. (1995) study, administered the self-report Amsterdam Alexithymia Scale (AAS; Bermond et al., 1999) and the dispositional Ways of Coping Checklist (WCCL; Lazarus & Folkman, 1984) to 131 female participants, aged 16-59 years. Their main findings revealed that alexithymia was negatively associated with '*seeking social support*' and '*planful/rational actions*' (Vingerhoets et al., 1995). Thus, suggesting that alexithymia is negatively related to problem-focused or adaptive coping (Vingerhoets et al., 1995). They further revealed that alexithymia was positively associated with '*distancing*', thus suggesting that alexithymic individuals have a positive relationship with emotion- and avoidance-focused coping or maladaptive coping (Vingerhoets et al., 1995). These findings are supported by Besharat's (2010) study, reporting that non-alexithymic individuals scored significantly higher on problem-focused coping than low and high-alexithymic individuals. However, high-alexithymic individuals scored significantly higher on emotion-focused coping than low and non-alexithymic individuals. Likewise, for avoidance-focused coping, both high and low-alexithymic individuals had higher scores for this particular coping strategy than non-alexithymic individuals (Besharat, 2010).

Similar findings were reported in Parker and colleagues' (1998) study, administering the TAS-20 (Bagby et al., 1994b) and the Coping Inventory for Stressful Situations (CISS; Endler & Parker, 1990) to 83 undergraduate students (Parker et al., 1998). Their results revealed that high-alexithymic individuals were significantly less attentive towards problem-focused coping and significantly more attentive towards distraction activities (i.e. watching television) (Parker et al., 1998). Thus, suggesting that high-alexithymic individuals most often apply emotion- and avoidance-focused coping or maladaptive coping (Parker et al., 1998). The researchers further proposed that these results strongly indicated that high-alexithymic individuals have lower scope to reflect upon their stressful situations and lack the ability to use emotions in a positive manner to guide their behaviour, or in other words, they are not able to apply problem-focused coping strategies (Parker et al., 1998). Fortune et al. (2002) expanded on previous findings by reporting that alexithymia, in conjunction with emotion- and avoidance-focused coping significantly caused increased levels of psychological distress, such as worrying, anxiety and depression.

In the context of this study, coping is alternatively categorised into two types: approach coping and avoidant coping, considering they are particularly relevant to the coping measure used in this study: Brief Coping Orientation To Problems Experienced Inventory (Brief-COPE; Carver, 1997). Also, it is important to note that emotion-focused coping was not included in this study, as it is a very similar coping strategy to avoidant coping (Vingerhoets et al., 1995; Fortune et al., 2002). As such, throughout this study, the approach coping scale will specifically measure problem-focused coping strategies which is a form of adaptive coping, whereas the avoidant coping scale will simultaneously measure both emotion- and avoidance-focused coping strategies which are a form of maladaptive coping. Lastly, in terms of the alexithymia and coping constructs, it is necessary to understand that there is no research that has directly investigated the

relationship between the TAS-20 (alexithymia) (Bagby et al., 1994b) and Brief-COPE (approach and avoidant coping) (Carver, 1997). For this reason, the Brief-COPE (Carver, 1997) is a suitable scale for measuring coping strategies in this study.

1.5 Alexithymia and Mindfulness Meditation

Mindfulness meditation is increasingly being recognised to have a significant and positive influence on mental health and has been an important phenomenon in both clinical and experimental areas (Lykins & Baer, 2009). Mindfulness is a mental state and an intervention where one acceptingly and non-judgmentally focusses their attention on the present moment (Kabat-Zinn, 1990; Hofmann et al., 2010). Bishop et al. (2004) described mindfulness as the ability to focus attention for a sustained period of time, whilst maintaining a curious attitude surrounding openness and acceptance, in order to gently observe inner processes, such as thoughts, feelings and sensations. One of the major effects of mindfulness, as a therapeutic technique, is emotional regulation which is achieved by observing the inner processes without being overwhelmed, avoiding, suppressing or taking action on them (Gilbert et al., 2011). In saying this, mindfulness meditation is a practice designed to increase the aforementioned mindfulness mental state itself (Hudlicka, 2013). A study by Kabat-Zinn (2003) suggests that regular practice of mindfulness meditation is positively associated with physiological-emotional control, and thus reduced suffering and improved well-being. As such, a progressively growing empirical literature supports the efficacy of various mindfulness and acceptance-based interventions which are similar to mindfulness meditation (e.g. Mindfulness-Based Cognitive Therapy (MBCT; Segal et al., 2002)), across diverse populations suffering from different psychological conditions, including alexithymia (Baer, 2003; Robins & Chapman, 2004; Bornemann & Singer, 2017).

Currently, there are only a few studies that have investigated the relationship between alexithymia and mindfulness meditation. De La Fuente Arias and colleagues (2010), assessed this relationship by administering the TAS-20 (Bagby et al., 1994b) and the meditation-flow program (Franco, 2009) to a group of students, over a time-span of 10 weeks. At the end of 10 weeks, they found a significant reduction in alexithymia scores, along with improved emotional identification and differentiation, which subsequently led to more effective emotional self-regulation (De La Fuente Arias et al., 2010). This supports Martín-Asuero and García de La Banda's (2007) claim that continued practice of mindfulness meditation in the long-term does in fact help with emotional self-regulation which is a deficit in alexithymia, whilst also providing clarity of emotional states.

Similar findings were reported in Santarnecchi and colleagues' (2014) study, in which they administered the TAS-20 (Bagby et al., 1994b) and the Mindfulness Attention Awareness Scale (MAAS; Brown & Ryan, 2003) to a group of students, over a time-span of 8 weeks. At the end of 8 weeks of practising mindfulness meditation, there was a significant decrease in alexithymia levels (Santarnecchi et al., 2014). The authors further claimed that mindfulness improved the mental state of alexithymic individuals, as it increased the self-awareness of their own emotions and feelings, considering these are some of the core mechanisms affected when suffering from alexithymia (Santarnecchi et al., 2014). Thus, indicating a decrease in alexithymia. These findings are comparable to a recent study by Aaron and colleagues (2020), in which they administered the TAS-20 (Bagby et al., 1994b) and a mindfulness-based body scan meditation intervention to 76 undergraduate students. They reported findings of greater emotional awareness after they underwent a brief mindfulness-based body scan meditation (Aaron et al., 2020).

