

**Positive but Rarely Protective: Associations of Adolescents' Mindfulness with  
Emotional Adjustment and Responses to Rejection by Peers**

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### **STATEMENT OF ORIGINALITY**

This work has not been submitted previously for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

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**ABSTRACT**

Dispositional mindfulness has been described as the self-regulation of sustained attention to thoughts, feelings, and sensations in the present moment in a way characterised by curiosity, openness, and acceptance (Bishop et al., 2004). As a construct, dispositional mindfulness is expected to activate internal mechanisms, including cognitive, emotional, and behavioural flexibility, which facilitate adaptive emotion and behavioural regulation (Shapiro, Carlson, Astin, & Freedman, 2006). Multiple stress and coping theories (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001; Skinner & Zimmer-Gembeck, 2007, 2016) and neurodevelopmental perspectives (e.g., Sanger & Dorjee, 2015) identify flexibility and regulation as parts of the process of successfully attending, responding, and adapting to stressful events.

One significant form of stress can come from social relationships that are rejecting or unsupportive. Accepting, close and supportive social interactions and relationships with others are essential experiences that are foundations for the fulfillment of the basic human need for relatedness, one of three psychological needs proposed in Self-Determination Theory (Ryan & Deci, 2000). Relatedness, in Self-Determination Theory, is defined as the need to belong to social groups and to be related to, and valued by, others. When the need for relatedness is not met because of social rejection, social disconnection or a lack of supportive relationships, this signals an unmet relatedness need that can be thought of as akin to a stressful experience. The associated distress from this unmet need can be significant and long-lasting, and experiencing stressful events that threaten relatedness can have far-reaching negative impacts on well-being. Yet, there are individual differences in sensitivity to threats to relatedness that might be explained by dispositional traits such as mindfulness. However, there has been limited research focused on whether mindfulness, as a naturally occurring disposition, is associated with emotional adjustment and responses

to one of the most common distressing interpersonal experiences during adolescence and young adulthood, namely victimisation and rejection by peers.

Drawing from dispositional mindfulness research, stress and coping theories, Self-Determination Theory, and past research that identifies peer victimisation and exclusion as a significant threat to relatedness, this research had two general aims. The first aim was to investigate whether dispositional mindfulness is negatively associated with emotional and social distress, focusing on its association with self-reported loneliness, social anxiety, depression (Study 1), as well as perceived threat to relatedness (i.e., feelings of rejection and exclusion) following a laboratory experience of rejection by peers (also referred to here as *social exclusion*; Study 2). The second aim was to test whether dispositional mindfulness was protective of emotional well-being when peer victimisation and exclusion had been personally experienced (Study 1) or directly after its occurrence (in Study 2).

Study 1 included 361 Australian adolescents, aged 11-18 years, recruited from a large independent public high school. Study 2 included 90 adolescents and young adults aged 16-23 years recruited from a large urban university. In Study 1, dispositional mindfulness was examined as a direct correlate of internalising symptoms (loneliness, social anxiety, and depression) and tested as a buffer of the associations of stress in the peer domain (peer victimisation and exclusion) with symptoms. Results indicated that dispositional mindfulness was associated with better emotional well-being, but it was not protective (i.e., did not buffer) against the association of peer victimisation and exclusion with adolescents' elevated symptoms of loneliness, social anxiety, and depression.

The aims of Study 2 were accomplished by participants attending a research laboratory at a university and engaging in a simulated experience of peer social exclusion via an online ball tossing game called Cyberball. Before and following the

game plus after a delay, participants completed several items to report mood, social feelings, and perceived life meaning to investigate reactions and recovery from the experience of social exclusion. Results indicated that dispositional mindfulness was a resource for presenting with more positive emotions and friendly feelings towards others prior to Cyberball and was associated with greater recovery from the negative mood following social exclusion during Cyberball. This study also considered threat appraisal (i.e., how rejected participants felt after Cyberball), finding that higher threat appraisal was associated with more negative reactions across all measures. Also, participants with high dispositional mindfulness and low appraisal of threat reported the most positivity following social exclusion.

Three general conclusions are drawn from the results of the two studies: 1) adolescents and young adults who report more dispositional mindfulness report better adjustment; 2) adolescents with more capacity for dispositional mindfulness are not universally protected from the negative outcomes following the stress of naturally occurring peer victimisation and exclusion or induced social exclusion, however there is some promise that mindfulness may enhance mood recovery; and 3) the negative impact of social threat and exclusion by others seems pervasive and difficult to avoid. Future research, recommendations, and practical implications when working with adolescents and young adults are discussed. Improving mindfulness can improve emotional adjustment and lead to more positive peer interpersonal relationships. However, mindfulness interventions are not a one size fits all approach, and, in fact, under particular conditions could be harmful to some young people. The current thesis provides a foundation from which to better identify why and when mindfulness may be of benefit to young people, promoting more adaptive social functioning and well-being.

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**LIST OF OUTPUTS PRODUCED DURING THE PHD CANDIDATURE:**

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Included in this thesis are papers in Chapters 6 and 7 which are co-authored with other researchers. My contribution to each co-authored paper is outlined at the start of the relevant chapters. The bibliographic details/status for these papers including all authors, are:

**Chapter 6:** Chapter 6 consists of a co-authored paper that has been published. As per SAGE guidelines, Chapter 6 consists of an accepted manuscript (post-peer-review, pre-copyedit version of an article) published in the International Journal of Behavioural Development. The final authenticated version is available online at:

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## CHAPTER 1

### **Introduction, Development and Dispositional Mindfulness among Youth, and Aims of the Thesis**

The importance of integrating mindfulness meditation into daily life has been a principal of Buddhism for centuries. In recent years, the concepts of mindfulness and mindfulness meditation practices have been adapted for use in modern psychology (e.g., Kabat-Zinn, 1990, 1994, 2003; Segal, Teasdale, & Williams, 2004), being applied in many psychological interventions and studied as a trait that naturally differs among individuals (i.e., trait or *dispositional mindfulness*; Brown & Ryan, 2003; Brown, Ryan, & Creswell, 2007; Carpenter, Conroy, Gomez, Curren, & Hofmann, 2019; Tomlinson, Yousaf, Vitterso, & Jones, 2018). The practice of mindfulness, traditionally cultivated through mindfulness meditation, aims to increase awareness of present experience, with acceptance (Kabat-Zinn, 1994). Therefore, a mindful state could be described as being in the present on a moment-by-moment basis, while accepting the self and the surroundings for what they are, and doing so non-judgementally. The capacity for mindfulness is hypothesised to become more routine with training and sustained practice. In addition, the development of routine mindful techniques are expected to activate internal mechanisms, including cognitive, emotional, and behavioural flexibility, which then facilitate the adaptive regulation of emotion and behaviour somewhat involuntarily or automatically. Multiple stress and coping theories (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001; Skinner & Zimmer-Gembeck, 2007, 2016) and neurodevelopmental perspectives (e.g., Sanger & Dorjee, 2015) identify these aspects of regulation as parts of the process of successfully attending, responding, and adapting to stressful experiences.

Mindfulness has been described as a practice that could have far-reaching positive benefits for humans and their communities, promoting both internal and social

harmony (Eberth & Sedlmeier, 2012; Kabat-Zinn, 1994; Kwee, 2012). Given such views, modern psychology has tended to concentrate on mindfulness as a tool or a skill that can be enhanced or naturally occurs, linking this skill to the ability for self- and emotion-regulation, to better personal well-being, and as a skill or trait that can promote, protect against or eradicate psychopathology. For example, research has shown that adults who completed an 8-week mindfulness-based stress reduction course and practiced meditation at home reported a decrease in stress and psychological symptoms and an increase in well-being (Carmody & Baer, 2008). In another adaptation of mindfulness stress reduction, referred to as mindfulness-based cognitive therapy, one meta-analysis summarised what was known about the efficacy of preventing depression relapse (Kuyken et.al., 2016). The authors of this review concluded that mindfulness-based cognitive therapy was particularly valuable for reducing recurrent and more pronounced depressive symptoms. Such intervention research studies (see Goldberg, Tucker, Greene, Davidson, Wampold, Kearney, & Simpson, 2019; Parsons, Crane, Parsons, Fjorback, & Kuyken, 2017, for reviews), which now number in the 100s if not 1000s, show that mindfulness is a practice, a skill or a way of being that can be nurtured with practice. Thus, mindfulness can be improved and can be assessed as an outcome of intervention.

### **Introduction to the Concept of Dispositional Mindfulness**

In another line of inquiry in psychology and related social sciences, mindfulness has been conceptualised as an inherent capacity to view and respond to the internal self and the external environment in a way consistent with a mindful state (Brown & Ryan, 2003). In this view, mindfulness is a trait-like lens through which stimuli are sensed, perceived, attended to, and responded to. Researchers usually have labelled this trait-level individual difference factor (varying naturally from low to high) as *dispositional mindfulness*, but it is sometimes referred to as trait mindfulness (Brown & Ryan, 2003).

There have been some controversies around the use of mindfulness as a construct of research in modern psychology, including how to define it (Dreyfus, 2011; Grossman, 2011). In particular, dispositional mindfulness has been defined in the psychological research literature in multiple ways and some authors have highlighted definitional challenges while also describing how contemporary features of mindfulness differ from classical Buddhist accounts (e.g., Dreyfus, 2011). A theme among such views is that some definitions (and associated measures) have not adequately captured the full essence of mindfulness. In an attempt to unify the field, scholars gathered to establish a consensus on mindfulness and developed a model which seems to have produced a well-accepted operational definition of mindfulness (Bishop et al., 2004). This definition states that mindfulness involves “the self-regulation of attention so that it is maintained on immediate experience, thereby allowing for increased recognition of mental events in the present moment” and “a particular orientation toward one’s experiences in the present moment, an orientation that is characterised by curiosity, openness, and acceptance” (p. 232) (Bishop et al., 2004). The paper in which this definition appeared has been cited approximately 6500 times (14 April 2020), and could be taken as a promising sign that consistency in defining mindfulness is emerging among researchers.

### **Research on Dispositional Mindfulness in Youth**

Dispositional mindfulness, although measured in a variety of ways, has been found to be a correlate of 1) greater cognitive abilities (e.g., Anicha, Ode, Moeller, & Robinson, 2012; Short, Mazmanian, Oinonen, & Mushquash, 2016); 2) better health behaviours (e.g., Kang, O’Donnell, Strecher, & Falk, 2017; Karyadi, VanderVeen, & Cyders, 2014); 3) stress reduction (e.g., Hicks et al., 2020; Weinstein, Brown, & Ryan, 2009); and 4) enhanced psychological well-being (e.g., Jimenez, Niles, and Park, 2010; Tomlinson, Yousaf, Vitterso, & Jones, 2018; Stevenson, Millings, & Emerson, 2019).

This basic research adds to the extensive research that investigates applications of mindfulness interventions with novel populations and specific problems. While mindfulness-based intervention research with novel populations and specific problems is informative and important it also draws attention to the need for additional basic science that allows for a fuller understanding of the mechanisms that help to identify when and why mindfulness is associated with benefits, and addresses additional fundamental questions such as whether research on dispositional mindfulness (or mindfulness interventions) can be generalised across age groups or settings (Dimidjian & Segal, 2015). Some have raised developmental questions deserving investigation, including whether factors of mindfulness develop differentially and naturally with increasing age and whether all factors of mindfulness are beneficial for all adolescents' well-being (Zimmer-Gembeck, 2020). Furthermore, others have claimed that much of the existing research is quite limited for understanding whether mindfulness is a naturally occurring phenomena that exists early in life, assuming that a trait should show individual differences when individuals first develop the advanced cognitive and emotional capacities needed for mindfulness (e.g., Friedel et al., 2015).

**Youth dispositional mindfulness and its development.** There is literature that suggests that individual differences in dispositional mindfulness might emerge in the late childhood years or earliest years of adolescence when young people make major advances in self-regulation and make substantial gains in their understanding of emotion and the control/regulation of emotions, and their coping strategies become more self-generated, sophisticated and differentiated (Roeser & Pinela, 2014; Shute, 2019; Zimmer-Gembeck & Skinner, 2011). Mindfulness has been described as a metacognitive skill (Bishop et al., 2004), and metacognition does not (typically) fully form until, at the earliest, the second decade of life (Kuhn, 2000; Skinner & Zimmer-Gembeck, 2016). However, it is promising that previous research has found that adults

and adolescents self-report similar levels of mindfulness despite theorized developmental differences in these norms; such findings have been used as evidence that adolescent self-reports of mindfulness are not reflecting the expected developmental changes that should occur between adolescence and adulthood (Grossman, 2011; Pallozzi et al., 2017).