Moreover, several articles have shown that mindfulness meditation has improved interoceptive accuracy, which is another major characteristic of alexithymia (Aaron et al., 2020; Erns et al., 2013; Longarzo et al., 2015). Interoceptive accuracy refers to the ability to accurately detect internal physiological sensations within one's body (Erns et al., 2013; Longarzo et al., 2015). This ability has been found to be pivotal in modulating the subjective emotional states of alexithymic individuals (Damasio, 2003; Herbert & Pallatos, 2012). Aaron et al. (2020) noted that individuals who meditated showed significant increases in interoceptive accuracy. Thus, indicating a possible decrease in alexithymia.

Overall, it is evident that practicing mindfulness meditation certainly has some noticeable positive influences on individuals suffering from alexithymia, such as increased emotional awareness, improved emotional self-regulation and interoceptive accuracy.

1.6 Aims and Hypotheses of the Present Study

The present study included three main aims. The first aim was to determine the relationship of alexithymia with two distinct styles of coping (avoidant and approach). However, the aforementioned literatures (Vingerhoets et al., 1995; Besharat, 2010; Parker et al., 1998; Fortune et al., 2002) focused on three types of coping styles: problem-, emotion- and avoidance-focused coping and comparatively indicated that alexithymia was positively associated with emotion- and avoidance-focused coping strategies, and negatively associated with problem-focused coping strategies. As such, while there is evidence explaining the direct relationship of problem-, emotion- and avoidance-focused coping with alexithymia, there is no evidence explaining the direct relationship of approach-focused coping with alexithymia, given that it is similar to problem-focused coping. This provided theoretical motivation to explore whether alexithymia also had a negative relationship with approach-focused coping, as it did with

problem-focused coping. The second aim was to test the association of meditation practice with reduced maladaptive (avoidant) coping and increased adaptive (approach) coping. Kabat-Zinn (2003) reported that mindfulness meditation was positively associated with physiological-emotional control, and thus reduced suffering and improved well-being. This provided theoretical motivation to explore whether meditation practice particularly reduced maladaptive or avoidant coping strategies, whilst promoting adaptive or approach coping strategies in those suffering from alexithymia. Following this, the third aim was to examine whether meditation is related to coping by reducing alexithymia. Previous studies have found associations between alexithymia and various types of coping strategies (Vingerhoets et al., 1995; Besharat, 2010; Parker et al., 1998; Fortune et al., 2002), as well as between alexithymia and mindfulness meditation (De La Fuente Arias et al., 2010; Santarnecchi et al., 2014; Aaron et al., 2020). However, there are no studies that have examined the possibility of meditation being indirectly related to the two distinct styles of coping relevant to this study, by reducing alexithymia. This provided theoretical motivation to explore how meditation practice was associated with coping, through the reduction of alexithymia.

Based on previous research and the proposed aims, the following hypotheses were formulated. Hypothesis 1 is that alexithymia is associated with higher avoidant coping and lower approach coping. Hypothesis 2 is that meditation experience is associated with lower avoidant coping and with higher approach coping. Hypothesis 3 is that meditation experience is associated with lower alexithymia. Lastly, considering mindfulness meditation is associated with improved emotional self-regulation and reduced alexithymia scores, the final hypothesis (Hypothesis 4) is that meditation experience will be associated with lower avoidance coping and higher approach coping, indirectly through alexithymia.

Method

2.1 Participants

The study obtained a convenience sample of 189 participants, of which 59 withdrew early, without completing all questionnaires. Upon exclusion of the incomplete responses, the final sample consisted of 130 participants, including 83 females (63.8%), 45 males (34.6%) and 1 who did not specify (.8%). Participants' age range was between 19 and 65 years (M = 31.37, SD = 11.77), with 5 who did not specify their age. Participants' highest level of formal education varied from a certain number of years completed in high school (N = 5), graduated high school from Year 12 or 13 (N = 30), completing TAFE or another technical diploma (N = 12), completing their undergraduate degree (N = 49) or completing their postgraduate degree (N = 33), and 1 who did not specify. Majority of participants from the final sample reported English as their first language (N = 68, 52.3%), whilst the remaining 46.2% reported Marathi (N = 32), Hindi (N = 12), Punjabi (N = 3), Kannada (N = 2), and there was 1 participant each with other Asian and European languages, and 2 who did not specify. Participants from the final sample comprised of various nationalities, but the two most common nationalities were Indian (N = 58, 44.6%) and Australian (N = 53, 40.8%).

2.2 Procedure

The study received approval by The Human Research Ethics Sub-Committee from the School of Psychology at the University of Adelaide. Participants were recruited from the University of Adelaide first-year onwards Psychology pool, and social media including Facebook, Instagram, LinkedIn and WhatsApp. Participants completed an online survey via Qualtrics and were informed that participation in the study was voluntary and of their right to withdraw their participation at any time. Participants were also informed that their identity would

be kept anonymous, with the obtained data being non-identifiable throughout the whole research process. The eligibility criteria for this study required participants to be fluent in English and be aged between 19 and 65 years. This was confirmed by the student researcher and principal investigator.

The survey completion time was approximately 10-15 minutes. Once participants' voluntary consent was obtained to take part in the study, they were requested to report their demographic information (age, gender, first language, country of birth, country of residence, highest education level, current education status) and complete self-report questionnaires that measured meditation experience, alexithymia and two types of coping styles; approach (adaptive/positive coping) and avoidant (maladaptive/negative coping).

2.3 Measures

2.3.1 Meditation Experience Questions

Meditation experience was obtained through a brief but comprehensive questionnaire. The meditation experience questions assessed four aspects of meditation: years of meditation practice, minutes of meditation sessions, frequency of meditation and type of meditation. Years of meditation was measured as a categorical variable, e.g. '*How long have you practiced meditation*' with response options ranging from '*Never*' to '*6+ years*'. Minutes of meditation was measured as a continuous variable. Likewise, frequency of meditation was also measured as a continuous variable by identifying the number of meditation sessions per week. Type of meditation was measured as a categorical variable: e.g. '*Mindfulness meditation*', '*Concentrative meditation*', etc.

2.3.2 Toronto Alexithymia Scale (TAS-20; Bagby et al., 1994b)

The TAS-20 is a 20-item, validated self-report assessment of alexithymia (Bagby et al., 1994a). It is made up of three sub-scales: Difficulty Identifying Feelings (DIF), Difficulty Describing Feelings (DDF) and Externally-Oriented Thinking (EOT). Each sub-scale yields a score, which is then summed to obtain a total alexithymia score, of which higher scores indicate higher levels of alexithymia (Eiden, 1998). Items are rated on a 5-point Likert-type response format, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), allowing participants to communicate whether or not they can comprehend their emotional state, e.g. "*I am often confused about what emotion I am feeling*". The TAS-20 demonstrates good internal consistency (Cronbach's alpha = .81) and test-retest reliability (r = .77) (Bagby et al., 1994b). Another study by Bagby and colleagues also demonstrated adequate levels of convergent validity with other measures of personality (e.g. NEO Personality Inventory), as well as concurrent validity based on the ratings of alexithymia, which were given by external observers (Bagby et al., 1994a).

2.3.3 Brief Coping Orientation To Problems Experienced Inventory (Brief-COPE; Carver, 1997)

The Brief-COPE is a 28-item, validated self-report questionnaire that has been theoretically designed to measure adaptive and maladaptive ways of coping, associated with stressful life circumstances. The scale addresses two types of coping styles: Approach Coping and Avoidant Coping, eventually determining one's primary coping style from the two types. Additionally, items in the scale are categorized in the following sub-scales: Self-distraction, Active coping, Denial, Substance use, Use of emotional support, Use of instrumental support, Behavioural disengagement, Venting, Positive reframing, Planning, Humour, Acceptance, Religion and Self-blame, with two survey items assessing each of the 14 sub-scales. Items are

rated on a 4-point Likert-type response format, ranging from 1 (*I haven't been doing this at all*) to 4 (*I've been doing this a lot*), allowing participants to communicate their coping strategies, e.g. "*I've been turning to work or other activities to take my mind off things*". A validation study on the Brief-COPE, by Hagan and colleagues demonstrated an overall acceptable internal consistency (Cronbach's alpha = .56) across the 14 sub-scales, with some sub-scales, e.g. Acceptance, presenting higher internal consistency (Cronbach's alpha = .81) (Hagan et al., 2017). The Brief-COPE correlated significantly with other psychological measures of distress, e.g. Hospital Anxiety and Depression Scale (HADS), either with the anxiety or depression sub-scale, or both (Hagan et al., 2017).

In the present study the Brief-COPE items were grouped according to Avoidant (12 items) and Approach Coping (12 items). The Humour and Religion sub-scales were not included in the data analysis process as they are neither avoidance or approach coping.

Internal consistency for both the Avoidant Coping (Cronbach's alpha = .82) and Approach Coping (Cronbach's alpha = .82) sub-scales was high.

2.4 Design and Statistical Analysis

IBM Statistical Package for the Social Sciences (SPSS) Statistics 26 was used to perform data analysis. Descriptive statistics were first obtained for the age and gender variables, and TAS-20 and Brief-COPE sub-scales, along with a total value for the TAS-20 scale. Following this, Pearson's correlations were conducted to test the proposed hypotheses, and one-way ANOVAs were used for significance testing for meditation experience categories, and TAS-20 variables, and Brief-COPE variables. Finally, mediation analysis was planned using PROCESS 2.16.1 to assess whether there is an indirect relationship between Meditation, Alexithymia and Coping Styles.

Results

3.1 Preliminary Data

Prior to analysis, data were screened for missing values, outliers, linearity and normality. Visual inspection of histograms and skew, and analysis of Shapiro-Wilk's test directed the assumptions of normality. Altogether, they revealed that the TAS-20 (Bagby et al., 1994b) Total and its sub-scales, DIF and DDF did not deviate too far from being normally distributed, whereas the EOT was slightly skewed, as the Shapiro-Wilk statistic indicated that the assumption of normality was violated ($p > .05$). For the Brief-COPE (Carver, 1997) sub-scales, visual inspection of histograms and skew for Avoidant Coping showed that it was slightly skewed, however based on the Shapiro-Wilk statistic ($p < 0.05$) and a large sample size ($N = 130$), this data was considered appropriate for parametric tests (i.e. Shapiro-Wilk test) (Saculinggan & Balase, 2013). Regarding Approach Coping, the data did not deviate too far from being normally distributed based on visual inspection of histograms and skew (Saculinggan & Balase, 2013).

Furthermore, visual inspection of scatterplots determined that there were overall linear relationships between measures of the TAS-20 Total, Avoidant Coping and Approach Coping. Although, it is important to note that the linear relationship was noticeably stronger between TAS-20 Total and Avoidant Coping, than it was between TAS-20 Total and Approach Coping.

Outliers were assessed using the labelling rule, in which the interquartile range is multiplied by 1.5 and either added to the upper quartile or subtracted from the lower quartile (Hoaglin & Iglewicz, 1987; Tukey, 1977). Scores that are found to be either above the upper value or below the lower value are then considered outliers (Hoaglin & Iglewicz, 1987; Tukey, 1977). The upper value of Avoidant Coping, as determined by the labelling rule was 40. As such, 2 outliers were found for Avoidant Coping (46 and 44). Both values were changed to 40, as they

did not deviate too far from a normal distribution while still being considered extreme values in the upper quartile. The upper value of Approach Coping was 47.4 and the lower value was 14.4. As such, 1 outlier was found (48) in the upper quartile range and 3 outliers were found in the lower quartile range (12, 12 and 14), for Approach Coping. The 48 value was changed to 47.4 and the 12, 12, and 14 values were all changed to 14.4. In terms of the TAS-20 Total, DDF, DIF and EOT, no outliers were found for these variables.

3.2 Descriptive Analyses

Table 1 displays the number of participants and percentages in each category of meditation experience. It is necessary to note that the variables, including minutes of meditation and frequency of meditation were converted from continuous variables to categorical variables, used in previous research (Proeve, 2020). Majority of the participants had not meditated (43.1%) or had meditated less than 1 year (30.8%). Additionally, participants who meditated, mostly meditated from 1-20 minutes (31.5%). Also, meditating participants most frequently meditated less than once a month (21.5%). Lastly, the most common type of meditation practice used was mindfulness meditation (37.7%).