Although there are only a small number of available published research studies on the development of dispositional mindfulness during childhood and adolescence, there is some promising developmental research emerging that sheds some light on dispositional mindfulness in adolescents. In one study from the USA, Warren et al., (2020) assessed the longitudinal trajectory of developmental changes in mindfulness from grades 9 through 10 among 3453 adolescents. In this study, there was no evidence of normative age-related changes in mindful awareness, but there was significant interindividual variability in slopes (i.e., individual patterns of change over time), with some adolescents found to increase, others to decrease and others showing general stability in mindfulness over the grades. In this same study, some environmental circumstances were associated with adolescents' level of dispositional mindfulness; in grades where the needs-supportive climate was higher (e.g., the need for autonomy, relatedness, and competence in parents, teachers, and friend relationships) and discrimination (defined as how often in daily life adolescents are discriminated against because of something about them, for example skin colour, appearance, or beliefs), adolescents reported greater mindful awareness. An unexpected finding was that, in grades where perspective taking and prosocial behaviours were higher, adolescents reported lower mindfulness awareness. This finding could be explained by students who are more advanced at perspective taking and prosocial behaviours having more lapses in self-focused attention (as measured in this study) because they are focused more on others. Consistent with this possibility, in another recent longitudinal study using the

short-form version of the multi-facet Five Facet Mindfulness Questionnaire among 599 adolescents, mindfulness and self-compassion were highly correlated, but mindfulness and self-compassion were not highly correlated with compassion for others (Colaianne, Galla, & Roeser, 2020). This paper suggests the tendency to be more mindful may be more important to the development of the self (i.e., dispositional mindfulness) rather than linked directly to an understanding of others or care for others (i.e., compassion for others), a finding that is also suggested in research by Warren et al. (2020) who found no association between empathy and mindful awareness among US high school students followed from age 14 to 18 years.

Other research has focused on identifying whether normative adolescent developmental changes in cognition or regulation may be a foundation for, and provide opportunities for growth of, dispositional mindfulness (Roeser & Pinela, 2014; Shute, 2019). However, at the same time there is attention to the possibility that dispositional mindfulness may open up opportunities that yield positive growth in social, emotional and perhaps even cognitive development (Amanda & Shane, 2019; Galla, Tsukayama, Park, Yu, & Duckworth, 2020; Schonert-Reichl et al., 2015; Zelazo & Lyons, 2012). For example, Amanda and Shane (2019) argued that mindfulness influences the way adolescents recognise and engage with internal and external problems (e.g., stressful events), and this mindful way of engaging with problems or stressors may increase adolescents' sense of control over their own efficacy to achieve good results and result in more positive developmental outcomes and pathways for youth, particularly promoting future patterns of self-regulatory and socio-cognitive skills. In addition, when the focus is on the mindfulness facet of non-reactivity to inner experiences, developmental change was recorded in a longitudinal study of adolescents from grades 8 to 9 (Galla et al., 2020). More specifically, this study found mindful non-reactivity increased on average across a two-year period, and greater increases in non-reactivity



were associated with declining perceived stress and negative affect, and increasing positive affect (Galla et al., 2020). This suggests the developmental progression of the non-reactivity facet of mindfulness may be a specific component of dispositional mindfulness linked to the adolescents' positive development of emotional well-being. Considering mindfulness has been linked with both socio-cognitive skills and emotional well-being, one implication of these findings is that adolescents who make more progress in developing skills in mindfulness may simultaneously experience improvements in their well-being.

**Dispositional mindfulness, youth well-being, and research gaps.** Regarding emotional well-being, there is a relatively large and growing number of published studies (not involving intervention) that have specifically examined adolescents' dispositional mindfulness and associations with mental health (e.g., Bluth & Blanton, 2014; Calvete, Fernández-González, Echezarraga, & Orue, 2019; Calvete, Orue, & Sampedro, 2017; Ciarrochi, Kashdan, Leeson, Heaven, & Jordan, 2011; Ciesla, Reilly, Dickson, Emanuel, & Updegraff, 2012; Cortazar & Calvete, 2019; Galla et al., 2020; Marks, Sobanski, & Hine, 2010; Pepping, Duvenage, Cronin, & Lyons, 2016; Xu, Fu, An, Yuan, Ding, & Zhou, 2018). Yet, despite the increase in the size of this body of research, it is still unclear whether dispositional mindfulness is beneficial to adolescents in a way similar to what has been found among adults. In support of this among adults, one published systematic review of 93 papers available up to June 2016 reported three main themes among the papers (Tomlinson et al., 2018). The themes identified were 1) dispositional mindfulness is associated with fewer psychopathological symptoms such as depression, 2) is positively linked to adaptive cognitive processes, and 3) is associated with better emotional processing and regulation (Tomlinson et al., 2018). However, the studies among adolescents have not been unanimous in these findings. For example, Cortazar and Calvete (2019) found mixed findings when investigating

different facets of dispositional mindfulness, as measured by the Five Facet Mindfulness Questionnaire (Baer, Smith, Hopkins, Krietemeyer, and Toney, 2006), on mental health. In general, the studies listed above have reported that adults, but also adolescents, higher in dispositional mindfulness exhibit or report better well-being and less emotional distress. However, although research on dispositional mindfulness has been growing at an exponential rate, much of the research in this area has concentrated on adults. There are still gaps in the basic research focused on dispositional mindfulness among adolescents, especially research that considers multiple facets of dispositional mindfulness. Such research is needed to provide additional guidance to practitioners who seek to find ways to describe and discuss the important components of mindfulness with young people, as well as providing information that moves researchers toward identifying specifically 1) what and why aspects of mindfulness may aid mental health and 2) extend the identification of individual skills that can boost adaptive responses to stressful events and help adolescents to withstand the many personal and social transitions they will encounter during the teenage years and early twenties.

Further, there are many unaddressed questions about how mindfulness may influence adolescents' feelings of social connectedness and peer relationships. Only two published studies could be located (Riggs & Brown, 2017; Warren et al., 2020) that examined whether dispositional mindfulness is more elevated among adolescents with greater advances in one of the important social developmental tasks of this age period, forming good friendships and being accepted by peers (Roeser & Eccles, 2015). One prospective study on dispositional mindfulness and associations with peer stress over time among young adolescents found that peer victimisation was linked to declining dispositional mindfulness over time (Riggs & Brown, 2017). In the second study, in grades where peer discrimination was lower and needs-supportive climate was higher, mindful awareness was also higher (Warren et al., 2020). In addition, while

dispositional mindfulness has been associated with reduced general life stress among adolescents (e.g., Cortazar & Calvete, 2019; Galla et al., 2020), no study could be located that has investigated whether dispositional mindfulness is protective (i.e., buffers) against the negative effects of peer relationship stressors, a common and particularly distressing form of stress for young people (Compas & Wagner, 1991; Spirito, Stark, Grace, & Stamoulis, 1991).

### **Summary of the Research**

The general purpose of the current series of two studies was to investigate whether dispositional mindfulness is a positive personal resource related to adolescents' well-being and more adaptive responses to the stress of peer relationships. In particular, the focus was on whether adolescents' dispositional mindfulness was a correlate of two key markers of positive (or less negative) adolescent development – their social relationships and their emotional adjustment. Thus, the studies tested two general research questions. The first question asked whether adolescents with more capacity for dispositional mindfulness would have better emotional adjustment, would report less peer victimisation and exclusion, and would perceive less threat from an induced experience of social exclusion. The second question asked whether mindfulness is protective, considering whether adolescents who report more dispositional mindfulness would be protected from the negative mental health correlates of peer victimisation/exclusion, and would respond less negatively and recover more quickly from an in-vivo experience of social exclusion by peers during a Cyberball game. Thus, across two studies, the domain of study was adolescent peer relationship stress, specifically operationalised as naturally occurring (and self-reported) victimisation and exclusion by peers (i.e., relational victimisation by peers) or as an induced experience of social exclusion in the laboratory. Peer relationship stress was the focus domain, given the prominent role of peer rejection and victimisation in social and emotional

maladjustment, and the great importance of belonging and friendship to adolescents, as well as young adults (Brown, Eicher, & Petrie, 1986; Compas & Wagner, 1991; LaGreca & Harrison, 2005; Zimmer-Gembeck, 2002, 2016).

More precisely, there were two specific aims of the proposed research. The first aim was to investigate whether adolescents higher in dispositional mindfulness also report better well-being, indexed here as less emotional and social distress (loneliness, social anxiety, depression; Study 1), as well as reporting less peer victimisation and exclusion (Study 1) and appraising less threat from a laboratory experience of social exclusion (Study 2). A second aim was to test whether adolescents and young adults higher in dispositional mindfulness were protected from emotional and social distress when victimisation and exclusion had been historically experienced (in Study 1) or directly after an induced occurrence of social exclusion (in Study 2).

Study 1 was a cross-sectional study of adolescents, whereby dispositional mindfulness was examined as a direct correlate of loneliness, symptoms of emotional disorders and experience of peer victimisation and exclusion, as well as a buffer of the positive associations of peer victimisation and exclusion with loneliness, social anxiety, and depressive symptoms. Study 2 was a laboratory study, whereby adolescents and young adults completed a measure of dispositional mindfulness and, about 1-week later, attended a laboratory where social exclusion was induced using the Cyberball computer game (Williams, Cheung, & Choi, 2000). Participants reported on their experience before and immediately following the stressor and shortly later (3min) to measure threat appraisal (how much they felt excluded/rejected), and reactivity and recovery from social exclusion. It was expected that dispositional mindfulness would be associated with less appraisal of threat, less emotional reactivity to threat, and better emotional recovery.

## Chapter Overview

The following five chapters (Chapters 2-5) review theories and related research that provide a broad foundation for the hypotheses proposed and tested in the two studies. First, the conceptualisation and measurement of dispositional mindfulness that formed a foundation for the studies are described in Chapter 2. Next, Chapter 3 summarised research on associations of dispositional mindfulness with socioemotional adjustment and responses to stress among adults and adolescents. Chapter 3 also describes research evidence addressing the notion that dispositional mindfulness is a naturally occurring individual difference factor that is associated with fewer internalising symptoms such as loneliness, social anxiety, and depression, and covaries with more adaptive responses to interpersonal stress. In addition, Chapter 3 describes the theoretical foundation underlying this research, such as Self-Determination Theory (Ryan & Deci, 2000, 2017), while also describing evidence of the importance of supportive and positive peer relationships in adolescence and young adulthood, and how peer victimisation and social exclusion can contribute to internalising symptoms. Chapter 4 describes the negative consequences of social exclusion including reactivity and recovery from threats to the need for relatedness, and how dispositional mindfulness can contribute to effective regulation and reduction of distress following an experience of social exclusion. Chapter 5 draws together theory and research to present an overview of the current studies and thesis.

Studies 1 and 2 are presented in Chapters 6 and 7. Following the presentation of these two studies, the final chapter (Chapter 8) provides a General Discussion, which summarises key findings and general conclusions from the thesis. This includes a discussion of recommendations on measurement and methodology, and practical implications in relation to working with adolescents and young adults using mindfulness approaches. Finally, future directions that can uncover the circumstances that explain

exactly why, and especially when, mindfulness is of benefit to adolescents' and young adults' well-being are suggested.

## CHAPTER 2

### The Five Factors of Dispositional Mindfulness

With a commonly agreed upon definition of mindfulness in place, rapid dissemination of mindfulness practices, and growing interest in mindfulness research, a related challenge for researchers was developing reliable and valid measures of dispositional mindfulness. This work began with a focus on adults, with self-report surveys a commonly used method. At least nine different measures (published in peer reviewed journals) were found that were developed specifically for adults, including the Freiburg Mindfulness Inventory (FMI; Buchheld, Grossman, & Walach, 2001), the Mindfulness/Mindlessness Scale (MMS; Bodner & Langer, 2001), the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003), the Kentucky Inventory of Mindfulness Skills (KIMS; Baer, Smith, Hopkins, & Allen, 2004), the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006), the Cognitive and Affective Mindfulness Scale- Revised (CAMS-R; Feldman, Hayes, Kumas, Greeson, & Laurenceau, 2007), the Southampton Mindfulness Questionnaire (SMQ; Chadwick et al., 2008), the Philadelphia Mindfulness Scale (PHLMS; Cardaciotto, Herbert, Forman, Moitra, & Farrow, 2008), and the Comprehensive Inventory of Mindfulness Experiences beta (CHIME-beta; Bergomi, Tschacher, & Kupper, 2013). One measure was located specifically designed for children and adolescents, the Child and Adolescent Mindfulness Measure (CAMM; Greco, Baer, & Smith, 2011), and a further one of the adult measures has been adapted for use with children and adolescents, the Mindful Attention Awareness Scale-Child (MAAS-C; Lawlor, Schonert-Reichl, Gadermann, & Zumbo, 2014), and the Mindful Attention Awareness Scale-Adolescent (MAAS-A; Brown, West, Loverich, & Biegel, 2011). Given there are so many available measures, there has also been debate regarding the measurement of mindfulness and some researchers have voiced their apprehension, including that questionnaires lack

construct validity due to a lack of observable signs by which to define or measure a mindful person (Grossman, 2011). Grossman (2011) proposed that current self-report measures can distort the meaning of mindfulness and may have negative impacts on the development of mindfulness-based interventions. He suggests that research psychologists should consider personal long-term experience and mindfulness practice to deeply understand the concept of mindfulness before attempting to define and quantify it for psychological research.