Table 1

Frequency and percentages of participants in each category of meditation experience (Years of Meditation, Minutes of Meditation Session, Frequency of Meditation and Type of Meditation) (N = 130)

Variable	*N*	%
Tried meditation		
Yes	60	46.2
No	70	53.8
Years of meditation		
Does not meditate	56	43.1
Less than 1 year	40	30.8
1 – 5 years	23	17.7
6+ years	10	7.7
Missing	1	0.8
Minutes of meditation		
Does not meditate	64	49.2
1 – 20 minutes	41	31.5
21+ minutes	17	13.1
Missing	8	6.2

Frequency of meditation		
Does not meditate	61	46.9
Less than 1 time per month	28	21.5
Regular meditation	13	10.0
Regular frequent meditation	28	21.5
Type of meditation practice		
Does not meditate	38	29.2
Mindfulness meditation	49	37.7
Concentrative meditation	15	11.5
Centering prayer	6	4.6
Christian meditation	1	0.8
Other	21	16.2

Note. N = Sample Size, % = Percentage of Sample

As shown in Table 2, the TAS-20 Total mean of 49.03 shows a high score but it is within the non-alexithymic range (equal to or less than 51) (Eiden, 1998). Overall, there was acceptable internal consistency across the measures used, with the exception of the EOT measure, as it had low internal consistency (Cronbach's alpha = .55). Table 2 displays descriptive statistics for the alexithymia and coping measures used in the present study.

Table 2

Internal Consistency, Means, Standard Deviations and Confidence Intervals for Measures of Alexithymia and Coping (N = 130)

Measures	α	Mean	SD	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
DIF	.86	16.88	6.70	15.73	18.08
DDF	.73	13.04	4.41	12.28	13.82
EOT	.55	19.11	4.45	18.38	19.87
TAS-20 Total	.85	49.03	12.56	46.85	51.19
Avoidant Coping	.82	23.73	6.36	22.65	24.83
Approach Coping	.82	30.97	6.35	29.85	32.10

Note. DIF = Difficulty Identifying Feelings, DDF = Difficulty Describing Feelings, EOT = Externally-Oriented Thinking, TAS-20 Total = Total Score of the 20-item Toronto Alexithymia Scale

Independent samples *t*-tests were conducted to assess whether there were statistically significant differences between comparing the means of males ($N = 45$) and females ($N = 83$), across the measures used in the present study. The results indicated that there were non-significant differences between males and females on the alexithymia measures: DIF, DDF, EOT, TAS-20 Total, and the coping measures: Avoidant Coping and Approach Coping (shown in Appendix A).

Age was significantly and negatively correlated with the DIF (r = -.24), DDF (r = -.25), TAS-20 Total (r = -.18), Avoidant Coping (r = -.31) and Approach Coping (r = -.22); however the EOT (r = .10) showed a non-significant and positive correlation with age.

One-way ANOVA for the level of education across measures showed a significant difference overall, but there was no clear difference between particular education groups (shown in Appendix A).

3.3 Tests of Hypothesis 1: Bivariate Relationships

As anticipated, alexithymia was significantly and positively correlated with avoidant coping (r = .51), indicating a large effect size, but not correlated with approach coping (r = -.04), suggesting that it was non-significant and almost unrelatable. In other words, as proposed by Hypothesis 1, alexithymia was associated with higher avoidant coping but not with lower approach coping. Thus, the obtained results partially support Hypothesis 1. Table 3 shows the correlations between alexithymia and the two styles of coping, as shown by the relevant measures of alexithymia, including DIF, DDF, EOT and TAS-20 Total, and the relevant measures of coping from the Brief-COPE, including Avoidant Coping and Approach Coping.

Table 3

Summary of Correlations for Scores on DIF, DDF, EOT, TAS-20 Total, Avoidant Coping and Approach Coping (N = 130)

	1	2	3	4	5	6
1. DIF						
2. DDF	.72**					
3. EOT	.26**	.40**				
4. TAS-20 Total	.88**	.88**	.63**			
5. Avoidant Coping	.60**	.47**	.08	.51**		
6. Approach Coping	.07	-.03	-.18*	-.04	.26**	

Note. DIF = Difficulty Identifying Feelings, DDF = Difficulty Describing Feelings, EOT = Externally-Oriented Thinking, TAS-20 Total = Total Score of the 20-item Toronto Alexithymia Scale

**p<0.05 **p<0.01*

3.4 Tests of Hypothesis 2: Meditation Experience with Coping Measures

Participants who had meditated for *6 years* and for *10 years* or more were combined into one category (*6+ years*) due to the limited number of meditators within each group. Also, the effect sizes in the present study are based on the benchmarks suggested by Cohen et al. (2001). For instance, it is suggested that an eta-squared of ≥.01 is reflective of a small effect size, an eta-squared of ≥.06 indicates a medium effect size and an eta-squared of ≥.14 reflects a large effect size (Cohen et al., 2001).

For avoidant coping, one-way ANOVA showed a marginal but significant effect for years of meditation, $F(3, 125) = 2.72$, $\eta^2 = .06$, $p = .05$, however post-hoc comparisons (Tukey's HSD) showed non-significant differences between groups.

Contrary to years of meditation, a one-way ANOVA showed a statistically significant effect for minutes of meditation, $F(2, 127) = 5.34$, $\eta^2 = .08$, $p = .01$, with a medium effect size, as demonstrated by η^2. This suggested that as minutes of meditation sessions increased, avoidant coping decreased. As such, the Tukey's HSD showed significant differences between those who did not meditate, compared with those who meditated for more than 20 minutes. Those who did not meditate obtained higher scores on avoidant coping, but not significantly higher than those who meditated for *less than 20 minutes*, as opposed to those who meditated for more than 20 minutes and obtained significantly lower scores on avoidant coping. Table 4 shows the means and standard deviations for minutes of meditation and avoidant coping.

However, a one-way ANOVA showed a non-significant effect for frequency of meditation, $F(3, 126) = .84$, $\eta^2 = .02$, $p = .48$, suggesting that frequency of meditation does not necessarily influence avoidant coping.