As described above, and despite the controversy, many mindfulness questionnaires have been developed to support mindfulness research in adults and, to a lesser extent, children and adolescents. Among the many measures available, Pallozzi, Wertheim, Paxton, and Ong (2017) suggest multi-faceted models of mindfulness may be the most useful for ensuring comprehensive coverage of potential factors in any composite score (or to allow for a focus on each factor or subcomponent of mindfulness). In addition, multifaceted models are more reflective of Bishop et al.'s (2004) widely accepted definition and they tend to align more closely to constructs proposed in original concepts of mindfulness from a non-Western perspective (Grossman, 2011). What might be surprising to some is that the one-factor models of the Mindful Attention Awareness Scale- adolescent version (MAAS-A; Brown et al., 2011) and the Child and Adolescent Mindfulness Measure (CAMM; Greco et al., 2011) are those measures most frequently used in studies of adolescents (Pallozzi et al., 2017).

Given the small number of mindfulness measures specifically designed for adolescents available when the studies in the current thesis were designed and conducted, the suitability of all published adult measures for use with adolescents was considered by drawing on a paper by Pallozzi et al. (2017). The criteria they used for assessing suitability for adolescent samples included reading complexity, concreteness of items, theoretical basis, and appropriateness of content. They found the one factor



Mindful Attention Awareness Scale - Adolescent version (MAAS-A; Brown et al., 2011), the one factor Child and Adolescent Mindfulness Measure (CAMM; Greco et al., 2011), the multi-factor Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006), and the Freiburg Mindfulness Inventory (FMI; Buchheld et al., 2001) all had good internal consistency when used with adolescents.

Running parallel to these psychometric studies of existing self-report measures of mindfulness, novel ways of capturing mindfulness have been emerging in research that relies on multiple informants, which should be described here (e.g., Rickert, Skinner, & Roeser, 2020). Similar to expressions of any individual trait, the way an individual experiences mindfulness may differ from their behavioural displays or expressions of mindfulness and, further, may not be consistent within a person across time (Rickert et al., 2020; Warren, Wray-Lake, & Shubert, 2020). For example, Rickert et al. (2020) investigated the mindfulness of 78 teachers using multiple informants (550 of their students and trained observers) in a longitudinal design. While there was some variability, in general, they found that students' and trained observers' perceptions of teachers' expressions of mindfulness (measured by assessing dimensions of calm, clear, kind, reactive, distracted, and critical behaviour) aligned to an extent to teachers own perceptions of their mindfulness. This study provided preliminary support that multi-informant measures combining observations and self-report may be beneficial to consider in further developing the ability to accurately measure mindfulness, but that there is some covariation between multiple reporters (including between self-report and other-report). In addition to providing some guidance on the use of multiple informants in research on mindfulness, such findings provide additional evidence of the validity of self-report measures of dispositional mindfulness.

Researchers in psychology are converging on the idea that mindfulness is multifaceted. Mindfulness is now most often described as a set of cognitive, emotional,

and behavioural skills, as described in Bishop et al.'s. (2004) widely accepted definition. In a conceptualisation that has had a great deal of influence on the field, Baer et al. (2006) proposed five facets of dispositional mindfulness to aid in understanding its components and associations with stress, coping, and well-being. These five facets are 1) observing experience; 2) describing/labelling experience with words; 3) acting with awareness; 4) non-judging of experience; and 5) non-reactivity to inner experience (Baer et al., 2006). The five facets represent the ability to pay attention, be aware, and perceive signals of emotion accurately, along with unbiased processing of experience. The five facets are proposed to work in conjunction to yield what is conceptualised as mindfulness, so that an overall mindfulness composite can be constructed by averaging the five facets. Nevertheless, the consideration of each of the five facets of dispositional mindfulness independent from the others can also be useful for understanding complex relations with other variables, particularly because it has been found that one or more facets can be strongly related to a specific variable, whereas other facets can be weakly related or unrelated (Baer et al., 2006).

The first facet, observing experience, represents an individual's attentiveness to internal and external experience (Baer et al., 2006). More specifically, this facet focuses on attending to or noticing internal and external stimuli, such as sensations, emotions, cognitions, sights, sounds, and smells (Holzel et al., 2011). Individuals low in observing experience might lack awareness of their own thoughts and emotions (Ciesla et al., 2012). Previous evidence suggests the observing facet is relevant for participants who practice meditation, but this facet may perform differently for nonmeditators (Baer et al., 2006, 2008; Goodall, Trejnowska, & Darling, 2012; Williams, Dalgleish, Karl, & Kuyken, 2014) and has also been found to be differentially related to other variables when measured in adolescents relative to in adult meditators (Abujaradeh, Colaianne, Roeser, Tsukayama, & Galla, 2020; Hambour, Zimmer-Gembeck, Clear, Rowe, &

Avdagic, 2018). For example, research has shown the observing facet has only small (and sometimes negative) associations with other dispositional mindfulness facets and has been found to have positive associations with symptoms of emotional maladjustment in adolescents and young adults (Hambour et al., 2018). Consequently, the observing facet was not administered in this thesis, leaving four facets of mindfulness.

The first of the remaining four facets, describing/labelling with words, is the ability to recognise and mentally label stimuli and emotional states with words (Holzel et al., 2011). This emotion labelling process facilitates treating emotion states as objects of attention, therefore promoting detachment by externalising negative emotions (Creswell, Way, Eisenberger, & Lieberman, 2007). Individuals low on describing/labelling might be aware of positive and negative experiences although lack the ability to recognise their emotions or express their thoughts logically (Ciesla et al., 2012). The third facet, acting with awareness, is the ability to attend to one's actions in the moment while avoiding disassociation, or acting automatically (Baer et al., 2006; Holzel et al., 2011). Individuals low in acting with awareness might be expected to have difficulties focusing their attention in the present on current activities.

The final two facets of mindfulness describe how an individual is more mindful, or how one goes about observing experience, describing/labelling with words, and acting with awareness. The fourth facet, non-judging of inner experience, is the ability to refrain from judgement or self-critical attitudes about one's sensations, cognitions, and emotions (Holzel et al., 2011). Individuals low on non-judging of inner experience might be distressed by their own thoughts or feelings and blame themselves for negative thoughts and feelings (Ciesla et al., 2012). Finally, the fifth facet, non-reactivity to inner experience, represents the ability to allow thoughts and feelings to come and go, without perseveration (Holzel et al., 2011). Individuals low in non-reactivity to inner experience

might be prone to experience higher levels of stress in response to distressing external events or internal experiences such as negative thoughts (Ciesla et al., 2012). These final two facets may also be seen as ways of operationalising acceptance of experience. For example, to accept an experience such as feeling anxious, an individual high in dispositional mindfulness might refrain from self-criticism about feeling anxious (non-judging), and refrain from impulsive reactions to this inner experience (non-reactivity).

At the time the current studies were conducted, there was no research investigating the reliability and validity of the Five Facet Mindfulness Questionnaire (Baer et al., 2006) among adolescent samples. However, the Five Facet Mindfulness Questionnaire (Baer et al., 2006) was arguably the most widely used measure among adults (Goldberg et al., 2016). Since collecting data for Study 1 of the current research, the Five Facet Mindfulness Questionnaire (Baer et al., 2006) has been adapted for use with adolescents and internal consistency among adolescent samples has been established (Pallozi et al., 2017). In addition, researchers were motivated to develop shorter versions (e.g., 15 items; Abujaradeh et al., 2020) of the Five Facet Mindfulness Questionnaire to combat problems such as participant fatigue and understanding of the questionnaire items. Reliability and validity of the short form Five Facet Mindfulness Questionnaire has been reported in a study of 599 US adolescents and results appear promising for using the measure during the adolescent stage of development (Abujaradeh et al., 2020). The researchers cited the importance of finding reliable and valid means of measuring mindfulness among adolescents due to adult measures potentially not capturing the way mindfulness is expressed in adolescents (Abujaradeh et al., 2020). Thus, given that these studies appeared after the current studies (see Chapters 6 and 7) were conducted, the full adult version of four of the original five facets of mindfulness were used in the current studies.

### CHAPTER 3

#### **Dispositional Mindfulness as a Buffer Against the Negative Effects of Stress on Emotional Adjustment**

Mindfulness has been argued to be a human resource that can be drawn upon to yield positive psychological development and reduce risks of developing emotional problems (Roeser & Pinela, 2014). This has certainly been supported in studies of adults, with adults higher in dispositional mindfulness found to report more positive emotional adjustment (e.g., Barnes, Brown, Krusemark, Campbell, & Rogge, 2007; Brown & Ryan, 2003; Goodall et al., 2012). Much of this mounting evidence was summarised in a systematic review, which included 39 papers available up to June 2016. The summary findings showed a significant negative association of dispositional mindfulness with psychopathological symptoms among non-clinical adults (including university students; Tomlinson et al., 2018). Consistent with this evidence, research with adolescents shows similar associations. In one study, Australian year 10 students who scored higher on a measure of mindful acting with awareness also reported more prosocial tendencies, had greater increases in well-being across a year, and experienced less sadness and more positive affect relative to other adolescents (Ciarrochi et al., 2011). Another study of 106 adolescents found higher dispositional mindfulness made a significant contribution to greater overall psychological health (Tan & Martin, 2016) (see also Chapter 1).

Despite these studies showing that individuals who report more mindfulness also report fewer symptoms of mental health problems or, conversely, better well-being, what has often been proposed but has been less frequently studied is the benefits of mindfulness when stressful events occur. Compared to studies of mindfulness and adjustment or well-being, it was much more difficult to locate published studies of dispositional mindfulness, especially among adolescents, as a correlate of emotional

responding to stressful events or as a buffering factor when stressful events occur. This is surprising, given that theories suggest mindfulness as a resource for better responding and adapting to stress (Brown & Ryan, 2003; Brown et al., 2007; Kabat-Zinn, 1990; Lucas-Thompson, Miller, Seiter, & Prince, 2019).

### **Dispositional Mindfulness: Evidence for Stress Buffering**

**Studies with adolescents.** Three published studies were found that had examined individual dispositional mindfulness facets and their associations with internalising symptoms in response to general stressful events among adolescents. Each study asked the participants to think about recent, but unspecified, stressful events when responding to questionnaire items. Taken together, the results of these three studies suggest dispositional mindfulness can be beneficial for young people concurrently and over the short-term, and may protect against the negative effects of general stress. First, one study of 317 Australian high school students found that the associations of general life stress (measured as recent life hassles or experiences) with symptoms of depression, anxiety, and stress were weaker for those higher in dispositional mindfulness (assessed using the MAAS, a one facet measure of mindful awareness; Brown & Ryan, 2003) (Marks et al., 2010). The second study investigated three of the five facets of mindfulness (Baer et al., 2006), finding that adolescents in the USA who reported higher scores on the nonreactivity and nonjudgement facets of dispositional mindfulness also reported lower levels of dysphoric mood following life stress (measured with one question “how many major stressful events occurred in your life today?”) (Ciesla et al., 2012). This was argued to suggest that mindful nonreactivity and nonjudgement were buffering the negative impact of stress on dysphoric mood. The third facet examined in this study, acting with awareness, was unrelated to dysphoric mood following life stress. More globally, a composite score of dispositional mindfulness formed by considering all measured facets did interact with daily stress to predict later dysphoria, with

individuals with low dispositional mindfulness found to be particularly vulnerable to the negative effects of stress (Ciesla et al., 2012).

In the third study, mindful acting with awareness (assessed using the MAAS-A; Brown et al., 2011) was found to moderate the relationship between general stress (measured as a broad range of negative life events that typically occur among adolescents) and psychological symptoms 1 year later (Calvete et al., 2017). More specifically, adolescents who reported more acting with awareness showed more decline in non-suicidal self-injury, and, also, the associations of stress with both externalising problems and non-suicidal self-injury behaviours were weaker in individuals high, relative to low, in acting with awareness. Further, acting with awareness was cross-sectionally associated with fewer depressive symptoms and less drug abuse. In addition to generally supporting the idea that mindfulness can be of benefit when managing, adapting to or coping with stressful events, the findings of these studies highlight the importance of considering mindfulness facets individually to accurately detect differential associations with emotional adjustment outcomes, as well as responses to stress and stressful life events.

**Studies with university students or adults.** Given the limited research on adolescents' dispositional mindfulness, it is important to also summarise research with university students and adults when considering whether mindfulness may be a buffer against the negative effects of stressful life events or daily hassles. Just as in the few studies of adolescents, research findings among adults suggest that some facets of dispositional mindfulness are associated, with some facets more strongly associated than others, with emotional adjustment when individuals experience stressful events (e.g., Barnhofer, Duggan, & Griffith, 2011; Creswell, et al., 2007; Paul, Stanton, Greeson, Smoski, & Wang, 2013; Peters, Eisenlohr-Moul, & Smart, 2015). In

particular, the more important facets seem to be describing/labelling emotions with words, mindful non-judging, and mindful non-reactivity to inner experience.