Table 4

Means, Standard Deviations and 95% Confidence Intervals for Minutes of Meditation and Avoidant Coping (N = 130)

			95% Confidence Interval for Mean	
Minutes of Meditation	Mean	SD	Lower Bound	Upper Bound
No meditation	24.43	6.07	22.95	25.91
Less than 20 minutes	24.62	6.88	22.48	26.76
20+ minutes	19.71	4.72	17.56	21.86
Total	23.73	6.36	22.63	24.83

Concerning approach coping, one-way ANOVA showed non-significant effects for years of meditation, $F(3, 126) = 1.15$, $\eta^2 = .03$, $p = .33$ and frequency of meditation, $F(3, 126) = .97$, $\eta^2 = .02$, $p = .41$.

However, a one-way ANOVA showed an overall significant effect for minutes of meditation, $F(2, 127) = 3.60$, $\eta^2 = .05$, $p = .03$ on approach coping, with a medium effect size. However, Tukey's HSD showed that there were no significant differences between particular groups for minutes of meditation and that the direction was unclear. For instance, there was a small difference between those who did not meditate ($M = 30.23$, $SD = 6.60$) and those who meditated for *less than 20 minutes* ($M = 33.03$, $SD = 5.60$), but this difference was larger between the *less than 20 minutes* group and those who meditated for more than 20 minutes ($M = 29.24$, $SD = 6.16$). Thus, suggesting that meditation experience is related to approach coping in some way but the direction remains unclear.

The obtained results partially support Hypothesis 2, as meditation experience (minutes of meditation) is significantly associated with lower avoidant coping, but not as much with higher approach coping in particular. However, there is a slight association present between meditation experience (minutes of meditation) and approach coping in general but the direction is not clear.

3.5 Tests of Hypothesis 3: Meditation Experience with Alexithymia

For the DIF sub-scale, a one-way ANOVA showed a non-significant effect for years of meditation, $F(3, 125) = 1.92$, $\eta^2 = .04$, $p = .13$, minutes of meditation, $F(2, 127) = 2.21$, $\eta^2 = .03$, $p = .11$ and frequency of meditation, $F(3, 126) = 1.66$, $\eta^2 = .04$, $p = .18$.

A one-way ANOVA showed that as the years of meditation increased, the scores for the DDF decreased, $F(3, 125) = 2.98$, $\eta^2 = .07$, $p = .03$, as demonstrated by the medium effect size. Tukey's HSD identified statistically significant differences on the DDF, between those who meditated for *less than 1 year* ($M = 13.63$, $SD = 3.87$) and those who meditated for 6 or more years ($M = 10.10$, $SD = 4.42$).

However, a one-way ANOVA for minutes of meditation, $F(2, 127) = 2.02$, $\eta^2 = .03$, $p = .14$ and frequency of meditation, $F(3, 126) = 1.97$, $\eta^2 = .05$, $p = .12$, both showed non-significant effects overall on the DDF sub-scale.

A one-way ANOVA revealed that with greater years of meditation, there was a decrease in the EOT sub-scale, $F(3, 125) = 2.99$, $\eta^2 = .07$, $p = .03$, as demonstrated by the medium effect size. Tukey's HSD showed a statistically significant difference on the EOT, particularly between those who meditated for *less than 1 year* ($M = 20.43$, $SD = 4.38$) and those who meditated for more than 6 years ($M = 16.70$, $SD = 3.95$).

However, one-way ANOVA for minutes of meditation, $F(2, 127) = .28$, $\eta^2 = .00$, $p = .76$ and frequency of meditation, $F(3, 126) = .53$, $\eta^2 = .01$, $p = .66$, both showed non-significant effects on the EOT sub-scale.

Following this, the relationship of meditation experience with the TAS-20 Total was measured. One-way ANOVA results showed that as the years of meditation increased, the overall TAS-20 Total scores decreased, $F(3, 125) = 3.71$, $\eta^2 = .08$, $p = .01$, as demonstrated by the medium effect size. Post-hoc comparisons (Tukey's HSD) identified a statistically significant difference on the TAS-20 Total, particularly between those who meditated for *less than 1 year* and those who meditated for more than 6 years. Table 5 shows the means and standard deviations for years of meditation and TAS-20 Total.

However, one-way ANOVA for minutes of meditation, $F(2, 127) = 1.93$, $\eta^2 = .03$, $p = .15$ and frequency of meditation, $F(3, 126) = 1.92$, $\eta^2 = .04$, $p = .15$, both showed non-significant effects on the TAS-20 Total.

Therefore, the obtained results overall indicated that meditation experience (years of meditation) was most associated with a decrease in alexithymia scores and thus with lower alexithymia. Hence, Hypothesis 3 was partially supported.

Table 5

Means, Standard Deviations and 95% Confidence Intervals for Years of Meditation and TAS-20 Total (N = 129)

			95% Confidence Interval for Mean	
Years of Meditation	Mean	SD	Lower Bound	Upper Bound
Does not meditate	50.66	13.48	47.05	54.27
Less than 1 year	51.68	11.74	47.92	55.43
1 – 5 years	44.43	10.63	39.84	49.03
6+ years	40.40	9.44	33.65	47.15
Total	49.07	12.60	46.87	51.26

3.6 Tests of Hypothesis 4: Indirect Effects

In terms of a mediation analysis, the main preconditions for testing mediation, which assumed that there would be a significant correlational relationship between alexithymia and coping, meditation and coping, and alexithymia and meditation, were not always met. In other words, there was a significant correlation between meditation experience and lower avoidant coping but meditation experience overall was not very much related to approach coping. Additionally, meditation experience did not have significant correlations with alexithymia, and thus a mediation effect was not tested. Therefore, this meant that the correlations overall between the three relevant constructs were not sufficiently significant or correlated to conduct a mediation analysis. Therefore, Hypothesis 4, which stated that meditation experience will be associated with lower avoidance coping and higher approach coping, indirectly through alexithymia, was not tested.