Extending on this research, buffering the negative effects of stress might explain why dispositional mindfulness has benefits for reducing psychological symptoms or improving well-being and positive emotional adjustment. For example, a study by Kadziolka, Pierdomenico, and Miller (2015) found that university students higher in self-report dispositional mindfulness at Time 1 were less likely to engage in physiological activation in response to an emotionally challenging task two weeks later. In another study, university students higher in dispositional mindfulness showed a weaker increase in cortisol response, and a weaker self-reported emotional response (negative affect and anxiety), to a social stress test experiment (Brown, Weinstein, & Creswell, 2012). Further to social stress, the role of dispositional mindfulness has also been examined in the context of romantic relationships and responses to relationship stress. One paper, by Barnes et al. (2007), utilised an innovative design comprising a series of two studies, the first was a survey study and the second study combined survey results with an observed five phase interaction sequence between heterosexual couples in a research laboratory. After acclimatisation to the laboratory setting, couples were asked to discuss the events of their day and a topic of conflict in their relationship. The findings revealed that university students higher in dispositional mindfulness experienced lower emotional stress responses, a greater capacity to respond constructively to relationship stress over time, and higher relationship satisfaction. Taken together, results from these studies suggest that individuals high in mindfulness display less negative emotional reactions to stress, and they recover from these negative reactions faster than individuals lower in dispositional mindfulness.

Other evidence for the possible adaptive potential of mindfulness comes from research on emotion regulation. In survey research, adults (aged 18-65) higher in



dispositional mindfulness have been found to report more enhanced emotion regulation abilities, such as acceptance of emotional responses, goal directed behaviour, impulse control, emotional awareness, access to emotion regulation strategies, and emotional clarity (e.g., Goodall et al., 2012). In addition, research with university students and adults provides evidence that individuals higher in dispositional mindfulness tend to be better at regulating general stress levels and emotions in response to emotionally challenging tasks and stressful social events than individuals lower in dispositional mindfulness (e.g., Barnes et al., 2007; Brown et al., 2012; Kadziolka et al., 2015). Interestingly, a laboratory-based experimental induction of mindfulness among participants with no previous mindfulness training found there was a decrease in both positive and negative mood among participants after 15 minutes of meditation, suggesting a flattening effect of all emotion when mindfulness is heightened (Thompson & Waltz, 2007).

Not only has dispositional mindfulness been associated with more adaptive responses to stress, these adaptive stress responses also seem to result in reduced symptoms of emotional disorders. One longitudinal survey study among adults (aged 27-59) reported that the mindfulness facet found to be most helpful in regulating negative emotion and reducing the likelihood of depressive symptom development was the ability to describe inner experience (Barnhofer et al., 2011). The mindfulness facet of describing is the ability to consciously note and label current experience. Emerging neuroscientific evidence suggests this mindfulness strategy can significantly facilitate the regulation of negative emotions when experiencing stress. One neurological study using fMRI found university students high in dispositional mindfulness had lower amygdala activation and higher prefrontal cortex activation in response to socio-emotional threat than students low in dispositional mindfulness (Creswell et al., 2007). This study suggests the positive effects mindfulness has on psychological health and

reducing negative affect might be due to enhanced prefrontal cortical regulation of affect in response to stress rather than a more primary amygdala dominated emotional stress response. This study also found that mindful describing was particularly important in facilitating prefrontal cortex activation under socio-emotional stress (Creswell et al., 2007).

The ability to effectively label emotions (i.e., mindful describing/labelling with words) assists individuals to treat emotional states as external objects, thereby facilitating detachment and allowing a more objective evaluation of the negative state, as well as a decreased tendency to internalise emotions. Additional research has found another particular facet of dispositional mindfulness, higher non-reactivity, to be associated with less rumination and less perceived stress in male adults (Paul et al., 2013). The authors interpreted these findings as suggesting that individuals reporting higher non-reactivity have a greater ability to automatically inhibit emotional and behavioural responses to negative stimuli (e.g., rumination), in turn buffering vulnerability to depression (Paul et al., 2013). However, this finding needs further investigation as the sample size was small and consisted only of male participants.

### **Dispositional Mindfulness and Interpersonal Stress**

As far as could be determined by searching the literature on stress and adolescents' dispositional mindfulness, all research on adolescent dispositional mindfulness, stress, and adjustment has focused only on general, self-reported and, often, unspecified stressors. Yet, multiple studies with adults have shown the particular importance of mindfulness for responding adaptively to *interpersonal* stress. Responses to different stressors can depend on the type of stress experienced, and different stressors bring with them different emotions and emotional intensity (Clear & Zimmer-Gembeck, 2016; Zimmer-Gembeck & Skinner, 2011). Thus, research that does not specify or limit the focus to particular stressful events or types of stress (or relies on a

mix of unspecified stressors) can have at least two potential limitations. The first is that not specifying the stressor could weaken findings regarding the correlates of stress responding, coping, and well-being. The second potential limitation is that self-reported stress exposure could be confounded with stress responding, coping, and emotional adjustment. For example, when a person is self-reporting on their stress exposure it could be difficult to avoid confusing their exposure with their reaction and emotional response to stress or generalising across these areas, particularly if the type of stress is unspecified. This has led researchers to encourage better specification of the type of stress under study in survey research, ideally using some priming across all respondents when conducting such research or measuring stressful experiences within a particular domain (Zimmer-Gembeck & Skinner, 2011). An alternative is to use stress inducing tasks, so that all participants experience a similar stressful event. To address this issue here, high school students participating in the first study included in this thesis (see Chapter 6) reported only on peer stress in the form of victimisation and exclusion. The second study (see Chapter 7) relied on stress induction, incorporating a rejection/ostracism stressor referred to as Cyberball.

### **Self-Determination Theory and the Need for Fulfilling Peer Relationships**

The focus on peer victimisation and exclusion in this research was founded in Self-Determination Theory (Deci & Ryan, 2000; Ryan & Deci, 2000). Self-Determination Theory (Deci & Ryan, 2000; Ryan & Deci, 2000) and extensions on this theory (Skinner, Johnson, & Snyder, 2005; Schoch, Nikitin, & Freund, 2015; Skinner, Zimmer-Gembeck, Connell, Eccles, & Wellborn, 1998; Vansteenkiste, & Ryan, 2013; Vansteenkiste, Ryan, & Deci, 2008; Zimmer-Gembeck, 2016) argue that acceptance by others, interpersonal support and intimacy, reliable companionship and feelings of belongingness are essential experiences that serve to fulfil the basic psychological human need for relatedness (sometimes called belonging or belongingness; see

Baumeister & Leary, 1995; Lambert et al., 2013). When the need for relatedness is not met, it is akin to a stressful experience and the associated distress from this unmet need can be the foundation of escalating loneliness, as well as depression and other emotional disorders (Chango, Allen, Szwedo, & Schad, 2014; Deci & Ryan, 2000; Nangle, Erdley, Newman, Mason, & Carpenter, 2003). Moreover, the impact on emotional health of an unmet need for relatedness can be significant and long-lasting. Relatedness, in Self-Determination Theory, is defined as the need to belong to social groups and to be related to, and valued by, others (Baumeister & Leary, 1995; Deci & Ryan, 2000). More generally, Self-Determination Theory makes explicit hypotheses about why, when and how social groups or interactions with family, and partners, friends, workmates, teams or other social contexts can fulfil or thwart the basic human psychological need for relatedness (as well as two additional basic human needs for autonomy and competence) (e.g., Deci, Olafsen, & Ryan, 2017; Niemiec & Ryan, 2009; van Petegem, Soenens, Vansteenkiste, & Beyers, 2015; Vanhalst et al., 2015; Zimmer-Gembeck, 2016). With regards to fulfilling or thwarting the psychological need for relatedness, the interactions with others that fulfil this need are often operationalised in psychological research as relationship warmth, support and ongoing connection (Niemiec, Soenens, & Vansteenkiste, 2014; Weinstein & DeHaan, 2014). Conversely, the psychological need for relatedness is presumed to be thwarted (not met) when relationships are rejecting, ostracising, coercive or controlling (Costa, Ntoumanis, & Bartholomew, 2015; Weinstein & DeHaan, 2014). Importantly, here, victimisation and rejection are argued to be some of the most direct experiences that thwart the need for relatedness (Zimmer-Gembeck, 2016).

Not only does Self-Determination Theory identify the social-contextual conditions that meet or thwart the fulfillment of the need for relatedness (as well as for the psychology needs for autonomy and competence), but it also provides a framework

for understanding how fulfillment of psychological needs can contribute to positive psychological adjustment (Deci & Ryan, 2000; Vansteenkiste & Ryan, 2013). For example, fulfilment of the psychological needs for relatedness, autonomy and competence has been shown to facilitate intrinsic motivation, self-regulation and well-being across the lifespan in many domains, including education and health (Vansteenkiste, Niemiec, Soenens, 2010; van Petegem, Brenning, Baudet, Beyers, & Zimmer-Gembeck, 2018; Verstuyf, Vansteenkiste, Soenens, Boone, & Mouratidis, 2013).

Focusing on the need for relatedness, Self-Determination Theory identifies social exclusion or feelings of rejection as a powerful social signal of need threat, which can result in high levels of distress and, especially if overt, repeated or chronic, can be psychologically damaging (Deci & Ryan, 2000; Gardner & Zimmer-Gembeck, 2018; Nesdale & Zimmer-Gembeck, 2015; Vansteenkiste & Ryan, 2013; Zimmer-Gembeck, Nesdale, Webb, Khatibi, & Downey, 2016). In support of this, experiences such as social rejection or being ostracised or excluded have been found to be particularly detrimental to health and well-being (Stillman et al., 2009; Troop-Gordon, Rudolph, Sugimura, & Little, 2015; Zimmer-Gembeck, 2016). Therefore, social rejection is widely believed to be one of the utmost threats to satisfying the need for relatedness, which can cause discomfort and emotional pain, and can impair a sense of well-being and meaningful existence (Williams, 1997, 2001). In addition to Self-Determination Theory, the need to belong is a fundamental human desire, and the belongingness hypothesis (Baumeister & Leary, 1995) states that people have a strong drive to form and maintain positive interpersonal relationships. Much of our daily human behaviour is thought to be caused by this strong enduring desire to belong or relate to others, and failure to meet this fundamental need can lead to a variety of negative health effects

(Baumeister & Leary, 1995; Stillman et al., 2009; Troop-Gordon et al., 2015; Zimmer-Gembeck, 2016).

More explicitly, interpersonal stress and peer rejection are known to be some of the primary relatedness and belonging challenges faced during adolescence, being salient during this developmental time period (Zimmer-Gembeck, 2016). Negative interpersonal interactions with peers, such as peer victimisation and exclusion, are some of the most upsetting and stressful interpersonal events for young people (Spirito et al., 1991; Zimmer-Gembeck, 2016). In addition, research has found that young people often perceive interpersonal stress to be uncontrollable and this appraisal leads to decreased activation of coping strategies, often leading to maladaptive responses when dealing with the stress of problems with other young people (Zimmer-Gembeck & Skinner, 2011). Considering the prevalence and intensity of interpersonal stress in young people's lives, and research suggesting dispositional mindfulness is instrumental in more adaptive stress responding, dispositional mindfulness could be a natural tool to alleviate adolescents' adjustment difficulties related to interpersonal stress by facilitating adaptive regulation and coping skills. However, to date, the notion that dispositional mindfulness might buffer well-being when youth face the interpersonal stress of peer victimisation and exclusion has not been addressed in the literature or directly examined in research.

### **Peer Victimisation and Exclusion**

Peers and good peer relationships are instrumental for support in navigating through adolescence, for satisfying a fundamental need for relatedness or need to belong, and for overall development (Scholte & van Aken, 2006). Unfortunately, research findings indicate that not all peer relationships are positive. In fact, peer victimisation and exclusion is common, with approximately 17% to 25% of students reporting being bullied once or more a week (e.g., Craig et al., 2009; Cross et al., 2009;

Harel-Fisch et al., 2011). Peer victimisation and exclusion peaks in Years 8 and 9 of high school (13 to 16 years old), and peer victimisation and exclusion or the perception of peer victimisation and exclusion can be psychologically damaging, socially isolating, and disruptive to the development of future good peer relationships (Hawker & Boulton, 2000; Lopez, & DuBois, 2005; Nansel et al., 2001; Reijntjes, Kamphuis, Prinzie, & Telch, 2010; Troop-Gordon, 2017; Troop-Gordon, Rudolph, Sugimura, & Little, 2015; Zimmer-Gembeck, 2016; Zimmer-Gembeck, Nesdale, Webb, Khatibi, & Downey, 2016).

Overall, these actual and perceived interpersonal stressors have important clinical implications for mental health. While many adolescents adjust and learn to regulate adaptively, some experience difficulties leading to the development of internalising symptoms. A growing body of research around the world has documented a range of significant health and mental health problems for victims of peer victimisation and exclusion (Hong, Espelage, & Rose, 2019). In addition, experiences of peer victimisation and exclusion in childhood and adolescence are a precursor to both short term and persistent internalising symptoms impacting on later adjustment (Zwierzynska, Wolke, & Lereya, 2013). Research suggests loneliness, social anxiety and depression are common responses to the experience of peer victimisation and exclusion and the threat to relatedness and belonging (Baumeister & Leary, 1995; Leary, 1990).