Discussion

4.1 Overview

The primary purpose of this research was to investigate how alexithymia and meditation practice were related to the two distinct styles of coping; Approach Coping and Avoidant Coping. Specifically, the study wanted to test whether meditation practice was associated with a decrease in alexithymia, and whether meditation experience (years, frequency and minutes of meditation) decreased avoidant coping and increased approach coping by subsequently reducing levels of alexithymia. In terms of the first aim, it was found that alexithymia showed a significant and positive relationship with avoidant coping, but alexithymia was almost unrelated with approach coping. In terms of the second aim, it was found that meditation practice did have an overall influence on avoidant coping, however its relationship with approach coping was not as influential, as compared to avoidant coping. Additionally, it was also found that long-term meditation experience was somewhat effective for alexithymic individuals. Lastly, in terms of the third aim, it was found that the correlations overall between the three relevant constructs were not sufficiently significant or correlated to conduct a mediation analysis. Nonetheless, the results of the present study contribute to current understandings of the association between alexithymia, meditation practice and coping. Overall, highlighting that consistent meditation practice might assist with emotion regulation in alexithymic individuals, and thus it may be an effective intervention strategy or a long-term treatment approach to reduce alexithymia. These findings and their theoretical and clinical implications, strengths and limitations are described in further detail below.

4.2 Summary of Findings

4.2.1 Relationship of Alexithymia with Coping

The first aim of this study was to determine the relationship of alexithymia with two distinct styles of coping (avoidant and approach). Since there was no research that examined the direct relationship of approach-focused coping with alexithymia, it was hypothesised that alexithymia would be associated with higher avoidant coping and lower approach coping. The obtained results revealed that Hypothesis 1 was partially supported: alexithymia was significantly and positively associated with avoidant coping, but non-significant and almost unrelatable with approach coping.

The relationship between alexithymia, as measured by the TAS-20 (Bagby et al., 1994) in an adult community sample, and avoidant coping, as measured by the Brief-COPE (Carver, 1997), was stronger in the present study, compared to previous studies which used other coping measures (Vingerhoets et al., 1995; Besharat, 2010). In saying this, the overall association between alexithymia and avoidant coping was in line with various other studies, reporting that alexithymic individuals often tended to rely more frequently on emotion- and avoidance-focused coping or maladaptive coping strategies (Vingerhoets et al., 1995; Besharat, 2010), all of which are a form of avoidant coping, as they altogether suggest negative affect (Higgins and Endler, 1995). The reason behind this finding may be that alexithymic individuals are incapable of regulating their emotions (Vingerhoets et al., 1995), and thus prefer to disengage from the stressful situation, as a way of reducing their negative emotions (e.g. anxiety) (Stone, 2005). This could explain why alexithymia is significantly and positively correlated with avoidant coping.

Conversely, alexithymia and approach coping were almost unrelated, compared to previous studies, which looked at similar adaptive coping strategies (i.e. problem-focused

coping) (Parker et al., 1998; Higgins & Endler, 1995). In saying this, the overall association between alexithymia and approach coping was in line with other studies, suggesting that alexithymic individuals were much less attentive of problem-focused coping, which is similar to approach-focused coping, as they both suggest positive affect, as opposed to avoidant-focused coping (Parker et al., 1998; Higgins & Endler, 1995). A plausible explanation for this finding may be that alexithymic individuals have lower capacity to reflect upon their stressful situations and lack the ability to use emotions positively to guide their behaviour (Parker et al., 1998; Vingerhoets et al., 1995). This could explain why alexithymia is almost unrelated with approach coping.

4.2.2 Relationship of Meditation Experience with Coping

The second aim of this study was to test the association of meditation practice with reduced maladaptive coping and increased adaptive coping. Since there was no research that examined the association of meditation practice with avoidant and approach coping in alexithymic individuals, it was hypothesised that meditation experience would be associated with lower avoidant coping and higher approach coping. The obtained results revealed that Hypothesis 2 was partially supported: meditation experience was significantly associated with lower avoidant coping, but not so much with higher approach coping in particular.

The results of investigating the relationship between meditation experience and avoidant coping showed that with increased minutes of meditation, but not years and frequency of meditation, there were significant decreases in Avoidant Coping. Those who had meditated for *20+ minutes* had significantly lower levels of avoidant coping than those who had not meditated and those who had meditated for *less than 20 minutes*. Although, there are no studies that have examined this exact relationship, there are findings of other similar studies that have examined

the effect of mindfulness meditation on maladaptive coping strategies, such as binge eating (Kristeller et al., 2006) and alcohol/substance use (Bowen et al., 2006), which may contribute to psychological distress and impairment. As such, the findings of previous studies are comparable to the present study's finding, as they overall indicate that consistent meditation practice reduces the use of maladaptive coping strategies. This may further suggest that regular meditation practice facilitates emotional regulation, which in turn has a positive influence on maladaptive coping strategies, by reducing suffering and improving psychological well-being in alexithymic individuals. This could explain why meditation experience (minutes of meditation) is significantly and positively correlated with avoidant coping.

Conversely, the relationship between meditation experience and approach coping showed a weaker effect. The findings of this study revealed that minutes of meditation was most effective for approach coping but not years and frequency of meditation. Interestingly, those who did not meditate and those who meditated for more than 20 minutes had lower levels of approach coping than those who meditated for *less than 20 minutes*. Cebolla et al. (2017) similarly found that those who meditated for more than 20 minutes reported to have experienced unwanted side effects, involving psychological discomfort. This may be because alexithymic individuals in the *no meditation* group might not have felt the need to meditate, as they may have not realised that their approach coping strategies are lacking. On the other hand, people who meditated for *less than 20 minutes* may know that meditation could strengthen one's observation skills and therefore they may understand just how much meditation time they require before going too deep into unnecessary thoughts, thus explaining their higher levels of approach coping. Alternatively, those who meditated for more than 20 minutes must have been under the impression that longer doses of meditation lead to immediate positive effects, and therefore people who meditated for

20+ minutes may have potentially become more aware of their negative feelings, resulting in lower approach coping. This could explain the relation between meditation experience (minutes of meditation) and approach coping, and why the direction of this relationship was unclear.

4.2.3 Relationship of Meditation Experience with Alexithymia

Hypothesis 3, which stated that meditation experience is associated with lower alexithymia, was partially supported. The reason for formulating this hypothesis was to see if previous findings could be expanded, concerning the positive association of long-term meditation experience with reduced alexithymia.