For example, one study among middle school students found that peer victimisation and exclusion contributes to difficulties in emotional, behavioural, and academic adjustment in general (Lopez & DuBois, 2005). Another study, involving 14 to 19-year-olds, found that adolescents who reported relational victimisation also reported more negative interactions with their best friend and romantic partner, which contributed to feelings of internal distress including social anxiety and depression (La

Greca & Harrison, 2005). Interestingly a recent longitudinal study of 2177 11 to 15-year-old adolescents found a buffering effect between peer victimisation and exclusion and depressive symptoms when school belonging was high (Davis et al., 2019). They also found a strong sense of school belonging was protective against long term problems including reduced depressive symptoms. This study highlighted the importance of a sense of belonging in thwarting the negative outcomes often attributed to the experience of peer victimisation and exclusion.

While physical victimisation is associated with more psychosocial difficulties, studies suggest experiencing peer relational aggression adds risk for internalising problems (Crick & Grotpeter, 1996; Marshall, Arnold, Rolon-Arroyo, & Griffith, 2015). Relational aggression has been defined as behaviour harming others through deliberate and hurtful manipulation or damage (or threat of damage) to their relationships, including purposeful social exclusion, rejection, and spreading rumours (Crick, 1996; Crick & Grotpeter, 1996). One meta-analysis of 24,622 children between the ages of 5 and 17 years reported convincing evidence that relational aggression was associated with internalising symptoms and this association was slightly stronger for anxiety than depression (Marshall et al., 2015). In addition, excluded or victimised children and adolescents experience higher levels of distress than other children, lower quality of friendship, and report experiencing more loneliness (Crick & Ladd, 1993; Thomas et al., 2016; Woods, Done, & Kalsi, 2008).

Research also suggests that chronic relational victimisation or peer rejection in childhood is associated with greater neural responses to peer social exclusion during adolescence (Will, van Lier, Crone, & Guroglu, 2016). In this study, 46 adolescents aged 12 to 15 years participated in a virtual experience of social exclusion while undergoing an fMRI. Participants were separated into two groups defined by either being accepted by peers or persistently excluded by peers from age 6 to 12.



Interestingly, both groups reported similar levels of distress after the virtual experience of social exclusion, however the adolescents with a history of repeated exclusion in childhood showed higher brain activity in the area associated with social exclusion distress. The authors suggested their findings may have implications for understanding how peer rejection, particularly chronic social exclusion during childhood, may contribute to increased mental health symptoms over time (Will et al., 2016). In addition, at least four meta-analyses have reported victims of peer victimisation and exclusion experience poorer socioemotional adjustment, including reporting more loneliness, social anxiety, and depressive symptoms (Gini, Card, & Pozzoli, 2018; Hawker & Boulton, 2000; Moore et al., 2017; Reijntjes et al., 2010).

Overall, many studies have supported the view that experiences of peer victimisation and exclusion are particularly detrimental to adolescent health and well-being, including emotional distress and more negative feelings towards the self (Troop-Gordon et al., 2015). Peer victimisation and exclusion is expected to thwart the fulfilment of the needs for relatedness and belonging, and when the needs for relatedness and belonging are not fulfilled, negative affect, distress and self-doubt can be the outcomes (Baumeister & Leary, 1995; Deci & Ryan, 2000; Leary, 2001). Therefore, the experience of peer victimisation and exclusion presents a unique challenge as it directly contests or denies the basic need to belong, which may well be a leading cause of internalising symptoms. This may be particularly true during adolescence, when young people are navigating social change and learning to regulate emotions and developing coping strategies to apply in new and challenging social contexts (Sommerville, 2013; Zimmer-Gembeck & Skinner, 2016). The negative impact of peer victimisation and exclusion during adolescence may be substantially elevated when compared to other developmental periods because of these maturational processes and changing interpersonal contexts that are universally characteristic of adolescence

(Troop-Gordon, 2017). While many adolescents adjust and learn adaptive coping and regulation skills, others have difficulties and internalising symptoms may emerge.

### **Associations of Peer Victimisation and Exclusion, Dispositional Mindfulness, and Internalising Symptoms**

Considering the research presented here, dispositional mindfulness might be a natural tool or buffer against feelings of loneliness and symptoms of internalising disorders, given it is a trait that should support better regulation of cognition, emotion and behaviour when stressful events occur. Thus, greater dispositional mindfulness should buffer well-being via supporting more constructive coping with experiences of peer victimisation and exclusion. For example, feelings of loneliness can be caused by an actual interference with relationships (i.e., no friends), or loneliness might be perceptual, where young people have relationships but these relationships are not perceived to meet their needs. Relationship research suggests that mindfulness promotes connection, closeness, and healthy relationships (Brown and Ryan, 2003; Kabat-Zinn, 1993; Welwood, 1996), and thus should buffer loneliness. For example, research in a family therapy context suggests that through improving the awareness and acceptance of distressing emotional states among adolescents, mindfulness may increase tolerance of others in times of conflict in close relationships (Brody, Scherer, Turner, Annett, & Dalen, 2018). In addition, theory (e.g., Boorstein, 1996; Kabat-Zinn, 1990) and research (e.g., Barnes et al., 2007; Carson, Carson, Gil, & Baucom, 2004) have linked mindfulness to positive interpersonal qualities, reduced relationship stress, and healthy relational functioning. One small qualitative study of 19 adolescents, aged between 15 to 17 years, reported interpersonal benefits of learning to trust others and stronger relationships with peers, family, and teachers following completion of a 7-month mindfulness skills program (Wisner & Starzec, 2016). Regarding healthy relational functioning, two studies among university students investigated mindfulness in

interpersonal interactions and the impact on friendship quality (Pratscher, Rose, Markovitz, & Bettencourt, 2018; Akin, Akin, & Ugur, 2016). Overall, both studies add evidence to support the idea that greater mindfulness was associated with enhanced interpersonal functioning and increased friendship quality. Considering mindfulness supports friendship quality among university students, and improved friendship quality is associated with reduced loneliness among adolescents, mindfulness may be a protective factor against the feelings of loneliness resulting from experiences of peer victimisation and exclusion via improved friendship quality (Woods et al., 2008).

The experiences of peer victimisation and exclusion, interpersonal stress, and loneliness are all aversive, and, as such, it is likely some anxiety, particularly social anxiety or the fear of negative evaluations from others will co-occur (Klemanski, Curtiss, McLaughlin, & Nolen-Hoeksema, 2017; Mathews, Kerns, & Ciesla, 2014; Slee, 1994; Zimmer-Gembeck, 2015). Research findings from children in an Australian primary school report that boys and girls who experience peer victimisation and exclusion have a greater fear of negative evaluation, and social avoidance is prevalent amongst girls experiencing peer victimisation and exclusion (Slee, 1994). Further research among adolescents found those reporting relational victimisation were more likely to develop social anxiety symptoms one year later (Storch, Masia-Warner, Crisp, & Klein, 2005). Moreover, in a 2-month prospective study among adolescents, the experience of peer victimisation and exclusion was found to be both a predictor and consequence of social anxiety over time (Siegel, La Greca, & Harrison, 2009). These findings suggested an interaction effect where adolescents who were victimised were more likely to experience social anxiety, and adolescents who experienced social anxiety are more likely to be victimised. A recent meta-analysis on studies investigating social anxiety and peer victimisation and exclusion that were published between 2011 and 2018 found that, overall, peer victimisation and exclusion was positively associated

with social anxiety, and peer victimisation and exclusion may contribute to the maintenance and exacerbation of social anxiety symptoms (Pontillo et al., 2019).

Mindfulness-based interventions have been effective in treating disorders characterised by sensitivity to rejection or social evaluation, including social anxiety (Goldin & Gross, 2010). In one study of undergraduate students, dispositional mindfulness (specifically the non-judging facet) was found to protect against anxiety about rejection and negative affect (Peters et al., 2015). Further, a study in an Australian secondary school reported all five facets of dispositional mindfulness had unique associations with social anxiety symptoms, where students reporting higher dispositional mindfulness also reported fewer social anxiety symptoms, with the exception of the mindfulness observing facet, which was associated with higher social anxiety symptoms (Hambour et al., 2018).

In a similar pattern to loneliness and social anxiety, peer victimisation and exclusion and threatening the need to belong can be a precursor of depressive symptoms, and previous research has found that university students with a lower sense of belonging experience more symptoms of depression (Tambor & Leary, 1993). Adolescents who reported being victimised by their peers at 13 years of age were twice as likely to meet criteria for depression at 18 years of age than adolescents who did not report experiencing peer victimisation and exclusion (Bowes, Joinson, Wolke, & Lewis, 2015). Overall, the experience of peer victimisation and exclusion has been found to have detrimental effects on depressive symptoms in adolescents across many studies (e.g., Troop-Gordon et al., 2015).

In addition to the proposed benefits for loneliness and social anxiety, theory suggests the specific dispositional mindfulness facets of nonreactivity, nonjudgement, and acting with awareness may be particularly relevant and typically associated with depressed mood (Baer et al., 2006). Instead of focusing on negative feelings, individuals

lower in dispositional mindfulness might reject, avoid, brood on, or suppress their thoughts and feelings, resulting in the emergence or escalation of depressive symptoms (Ciesla et al., 2012). Research suggests individuals with a lower capacity for dispositional mindfulness have decreased ability to recognise self-regulation failures and therefore experience more symptoms of depression via maladaptive coping responses (Ciesla et. al., 2012; Pyszczynski & Greenberg, 1987). These maladaptive coping responses increase the severity of symptoms of depression and also result in symptoms persisting for longer periods of time. However, in a 2-year longitudinal study of 1190 Spanish adolescents (13 to 18 years old), mindful attention and awareness reduced the predictive association between rejection schemas and depressive symptoms over time (Calvete, Morea, & Orue, 2019). Taken together it could be suggested that all facets of dispositional mindfulness may contribute in different ways to an overall more positive affect in the moment, leaving individuals less prone to experiencing persistent depressive symptoms.

One explanation for the positive association of dispositional mindfulness with more positive well-being is the stress buffering hypothesis (e.g., Cohen & Edwards, 1989). In this view, some psychological factors such as dispositional mindfulness protect or buffer against the negative effects of stressful events, but will not give additional health benefits in the absence of stress (Brown et al., 2012). More specifically, theory suggests that dispositional mindfulness can yield greater clarity in perceptions of current stressful experience by encouraging moment-to-moment sensory contact with life, free from a dense filtering of experience through discriminatory thoughts (Brown et al., 2007). Therefore, when experiencing an interpersonally stressful event individuals high in dispositional mindfulness would see things more clearly and be capable of responding in a more coherent, organised, and flexible manner untainted by extreme emotional reactions. In essence, in the face of stress, those higher in

dispositional mindfulness would be protected or buffered from the resulting internalising problems that could emerge following peer victimisation and exclusion.

### **Summary**

The research summarised here suggests dispositional mindfulness might be a natural tool or buffer against loneliness and internalising symptoms (as well as other negative reactions) associated with experiences of peer victimisation and exclusion. These findings suggest that young people high in dispositional mindfulness would have more adaptive emotional adjustment in the face of interpersonal stressors, and, relative to youth lower in dispositional mindfulness, they would be less likely to exhibit mental health problems in the form of internalising symptoms such as loneliness, social anxiety and depression when they experience peer victimisation and exclusion. Therefore, the first aim of this thesis was to examine the associations of adolescents' dispositional mindfulness with internalising symptoms (defined as loneliness, social anxiety, and depression), while also accounting for the role of peer interpersonal stress in the form of peer victimisation and exclusion in adolescents' symptoms (Study 1). In this study, dispositional mindfulness was examined as both a direct correlate of symptoms and peer victimisation and exclusion, as well as a buffer against the positive associations of peer victimisation and exclusion with loneliness, social anxiety, and depression.

## CHAPTER 4

### **Dispositional Mindfulness, Relatedness Threat, and Responses to Stress:**

#### **Reactivity and Recovery**

Experiences of social exclusion and rejection have been described as so threatening that they impair the sense of a meaningful existence and self-esteem (Baumeister & Leary, 1995; Williams, 1997, 2001; Zimmer-Gembeck, 2016). However, not all individuals are equally sensitive to rejection and ostracism; they vary in their appraisal of and responses to threat (Zimmer-Gembeck et al., 2013; Zimmer-Gembeck, Van Petegem, & Skinner, 2016). Individual capacities, such as dispositional mindfulness, may be at work here, providing benefits such as a reduced appraisal of threat, less reactivity, and quicker or better recovery (Lucas-Thompson et al., 2019; Molet, Macquet, Lefebvre, & Williams, 2013). Therefore, just as associations between individual differences in mindfulness and health benefits or deficits in the face of stress would be expected, it might also be expected that individual differences in perceived relatedness need threat (e.g., feelings of rejection and exclusion) would be associated with differing levels of symptoms.

While the benefits of being more mindful are well known, only recently have associations of mindfulness with appraisals of need satisfaction or threat been reported in the literature. These studies generally report that need satisfaction or threat mediates the association between mindfulness and a health or wellness outcome. For example, in one study, individuals higher in mindfulness had better sleep quality and daytime functioning and this association was mediated by the appraisal of greater need satisfaction found among individuals higher in dispositional mindfulness (Campbell et al., 2015). Further evidence comes from a two-wave longitudinal study of athletes, whereby dispositional mindfulness was associated with increased well-being over time

and this association was mediated by psychological need satisfaction (Chang, Chang, & Chen, 2018).