The present study's findings overall suggested that with increased years of meditation, but not minutes and frequency of meditation, there were significant decreases in alexithymia scores. Those who meditated for *6+ years* indicated lower levels of alexithymia than those who did not meditate, along with those who meditated for *1-5 years*, and *less than 1 year*. There are no longitudinal studies that have examined years of meditation experience with alexithymia, potentially due to time constraints. However, previous studies, while limited, have examined this relationship by alternatively considering several weeks of regular meditation in relation to alexithymia scores, for which the results are a good indication that the present study's findings are progressing towards the predicted direction. For instance, De La Fuente Arias et al. (2010) revealed that at the end of a 10-week meditation program, participants showed a significant reduction in alexithymia scores. Similarly, another study by Martín-Asuero and García de La Banda (2007) extended this finding and further indicated that regular mindfulness meditation practice was more effective in the long-term, which consistently reduced levels of alexithymia. This may be because long-term meditators present a greater awareness of their own emotions and feelings than non-meditators or short-term meditators, and are therefore able to modulate their

emotional-physiological states, eventually leading to a decrease in alexithymia scores. This could explain why meditation experience (years of meditation) is significantly and positively correlated with lower alexithymia.

4.2.4 Indirect Relationship of Meditation Experience with Coping Styles through Alexithymia

Finally, the third aim was to examine whether meditation is related to coping by reducing alexithymia. Since there was no research that examined the possibility of meditation being indirectly related to the two distinct styles of coping in this study, by reducing alexithymia, it was hypothesised that meditation experience would be associated with lower avoidant coping and higher approach coping, indirectly through alexithymia. However, Hypothesis 4 was not tested, as the empirical findings prior to mediation were the opposite of what was expected, that is, the categories of meditation experience were not always related to the sub-scales of coping and alexithymia. In saying this, the study had expected a mediation effect to be present, considering it did find a strong linear relationship between alexithymia and higher avoidant coping. Additionally, it was also clear that a positive association was present between meditation experience and decreased avoidant coping and consequently, reduced alexithymia scores. Moreover, this expected finding was in line with previous research which had demonstrated that alexithymia is predictive of maladaptive emotion regulation strategies (Sfärlea et al., 2019) and that it can be reduced by practising meditation on a regular basis (Santarnecchi et al., 2014). However, the results of Hypothesis 2 and 3 were unexpected, as they were both only partially supported, since not all categories of meditation experience (years, minutes and frequency of meditation) were equally related to Approach and Avoidant Coping, and Alexithymia. Therefore, this correlational relationship suggested that a mediation effect was not possible between the relevant constructs. A plausible explanation for these findings may be that the effects of

meditation could have been underpowered due to lower numbers of meditators and higher numbers of non-meditators. As such, this could explain why a mediation effect was not possible for Meditation Experience and Coping, through Alexithymia.

4.3 Theoretical and Clinical Implications

The present study's findings have several important implications, concerning meditation experience, alexithymia and coping.

One of the first major findings is that increased minutes of meditation, but not years and frequency of meditation, may decrease avoidant coping, but might not have a large effect on increasing approach coping. This suggests that meditating routinely for more than 20 minutes is an effective tool for emotion regulation and gradually reducing emotional suffering, while improving psychological well-being, as previously suggested in similar research by Kristeller et al. (2006) and Bowen et al. (2006). This finding also implies that meditation, an internal process, is of limited usefulness in increasing approach coping, and may involve some underlying factors (e.g. individual differences when meditating). However, previous research also emphasises that alexithymic individuals should be prepared to meditate on a long-term basis, in order to see a consistent reduction in maladaptive coping strategies, while potentially encouraging adaptive coping strategies (La Fuente Arias et al., 2010; Martín-Asuero & García de La Banda, 2007). This would be much better than meditating at random times without following a routine, which could actually increase maladaptive coping, based on the present study's findings.

This leads to the second major finding, which implies that meditating for an extensive amount of time (e.g. more than 20 minutes) within a single session can be mentally draining, which could perhaps make an individual more prone to being influenced by negative emotions, potentially making it difficult to reduce alexithymia, as previously found by Cebolla et al. (2017)

and Santarnecchi et al. (2014). This suggests that meditation will be most effective for alexithymic individuals if they meditate for a reasonable amount of time (e.g. 20 minutes maximum) and maintain a routine in the long-term, thus making them more aware of their emotions and gradually reducing the levels of alexithymia, as each year passes.

Overall, based on the present study's findings, it is possible that regular meditation practice could be a helpful tool in managing and reducing maladaptive coping and reducing alexithymia, while encouraging adaptive emotion coping strategies. As such, this suggests that meditation practice could be clinically implied as an effective intervention strategy or a long-term treatment approach, in conjunction with other tools which may further assist in reducing the psychological suffering of alexithymic individuals.

4.4 Strengths, Limitations and Methodological Considerations

The present study presented several strengths and limitations, which should be taken into account when understanding the results.

Firstly, the obtained sample had a limited range of meditators, which may be why the effects of meditation were underpowered. For instance, almost half of the sample had meditation experience but only 7.7% of these had meditated for *6+ years*, and only 13.1% of participants meditated for *21+ minutes*. Therefore, it is possible that decreased levels of alexithymia and avoidant coping in these groups could also be due to other factors. For example, it was found that participants who meditated for 6 or more years tended to be older and more educated. This could mean that age and education may have been confounding variables. Therefore, future studies should aim to gather a larger sample of meditators, who are at the higher ends of the scale for years of meditation and minutes of meditation. This would balance the groups under these categories and would allow to confirm the relationship of meditation experience with

alexithymia and avoidant coping. Nonetheless, the sample was also a strength as it consisted of both meditators and non-meditators, allowing for comparison. By including both of these groups and different categories of meditation experience, the study was able to clearly demonstrate important differences between meditators and non-meditators. Another strength of the sample was that it was a community sample which had diverse participants, making it possible to generalise relevant evidence for various nationalities.