Overall, such studies suggest that dispositional mindfulness may impart benefits partly because it is associated with a perception of greater need fulfilment (or, conversely, lesser need threat). Yet, it is unclear whether mindfulness might interfere with appraisal of threat when social exclusion occurs. It might be expected that dispositional mindfulness would be protective against an appraisal of threat to relatedness because it includes the ability to pay attention, be aware, and perceive signals of emotion accurately, along with more unbiased processing that leads to a more accurate view of a threatening situation. Such abilities could translate into avoiding the negative self- and other-related beliefs that can follow from negative social experiences (Hankin & Abramson 2001; Panak & Garber, 1992; Zimmer-Gembeck et al., 2016), resulting in appraising events as less personally threatening.

Stress reactivity and level of recovery are other potential mechanisms that could account for why dispositional mindfulness is beneficial to well-being. Mindfulness may not only systematically affect immediate emotional responses to negative situations, but also may (or instead) allow for a more positive recovery from distressing situations (Molet, Macquet, Lefebvre, & Williams, 2013). As described by Brown et al. (2007), this suggests dispositional mindfulness may operate indirectly, through the enhancement of self-regulated functioning that comes with ongoing attention and sensitivity to internal and external cues. In this view, individuals high in dispositional mindfulness would show improved recovery after an interpersonally stressful event, because dispositional mindfulness would prevent participants from reliving (e.g., decreased rumination) the stressful experience. In summary, dispositional mindfulness might have two functions, firstly to minimise the negative reaction to stressful events, and secondly to enhance the recovery of positivity after a stressful event.



While self-report scales are useful in gaining an overall understanding, they make it difficult to understand whether dispositional mindfulness contributes to better emotional responding to a specific stressful event. Thus, to examine stress reactivity and recovery more directly, a salient stressor is needed, with immediate measures required after the event and at some time later. To accomplish this, in Study 2 (see Chapter 7), individual participants played a game of Cyberball (Williams, 2009), which simulated social exclusion, sometimes referred to as ostracism or interpersonal rejection. The terms social exclusion and social rejection are used interchangeably here. Cyberball is a useful way to examine the immediate impact of social exclusion on affect and other stress responses.

### **Research using the Cyberball Game**

Studies using the Cyberball game consistently demonstrate that social exclusion simulated in the game results in negative responses, including decreased well-being/poorer mood and lower self-reported need levels of belonging, self-esteem, control, and meaningful existence (Williams, 1997, 2001, 2009). Furthermore, even though Cyberball is a computer generated experience of social exclusion, where participants are led to believe they are playing with others, the results are consistently impactful and robust (Williams, Cheung, & Choi, 2000). For most individuals playing the game, social rejection is felt immediately as a negative experience, and is so powerful that even the experience of being ignored or excluded via a computer is powerful enough to set off strong emotional reactions comparable to experiencing actual human social rejection (Zadro, Williams, & Richardson, 2004). Research has found that the social rejection experience induced using Cyberball negatively affects adolescents and emerging adults' basic needs more than young adults (Pharo, Gross, Richardson, & Hayne, 2011), perhaps reflecting the high degree of social affiliation

among adolescents and an increased importance placed on, and sensitivity to, social relationships.

In addition to threatening psychological needs, some Cyberball studies have reported changes in mood following the experience of social exclusion during the game. In one study among adolescents, socially excluded participants reported higher feelings of negative mood and lower feelings of positive mood compared to included participants (Pharo et al., 2011). However, overall, the effects on mood are mixed and inconsistent in studies of university students; some studies show a decrease in mood and some show no effect following social exclusion (Zadro et al., 2004). Suggestions have been made that negative mood might be more prominent in younger groups after they experience social exclusion in Cyberball because they experience higher need threat (Pharo et al., 2011). In one study comparing adolescents and adults, adolescents' mood was more affected by social exclusion compared to adults (Sebastian, Viding, Williams, & Blakemore, 2010). In contrast, another study found the effect of social exclusion on mood was negative and did not differ between adolescents and emerging adults (Gross, 2009).

Research shows that, when participants are socially excluded during Cyberball, the pattern of neural activation that occurs is similar to when participants experience physical pain (Eisenberger, Lieberman, & Williams, 2003). Interestingly, one of the first uses of mindfulness in modern psychology was as a tool for alleviating physical pain, where early research found mindfulness meditation was an effective form of chronic pain management (Kabat-Zinn, Lipworth, & Burney, 1985). More recently, brief mindfulness meditation inductions have shown that mindfulness training is effective in reducing experimentally induced physical pain (Zeidan, Gordon, Merchant, & Goolkasian, 2010). In addition, neuroscientific research suggests mindfulness meditation engages multiple brain mechanisms and areas associated with the cognitive

modulation of pain, therefore it is suggested mindfulness training is capable of altering the subjective pain experience (Zeidan et al., 2011). Considering the experience of physical pain and social pain seems to share a similar pattern of neural activation, mindfulness could be effective in reducing social rejection pain in a similar way to physical pain.

Research has been limited in attempts to identify if dispositional mindfulness is a resource helping individuals to recover more quickly from the mood changes following social exclusion. In fact, only two studies were located (Martelli, Chester, Brown, Eisenberger, & DeWall, 2018; Molet et al., 2013). In the first study (Molet et al., 2013), two groups of undergraduate university students played Cyberball. Prior to Cyberball, one group completed a brief 12-minute experimental induction of focused attention using a guided mindfulness breath activity and one group was a control. Results indicated both groups experienced the same degree of need threat immediately following social exclusion, as measured by assessing belonging, self-esteem, meaningful existence, and control in a self-report questionnaire; yet, the focused attention group showed improved recovery from need threat (Molet et al., 2013). Although this is only one study with a limited range of outcome measures, this study supports the recovery model, whereby training in mindfulness was associated with better recovery from social exclusion. Research suggests individuals higher in dispositional mindfulness experience similar benefits as individuals who practice mindfulness (Coffey & Hartman, 2008; Hoffman, Sawyer, Witt, & Oh, 2010; Keng, Smoski, & Robins, 2011; Rau & Williams, 2016; ). Therefore, it is likely individuals higher in dispositional mindfulness might also recover more quickly from negative mood induced by social exclusion.

In the second study (Martelli et al., 2018), 39 undergraduate university students completed a measure of dispositional mindfulness and then played a game of Cyberball

while undergoing functional magnetic resonance imaging (fMRI). One hour after playing the game the participants reported their level of social distress retrospectively. They found participants who reported higher dispositional mindful awareness (using the MAAS; Brown & Ryan, 2003) also retrospectively reported less distress during Cyberball. Based on the results of the fMRI, the authors suggest dispositional mindfulness may be associated with effective coping with social rejection by not over-activating top-down regulatory mechanisms in the brain, potentially resulting in more effective long term emotion regulation of rejection related distress (Martelli et al., 2018). Of course, one limitation is the retrospective reporting of social distress, with a one hour lag between Cyberball and distress reporting. Therefore, the delay in response may have involved interference, which makes it difficult to attribute recovery to dispositional mindfulness. Moreover, the methodology did not allow for an examination of the association between dispositional mindfulness and immediate reactivity to Cyberball social exclusion.

## **Summary**

Drawing together 1) research on the negative consequences of social exclusion stemming from a set of unfulfilled core needs including relatedness and belonging, self-esteem, control, and meaningful existence, and 2) research on the benefits of mindfulness in reducing the subjective experience of pain, including similarities between physical pain and social pain, the second aim of this thesis was to examine whether and how dispositional mindfulness provides benefits such as reduced appraisal of threat, less reactivity to threat, and better recovery following induced social exclusion. This second aim was addressed using a laboratory study (Study 2 – see Chapter 7) where young adults completed a measure of dispositional mindfulness and, about 1 week later, experienced a social exclusion stressor (Cyberball) and reported on

their experience immediately following the stressor and again some minutes later as a measure of recovery.

## CHAPTER 5

### The Current Thesis

Given its benefits for emotional and social health in adults and similar evidence emerging in studies of adolescents, dispositional mindfulness is often described as a useful individual resource that can be trained and practiced (Barnes et al., 2007; Brown & Ryan, 2003; Ciarrochi et al., 2011; Goodall et al., 2012; Roeser & Pinela, 2014; Tomlinson et al., 2018). Particularly relevant to this thesis, it is possible that dispositional mindfulness provides a number of benefits that serve to buffer against negative psychological responses to peer victimisation and exclusion. Moreover, adolescent and young adulthood (age 12 to 25 years) might be an especially relevant age window during which to consider individual differences in dispositional mindfulness, and the interplay with experiences and responses to peer victimisation and exclusion. In particular, peer relationships are important to youth and they have significant impacts on their emotional functioning and health, and peer victimisation and exclusion are not uncommon experiences for them (Giordano, 2003; Hong et al., 2019; Scholte & van Aken, 2006; Zimmer-Gembeck, 2016). Moreover, there are many developmental advancements that make this age period important, including the increasing differentiation and flexibility of coping with stress, and improvements in emotion and self-regulation that has been found to occur during adolescence (Zimmer-Gembeck & Skinner, 2011). For example, young people are facing greater pressures to demonstrate increased autonomy and self-reliance in guiding their actions and appropriately responding to the distress of uncontrollable situational pressures. Thus, the focus of this thesis was on the age period from early adolescence to young adulthood (focusing on age 11 to 18 in Study 1, and age 16 to 23 in Study 2).

Adolescence and young adulthood are periods of significant learning in how to adapt to stress. Those who have an enhanced mindful ability to recognise and describe

their feelings and act with awareness, while avoiding judging and reacting strongly to their feelings, may exhibit more adaptive responses to social stress; thus, dispositional mindfulness should have a protective effect against the negative emotional outcomes that can follow from stressful experiences. For some, these years might be a period of high stress, reduced well-being, and internalising disorders, and this may be particularly the case among young people without the personal capacities described in the definition of the five factors of dispositional mindfulness (Baer et al., 2006). These age ranges are relevant, also, because adolescence has been identified as a window of opportunity for interventions to teach life skills that are thought to enhance well-being and resilience when coping with stress. Considering the evidence that mindfulness can be trained and practiced (e.g., Baer, 2003; Biegel, Brown, Shapiro, & Schubert, 2009; Burke, 2010; Ciarrochi et al., 2011; Dunning et al., 2019; Miller, Wyman, Huppert, Glassman, & Rathus, 2000; Schonert-Reichl & Lawlor, 2010; Singh et al., 2007; Tan, 2016; Zack, Saekow, Kelly, & Radke, 2014), and that adolescence is a challenging time for managing many ongoing and novel stressful life events and hassles (Compas et al., 2017; Zimmer-Gembeck, 2016; Zimmer-Gembeck & Skinner, 2016), nurturing mindfulness skills in this period might be especially advantageous. This might provide the foundation for the benefits reported in research with adults and undergraduate university students (Baer, 2003; Britton, Shahar, Szepsenwol, & Jacobs, 2012).

Drawing together the theory and research described in Chapters 1 to 5, the overarching purpose of the current thesis was to investigate the role of dispositional mindfulness in the lives of adolescents and identify potential benefits including reducing negative psychological responses to peer victimisation and exclusion and lower reported levels of internalising symptoms (i.e., loneliness, social anxiety, and depressive symptoms). In addition, the specific role dispositional mindfulness played in young adults responses to peer victimisation and exclusion, and if benefits were seen as

less negative reactivity and better recovery from social exclusion threat, were also a major focus of this thesis. To date no previous studies could be located that had investigated how the five facets of dispositional mindfulness (Baer et al., 2006) might be associated with internalising symptoms, and if these skills set a foundation for relatedness need threat in response to peer social stress in adolescence. An important application for this thesis was to inform interventions aimed at enhancing mindfulness skills and ultimately overall well-being (via reducing internalising symptoms), and reducing maladaptive responses to social rejection among adolescents.

Evidence has shown that mindfulness practice (or training) in adults is associated with greater well-being, stress reduction, reduced depressive and anxiety symptoms, reduced rumination, less emotional reactivity, more cognitive flexibility, and greater relationship satisfaction. Similar findings including more adaptive self-regulation under stress, fewer symptoms of psychopathology (depression, anxiety, and social anxiety), and higher relationship satisfaction have been found for adults higher, relative to lower, in dispositional mindfulness. Given that it has been assumed that similar benefits accrue to younger age groups from mindfulness, but this has not been as widely examined, the first aim of this thesis was to examine whether dispositional mindfulness in adolescents was associated with some of the same benefits found among adults. Thus, in Study 1, it was expected that dispositional mindfulness, as well as fewer experiences of peer victimisation and exclusion would be associated with lower levels of internalising symptoms (loneliness, social anxiety, and depression). In addition, it was expected that mindfulness would moderate the effect of peer victimisation and exclusion on internalising symptoms. More specifically, the association of peer victimisation and exclusion with internalising symptoms was expected to be positive overall, but was expected to be weaker among adolescents high, relative to low, in dispositional mindfulness. Similar associations between dispositional mindfulness and



responses to stress were expected and tested amongst a group of adolescents and young adults after completing a social exclusion task in the laboratory in Study 2. The expectation here was that youth higher in dispositional mindfulness would perceive less threat to their relatedness when experiencing an induced experience of social exclusion, and that dispositional mindfulness would also promote reduced reactivity and/or better recovery from the experience of rejection and exclusion. This addressed the question of whether mindfulness was associated with fewer internalising symptoms because of its role in reducing perceived threats to relatedness in response to interpersonal or social stress among young adults. The two chapters that follow present these two empirical studies. Study 1 is presented in Chapter 6 and has been published, Study 2 is presented in Chapter 7 and has been submitted for publication.