Secondly, the sample mainly consisted of meditators who undertook mindfulness meditation (37.7%) as one of the many types of meditation. Therefore, the association between meditation experience and the two distinct styles of coping may vary depending on the type of meditation practised. In saying this, those who particularly practised mindfulness meditation also contributed to the strengths of this study, as it provided stronger support that mindfulness meditation assists in reducing avoidant coping and thus helps to reduce alexithymia scores. Therefore, mindfulness meditation could be applied in future interventions seeking to combat this issue.

Thirdly, another limitation was that the present study did not follow the time-ordered relationship required for a mediation analysis (Hyman 1955), considering all measures were collected at one time. Also, the retrospective approach applied for the meditation questions assumes that the predictor (meditation experience) preceded the indirect effect (avoidant and approach coping), which might have been an issue when considering mediation analysis. Therefore, future studies should aim for conceptual timing, which will make mediation analysis more applicable (Tate, 2015).

Additionally, the obtained sample was in the non-alexithymic range (equal to or less than 51) (Eiden, 1998), as the TAS-20 Total mean was 49.03 which is below the expected range.

Therefore, it is possible that the results of this study may have been overpowered by non-alexithymic individuals, and thus might be unfair to generalise with the whole sample. As such, future studies should consider obtaining a larger sample size which will subsequently allow the sample to be in the alexithymic range. This will further strengthen the findings of the study.

Lastly, another limitation was concerning the alexithymia measure, TAS-20 (Bagby et al., 1994b), that is, one of its sub-scales, EOT showed low internal consistency, compared to the DIF and DDF sub-scales, and this is consistent with previous studies (Bagby et al., 1994b; Maroti et al., 2018; Colombarolli et al., 2019). Therefore, future studies could consider further evaluating and validating the EOT sub-scale, as part of their research. Nonetheless, the TAS-20 scale was also one of the strengths of this study as it did correlate with alexithymia, which follows previous findings (Maroti et al., 2018; Colombarolli et al., 2019; Li et al., 2015).

4.5 Future Directions for Research

In addressing the limitations, there are many ways in which the current findings can be strengthened to have an improved understanding of how meditation influences coping and alexithymia.

Firstly, future research should gather a more representative sample with balanced numbers of meditators and non-meditators. This would reduce bias and ensure validity of the results, considering they can be generalised to the target population.

Secondly, future research should also consider gathering personal statements of participants, explaining their reasons for meditating. This would provide further insight into the current theory that those who attempt to meditate, but are inconsistent, may be doing it momentarily, to simply aid the distress associated with their psychological health. Thus, showing higher scores on avoidant coping and lower scores on approach coping than non-meditators.

Lastly, as this study suggests that maintaining a reasonable time of meditation in the long-term will reduce avoidant coping and possibly encourage approach coping, while ultimately reducing alexithymia, future research should consider including an intervention-based program, focusing on how different types of meditation encourage adaptive coping and gradually influence the levels of alexithymia. For example, groups could include a skilful compassion meditation group and a control group. This would help researchers understand whether different types of meditations affect coping and alexithymia in different ways, as well as how each groups' experiences differ and which type of meditation is the most effective for alexithymic individuals.

4.6 Conclusion

The present study's overall findings empirically suggest that years and minutes of meditation are two important factors in reducing avoidant coping and alexithymia. The findings further suggest that meditation experience may be an effective approach towards developing adaptive emotion regulation strategies, which would subsequently help alexithymic individuals attain more emotional awareness. Further, helping to manage or reduce other mental health struggles that have previously been linked to alexithymia. Overall, this study has promising theoretical and clinical implications that are indicative of a positive impact that meditation experience has on reducing avoidant coping and ultimately decreasing alexithymia. Therefore, this area of research deserves further attention, as does other forms of meditation practices, which encourage positive coping. Thus, leading the path towards an improved and more hopeful future for those struggling with alexithymia.

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Appendices

Appendix A

T-tests for Gender Differences in Alexithymia and Coping Measures

Independent samples t-tests were conducted to indicate statistically significant gender differences on the various measures used in the present study. However, the obtained results showed non-significant differences between males and females on the DIF $t(126) = -.38$, $p = .71$, DDF $t(126) = 1.03$, $p = .30$, EOT $t(126) = 1.10$, $p = .27$, TAS-20 Total $t(126) = .55$, $p = .58$, Avoidant Coping $t(126) = .20$, $p = .85$ and Approach Coping $t(126) = .24$, $p = .81$. That is, the average DIF score of males ($M = 16.69$, $SD = 7.04$) was not significantly different from that of females ($M = 17.16$, $SD = 6.53$); The average DDF score of males ($M = 13.67$, $SD = 4.70$) was not significantly different from that of females ($M = 12.83$, $SD = 4.19$); The average EOT score of males ($M = 19.78$, $SD = 4.12$) was not significantly different from that of females ($M = 18.88$, $SD = 4.55$); The average TAS-20 Total score of males ($M = 50.13$, $SD = 12.51$) was not significantly different from that of females ($M = 48.87$, $SD = 12.39$); The average Avoidant Coping score of males ($M = 24.0$, $SD = 6.72$) was not significantly different from that of females ($M = 23.75$, $SD = 6.17$); The average Approach Coping score of males ($M = 31.11$, $SD = 6.54$) was not significantly different from that of females ($M = 30.83$, $SD = 6.18$).

One-Way ANOVA for Level of Education Differences in Alexithymia and Coping Measures

One-way ANOVA was conducted to indicate statistically significant between-group differences for the level of education on the various measures used in the present study. The obtained results showed a significant difference overall, but there was no clear difference between particular education groups. For instance, a one-way ANOVA reported significant but unclear differences between those who had completed TAFE or another technical diploma and

those who had completed a postgraduate degree on the DIF, $F(5, 123) = 2.60$, $\eta^2 = .10$, $p = .03$, DDF, $F(5, 123) = 2.42$, $\eta^2 = .09$, $p = .04$, EOT, $F(5, 123) = 2.72$, $\eta^2 = .10$, $p = .02$, TAS-20 Total, $F(5, 123) = 3.13$, $\eta^2 = .11$, $p = .01$ and Avoidant Coping, $F(5, 123) = 3.77$, $\eta^2 = .13$, $p = .00$, whereas a one-way ANOVA reported non-significant differences on Approach coping, $F(5, 123) = 1.37$, $\eta^2 = .05$, $p = .24$.