## CHAPTER 6

### Study 1

#### **Internalizing Symptoms and Loneliness: Direct Effects of Mindfulness and Protection Against the Negative Effects of Peer Victimization and Exclusion**

Chapter 6 contains Study 1, which is presented in the form of the published journal article (Clear et al., 2020). The original formatting required for this publication was retained, but references for this chapter are included at the end of the thesis as part of the full reference list. This published manuscript was prepared utilising data collected from Australian students at an urban independent public high school. Students participated in one data collection where they completed a questionnaire. The resulting data was analysed in a cross-sectional design. As described in Chapter 1 and Chapter 5, the aim of Study 1 was to test associations of dispositional mindfulness and peer victimisation and exclusion with internalising symptoms of loneliness, social anxiety, and depression. An additional focus was to investigate whether dispositional mindfulness buffered (i.e., moderated) the effect of peer victimisation and exclusion on internalising symptoms. To achieve this aim, multiple regression was used to test all associations. Moderation was then used to test whether the association of peer victimisation and exclusion with internalising symptoms was weaker for participants higher, relative to lower, in dispositional mindfulness. Study 1 addressed the first aim of this thesis, as it examined the associations of adolescents' dispositional mindfulness with internalising symptoms of loneliness, social anxiety, and depression, while also accounting for the role of peer stress in adolescents' symptoms. In this study, dispositional mindfulness was examined as both a direct correlate of symptoms as well as a potential buffer of the effects of stress in the peer domain (i.e., peer victimisation and exclusion) on symptoms.

### **Statement of Contribution to Co-authored Published Paper**

This chapter includes a co-authored published paper. It consists of a post peer review, pre-copyedit version of an article published in the International Journal of Behavioural Development. The final authenticated version is available online at: <https://doi.org/10.1177.0165025419876358>. The bibliographic details of this co-authored paper, including all authors, are:

Clear, S. J., Zimmer-Gembeck, M. J., Duffy, A. L., & Barber, B. L. (2020).

Internalizing symptoms and loneliness: Direct effects of mindfulness and protection against the negative effects of peer victimization and exclusion.

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My contribution involved:

- Review of literature
- Development of hypothesis
- Selection of measures
- Development of methodology and design
- Collection of data
- Co-selection and completion of analyses
- Lead in writing of paper
- Corresponding author of paper

### Abstract

Drawing from dispositional mindfulness research and stress and coping theories, we tested whether adolescents' dispositional mindfulness was associated with perceptions of peer victimization and exclusion and internalizing symptoms. We further explored the role of dispositional mindfulness as a protective factor buffering the impact of peer victimization and exclusion on internalizing symptoms. Participants were 361 (40% boys) adolescents aged between 11 and 18 years ( $M = 14.9$ ,  $SD = 1.4$ ) who completed a questionnaire to assess dispositional mindfulness, perceptions of peer victimization and exclusion, social anxiety and depressive symptoms, and loneliness. As expected, more frequent experience of peer victimization and exclusion was associated with reporting more symptoms of social anxiety, depression, and loneliness. Further, adolescents who reported higher dispositional mindfulness also reported fewer symptoms of social anxiety, depression, and loneliness, even after controlling for gender and experiences of peer victimization and exclusion. Dispositional mindfulness was not protective against (i.e., did not buffer) the effects of peer victimization and exclusion on internalizing symptoms. Instead, we found that peer victimization and exclusion had a stronger association with symptoms of social anxiety, depression and loneliness when mindfulness was high relative to when it was medium or low. Yet, victimization was associated with greater social anxiety, depressive symptoms and loneliness at all levels of mindfulness.

**Keywords:** Dispositional mindfulness; social anxiety; depression; loneliness; relational victimization; physical victimization

### **Internalizing Symptoms and Loneliness: Direct Effects of Mindfulness and Protection Against the Negative Effects of Peer Victimization and Exclusion**

The practice of mindfulness, traditionally cultivated through mindfulness meditation, aims to increase awareness of present experience, with acceptance (Greenberg & Harris, 2012; Kabat-Zinn, 1994, 2003). A mindful state has been described as maintaining attention to the present moment-by-moment, while accepting things as they present, and doing so non-judgementally. Drawing upon this tradition, mindfulness has also been conceptualized as an inherent capacity to view and respond to one's internal and external environment in a way consistent with a mindful state (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Brown & Ryan, 2003). Researchers have labelled this tendency to be mindful as *dispositional (or trait) mindfulness*.

Dispositional mindfulness is expected to activate internal mechanisms, including cognitive, emotional, and behavioral flexibility, which facilitate adaptive emotion and behavioral regulation (Shapiro, Carlson, Astin, & Freedman, 2006). Multiple stress and coping theories (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001; Skinner & Zimmer-Gembeck, 2007, 2016) and neurodevelopmental perspectives (e.g., Sanger & Dorjee, 2015) identify flexibility and regulation as parts of the process of successfully attending, responding and adapting to stressful events. However, there has been limited research focused on whether mindfulness, as a naturally occurring disposition, develops during adolescence in ways consistent with what is known about adolescent development of cognitive and emotional capacities assumed to be associated with mindfulness (Friedel et al., 2015; Warren, Shubert, & Wray-Lake, this issue; Zimmer-Gembeck & Skinner, 2011). For example, mindfulness has been described as a metacognitive skill (Bishop et al., 2004), and metacognition is not fully formed until at least the second decade of life (Kuhn, 2000; Skinner & Zimmer-Gembeck, 2016).

Given the possibility that mindfulness may develop during adolescence, it is not yet clear whether mindfulness is as beneficial to adolescents as it has been found to be for adults (Gu, Straus, Bond, & Kavanagh, 2016; Shonin, van Gordon, & Griffiths, 2016). Although many views on mindfulness as a personal strength and a stress-reduction technique have been applied through mindfulness interventions for children and adolescents (e.g., Emerson, Nabinger de Diaz, Farrell, Waters, & Sherwood, this issue; Weijer-Bergsma, Formsma, de Bruin, & Bögels, 2012; Zoogman, Goldberg, Hoyt, & Miller, 2015), few studies have examined adolescents' *dispositional* mindfulness as a strength when adapting to stressful events. At present, we could locate only a small number of published studies (not involving intervention) that specifically examined adolescents' dispositional mindfulness and associations with mental health (e.g., Bluth & Blanton, 2014; Calvete, Orue, & Sampedro, 2017; Ciarrochi, Kashdan, Leeson, Heaven, & Jordan, 2011; Ciesla, Reilly, Dickson, Emanuel, & Updegraff, 2012; Marks, Sobanski, & Hine, 2010; Pepping, Duvenage, Cronin, & Lyons, 2016; Xu, Fu, An, Yuan, Ding, & Zhou, 2018). In general, these studies have reported that adolescents higher in dispositional mindfulness also exhibit or report better well-being and less emotional distress. In addition, we located one published study that examined dispositional mindfulness and associations with peer stress over time (Riggs & Brown, 2017). This prospective study of young adolescents found that peer victimization was linked to declining dispositional mindfulness over time. However, we could locate no study of whether dispositional mindfulness is protective (i.e., buffers) against the negative effects of peer stress on adolescents' mental health. To fill this gap, our primary purpose in the present study was to test whether dispositional mindfulness buffers against the negative socioemotional consequences known to be associated with peer stressful events. The stressor domain of study was peer victimization and exclusion (PVE), which encompasses both physical (i.e., overt) victimization, such as hitting and

pushing, and relational victimization, including ostracism and a focus on harming relationships with others (Coyne & Ostrov, 2018; Zimmer-Gembeck, Pronk, Goodwin, Mastro, & Crick, 2013). PVE is known to have detrimental effects on social and emotional maladjustment (Zimmer-Gembeck, 2016). As markers of maladjustment, we investigated three forms known to be quite prevalent among adolescents, namely social anxiety, depression, and loneliness (Kessler, Chiu, Demler, & Walters, 2005; Patel, Flisher, Hetrick, & McGorry, 2007; Waters & Craske, 2016).

### **Dispositional Mindfulness, PVE, and Internalizing Symptoms**

**PVE and symptoms.** PVE is a common adolescent experience, with approximately 17% to 25% reporting some form of bullying once a week or more (e.g., Craig et al., 2009; Cross et al., 2009; Harel-Fisch et al., 2011). PVE seems to peak between the ages of 13 to 16 years, and PVE, or the perception of PVE, can be psychologically damaging and socially isolating (Lopez, & DuBois, 2005; Nansel et al., 2001; Zimmer-Gembeck, Nesdale, Webb, Khatibi, & Downey, 2016). PVE is expected to interfere with the fulfilment of the need for belonging, and when the need for belonging is not fulfilled, negative affect, distress and self-doubt can be the outcomes (Baumeister & Leary, 1995; Leary, 2001). This may be particularly true during adolescence, when young people are navigating social change and learning to regulate emotions and developing coping strategies to apply in new and challenging social contexts (Sommerville, 2013; Zimmer-Gembeck & Skinner, 2016). Whereas many adolescents adjust and learn adaptive coping and regulation skills, others have difficulties and internalizing symptoms may emerge. For example, the widespread finding that victims of PVE experience poorer socioemotional adjustment, including reporting more loneliness, social anxiety and depressive symptoms, has been summarized in at least two meta-analyses (Hawker & Boulton, 2000; Reijntjes, Kamphuis, Prinzie, & Telch, 2010).

**Dispositional mindfulness and internalizing symptoms.** Dispositional mindfulness has been found to be a resource for positive functioning, and related to adaptive emotion regulation and coping responses to stressful events, such as PVE. For example, mindfulness has been associated with greater connection and closeness in relationships (Brown and Ryan, 2003; Kabat-Zinn, 1993; Welwood, 1996). In addition, other research (e.g., Barnes, Brown, Krusemark, Campbell, & Rogge, 2007; Carson, Carson, Gil, & Baucom, 2004) has found that positive interpersonal qualities, reduced relationship stress, and healthy relational functioning are all correlates of greater mindfulness. Taken together, this research suggests that dispositional mindfulness should be associated with reduced loneliness, given that the experience of loneliness can result from a lack of close relationships or the existence of close relationships that do not fulfil needs for relatedness (Dykstra & Fokkema, 2007; Rubin, Bukowski, & Parker, 2006).

PVE is an aversive experience that implies a lack of belongingness, and as such it is likely some anxiety, particularly social anxiety or the fear of negative evaluations from others, will co-occur or develop. Children and adolescents who experience PVE report a greater fear of negative evaluation and heightened distress in social situations that may involve evaluation or rejection, and social avoidance is often a common response to the experience of PVE, which itself is linked to increasing social anxiety and other socioemotional problems (Mathews, Kerns, & Ciesla, 2014; Klemanski, Curtiss, McLaughlin, & Nolen-Hoeksema, 2017; Zimmer-Gembeck, 2015).

Mindfulness-based interventions have been effective in treating disorders characterized by rejection sensitivity, including social anxiety (Goldin & Gross, 2010). Moreover, in one study of adolescents, dispositional mindfulness was associated with fewer social anxiety symptoms (Hambour, Zimmer-Gembeck, Clear, Rowe, & Avdagic, 2018). In another study of undergraduate students, dispositional mindfulness was associated with



less anxiety about rejection and negative affect (Peters, Eisenlohr-Moul, & Smart, 2015).

In addition to the proposed benefits for loneliness and social anxiety, theory suggests that greater dispositional mindfulness may be particularly relevant for lowered depressed mood (Baer et al., 2006). Instead of accepting and not judging personal negative feelings, individuals low in dispositional mindfulness might reject, avoid, brood on, or suppress their thoughts and feelings, resulting in the emergence or escalation of depressive symptoms (Ciesla et al., 2012). Moreover, individuals who are less mindful have been found to report a decreased ability to recognise self-regulation failures and seem to experience more depressive symptoms because of maladaptive coping responses (Ciesla et. al., 2012; Pyszczynski & Greenberg, 1987).

**Dispositional mindfulness as a stress buffer.** Another explanation for the association of dispositional mindfulness with better functioning is the stress buffering hypothesis (e.g., Cohen & Edwards, 1989). In this view, psychological resilience factors, such as dispositional mindfulness, protect or buffer against the negative cognitive or emotional (or even physiological) effects of stressful events, but will not give additional health benefits in the absence of stress (Brown, Weinstein, & Creswell, 2012). More specifically, theory suggests that dispositional mindfulness might be a buffer against the negative effects of stress, because mindfulness can bring clarity and richness to current stressful experiences by encouraging moment-to-moment perception of events, free from a dense filtering of experience through biased thoughts (Brown, Ryan, & Creswell, 2007). Therefore, when experiencing an interpersonally stressful event, such as PVE, individuals high in dispositional mindfulness would see things more clearly and completely and be capable of responding in a more coherent, organized, and flexible manner untainted by extreme emotional reactions. Given that a non-judgemental approach to day-to-day experiences is a key aspect of dispositional

mindfulness, adolescents higher in this capacity might also be less likely to focus on or ruminate on who is at fault for PVE; evidence has shown that attributional processes following PVE can play a role in subsequent development of increasing emotional or behavioral adjustment problems (e.g., Zimmer-Gembeck et al., 2016). Dispositional mindfulness may help adolescents to avoid rumination and attributional effort to explain their experiences of PVE, allowing them to disengage from and then, subsequently, re-engage with new, more positive social situations or partners. In essence, youth higher in dispositional mindfulness would be protected or buffered from the resulting internalizing problems and feelings of loneliness that could emerge following PVE.

### **The Present Study**

In summary, evidence, much of it conducted with young or older adults, suggests dispositional mindfulness is a resource that will directly minimize, but also buffer, against symptoms of social anxiety and depression, as well as feelings of loneliness, that have been associated with experiences of stress. However, much of this research has been conducted with adults and, given that adolescents are developing some of the meta-cognitive skills expected to be necessary to support dispositional mindfulness, it is important to understand if this also occurs for adolescents. More specifically, for the primary analyses, we had two hypotheses:

1) PVE will have positive, and dispositional mindfulness will have negative, unique associations with social anxiety and depression symptoms, and feelings of loneliness among adolescents.

2) Dispositional mindfulness will buffer (i.e., moderate) the effect of PVE on adolescents' internalizing symptoms and loneliness, which will be revealed by a weaker association of PVE with social anxiety and depressive symptoms and loneliness when dispositional mindfulness is high relative to when it is low or moderate.

## Method

### Participants

The participants were 361 students (144 boys, 209 girls, 8 identified as other or were missing gender), enrolled in Grades 7 to 12, at an independent public school in an urban area of Australia. Another 40 students attended the survey session, but patterned responding was found or they did not complete most of the survey so were excluded from the analyses. Fifty percent of the student body was randomly selected to participate by the school and, overall, the participation rate was 45% of all students. To our knowledge these students were representative of the entire student body. The survey session was completed in the last week of the school term. Students ranged in age from 11 to 18 years, with a mean age of 14.9 years ( $SD = 1.4$ ). Most participants (79%) identified as being white/Caucasian, 5.3% reported Asian origins, 2.8% identified as being Australian First People or Pacific Islander, 5.5% identified as other, while the remaining 7.4% did not report ethnicity. Of all participants, 41% reported some experience with mindfulness or meditation, and 17% engaged in religious or prayer activities. Dispositional mindfulness did not differ between adolescents who did or did not report practice of mindfulness and/or meditation,  $t(356) = -.77, p = .44$ .

### Measures

**Depressive symptoms.** Participants completed the Short Mood and Feelings Questionnaire (SMFQ; Angold et al., 1995) to measure self-reported depressive symptoms. The scale contained 13 items (e.g., “I cried a lot”), and students were asked to report their feelings within the past 2 weeks. Each item was rated on a 5-point scale from 1 (*not at all*) to 5 (*all the time*), with responses averaged so that higher scores reflected higher severity of depression, Cronbach’s  $\alpha = .95$ .

**Social anxiety symptoms.** Participants completed the Social Anxiety Scale for Adolescents (SAS-A; La Greca & Lopez, 1998) to measure the subjective experience of

social anxiety. The scale contained 18 descriptive self-statements (e.g., “I worry about being teased”). Each item was rated on a 5-point scale from 1 (*not true*) to 5 (*very true*), with responses averaged so that higher scores reflected higher severity of social anxiety, Cronbach’s  $\alpha = .95$ .

**Loneliness.** Participants completed the Loneliness and Social Dissatisfaction Scale (Asher, Hymel, & Renshaw, 1984; Asher & Wheeler, 1985) to measure subjective feelings of loneliness. The scale contained 16 items in total (e.g., “I don’t have any friends in class”). Each item was rated on a 5-point scale from 1 (*not true of me*) to 5 (*very true of me*). Items were averaged to form a composite score, with higher scores indicating greater feelings of loneliness, Cronbach’s  $\alpha = .90$ .

**Perceptions of victimization and exclusion.** Participants completed the Revised Peer Experiences Questionnaire (R-PEQ; Prinstein, Boergers, & Vernberg, 2001) to assess the frequency of perceived experiences of physical and relational PVE. The scale contained 9 items, with 4 items assessing physical victimization (e.g., “A teen threatened to hurt or beat me up”) and 5 items assessing relational victimization and exclusion (e.g., “A teen left me out of what he or she was doing”). Each item was rated on a 5-point scale from 1 (*never*) to 5 (*a few times a week*), with item scores averaged so that higher scores reflected higher perceived experiences of PVE, Cronbach’s  $\alpha = .87$ . Cronbach’s  $\alpha$  was .84 for physical and .85 for relational victimization.

**Dispositional mindfulness.** Participants completed 31 items from the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006) to measure dispositional mindfulness. The 31 items came from four subscales, including describing (8 items, “I am good at finding the words to describe my feelings”), acting with awareness (8 items, “I am easily distracted”), non-judging (8 items, “I disapprove of myself when I have irrational ideas”), and non-reactivity (7 items, “I watch my feelings without getting lost

in them”). The observing subscale items were not administered given previous evidence that this subscale is relevant for participants who practice meditation, but this subscale may perform differently for nonmeditators (Baer et al., 2006, 2008; Goodall, Trejnowska, & Darling, 2012) and has also been found to perform differently in adolescents (Abujaradeh, Colaianne, Roeser, & Gallas, this issue; Hambour et al., 2018). For example, research has shown the observing subscale has only small (and sometimes negative) associations with other dispositional mindfulness subscales and has been found to have positive associations with symptoms of emotional maladjustment (e.g., Hambour et al., 2018). Items were rated on a 5-point scale from 1 (*never or very rarely true*) to 5 (*almost always or always true*) and were averaged so that higher scores indicated greater dispositional mindfulness, Cronbach’s  $\alpha$  was .86. Cronbach’s  $\alpha$  for items on the four measured subscales ranged from .72 for non-reactivity to .84 for acting with awareness.

### **Procedure**

The survey was completed as a school related project, whereby the school requested all students to participate, but students had an option to decline. Participants completed paper questionnaires under supervision from a teacher in a designated room on school grounds during class time. There were no incentives offered for participation. The questionnaire took approximately 40 minutes to complete. Human Research Ethics Committee approval was received to analyse the school data for research purposes.

### **Overview of the Data Analyses**

*Ms*, *SDs*, and zero-order correlations between all measures were examined in preliminary analyses. In addition, *t*-tests were used to compare study variables between boys and girls. Next, we tested the hypotheses by analyzing total PVE as a composite of physical and relational forms of victimization and exclusion and a composite

mindfulness score, but also conducted follow-up (i.e., sensitivity) analyses with physical and relational forms separately, and with subscales of dispositional mindfulness.

To test the hypotheses, multiple regression was used to test all associations and the expected interaction effect of the composite dispositional mindfulness score  $\times$  the composite measure of PVE. The dependent variables (DVs) in the regression analyses were social anxiety symptoms, depressive symptoms, and loneliness. In these models, four independent variables (IVs) were entered, including dispositional mindfulness, PVE, age, and sex (0 = boys, 1 = girls). The interaction effect (dispositional mindfulness  $\times$  PVE) was then entered into each regression equation to test whether the association of PVE with symptoms was weaker for participants higher, relative to lower, in dispositional mindfulness. Variables were centred prior to testing interaction effects.

As a follow-up sensitivity analysis, we regressed internalizing symptoms and loneliness on the four measured subscales of dispositional mindfulness, physical victimization, relational victimization, sex and age. We then tested moderation of mindfulness subscales and either physical or relational victimization, which involved testing eight possible moderation effects (e.g., mindful awareness  $\times$  physical victimization, mindful awareness  $\times$  relational victimization) in each model (for a total of 24 interactions). We briefly report on the significant interactions from these additional analyses.

## **Results**

### **Missing Values and Nonnormality of Data**

There were 58 participants missing responses to one item, and 26 participants missing responses to between 2 and 6 items (no participant missed more than 6 items).

Because missing data were minimal and at random, scores were formed based on the completed items to maintain all participants in the data analyses. As participants' biological sex was included in all analyses, eight participants who did not report their sex were excluded. The symptom measures (social anxiety, depression, and loneliness) displayed some positive skew. Bivariate correlations were examined before and after a square root transformation of these variables. There was minimal difference in the correlations. Thus, the untransformed symptom measures were maintained for all analyses. The PVE measure displayed very significant positive skew. To address this, PVE was recoded into a dichotomous variable. Participants in the top 25% of PVE scores were categorized into the "high PVE" group (coded as 1, scores of 2.56 or higher) ( $n = 98$ ), and the remaining 75% of participants were categorized into the other group referred to as "low PVE" (coded as 0) ( $n = 263$ ). For follow-up analyses, the same procedure was used to dichotomize measures of physical victimization (0 = low, 1 = high, scores of 2.50 or higher) and relational victimization (0 = low, 1 = high, scores of 2.80 or higher). For descriptive statistics and correlations, PVE was maintained as a continuous variable. Additional follow-up analyses were also completed using continuous physical and relational victimization scores.

### **Correlations between Measures, Descriptive Statistics, and Sex Differences**

*Ms*, *SDs*, and Pearson's correlations between the study variables are shown in Table 1. As expected, individuals reporting higher levels of dispositional mindfulness (composite and subscales) were lower in social anxiety, depression, and loneliness. Also as expected, individuals reporting higher PVE (composite, physical and relational victimization) were higher in social anxiety, depression, and loneliness. Further, individuals higher in composite dispositional mindfulness reported less PVE, as well as less physical and relational victimization. Two of the four mindfulness subscales

**Table 1****Descriptive Statistics and Bivariate Correlations between All Study Variables ( $N = 361$ )**

	Mean ( <i>SD</i> )	1	2	3	4	5	6	7	8	9	10
1. Mindfulness composite	3.12 (0.47)	--									
2. Mindfulness awareness	3.06 (0.76)	.61**	--								
3. Mindfulness describing	3.13 (0.70)	.72**	.30**	--							
4. Mindfulness nonjudging	3.29 (0.75)	.66**	.28**	.25**	--						
5. Mindfulness nonreactivity	2.26 (0.65)	.54**	.12*	.35**	.12*	--					
6. Social anxiety	2.47 (0.94)	-.51**	-.28**	-.31**	-.47**	-.24**	--				
7. Depression	2.13 (1.03)	-.47**	-.30**	-.27**	-.40**	-.25**	.64**	--			
8. Loneliness	2.28 (0.75)	-.41**	-.24**	-.30**	-.29**	-.23**	.60**	.62**	--		
9. Peer victimization and exclusion	2.01 (0.80)	-.30**	-.24**	-.16**	-.24**	-.13*	.51**	.50**	.57**	--	
10. Physical victimization	1.79 (0.90)	-.17**	-.16**	-.13*	-.10	-.05	.29**	.31**	.43**	.83**	--
11. Relational victimization	2.19 (0.92)	-.33**	-.24**	-.15**	-.30**	-.16**	.58**	.53**	.55**	.90**	.52**

Note. \* $p < .05$ . \*\* $p < .01$ . All scores could range from 1 to 5.



(awareness and describing) were significantly negatively associated with physical victimization and all subscales of mindfulness were significantly negatively associated with relational victimization. As can be seen in Table 2, girls, relative to boys, had higher average scores for relational victimization, social anxiety and depressive symptoms, and lower average scores for physical victimization and mindful non-reactivity.

### **Symptoms as Associated with Dispositional Mindfulness, PVE, Gender, and Age**

**Primary analyses: Composite mindfulness and PVE.** In the model of social anxiety, the composite dispositional mindfulness score was significantly associated with fewer social anxiety symptoms (see Table 3). Also, composite PVE (dichotomous low/high) and gender were significantly associated with more social anxiety symptoms. Overall, 35.8% of the variance was accounted for by the IVs,  $F(4, 348) = 48.54, p < .001$ . When the moderator term was examined in step 2 of this model, a significant moderator effect was found accounting for a significant 1.53% of the variance in social anxiety symptoms,  $\beta = .15, F(1, 347) = 8.46, p = .004$ . Simple slopes analysis indicated there was a significant positive association between PVE and social anxiety when dispositional mindfulness was low (1 SD below the mean =  $-.47$ ),  $B = 0.42, p < .001$ , and the associations were stronger at a medium level (0),  $B = 0.70, p < .001$ , and a high level of dispositional mindfulness (1 SD above the mean =  $+.47$ ),  $B = 0.97, p < .001$  (see Figure 1).

In the model of depressive symptoms, the composite dispositional mindfulness score was significantly associated with less depressive symptoms, and composite PVE (dichotomous low/high) and gender significantly associated with more depressive symptoms (see Table 3). Overall, 37.6% of the variance was accounted for by the IVs,  $F(4, 348) = 52.41, p < .001$ . When the moderator term was examined in step 2 of this

**Table 2****Means and SDs for All Students and for Boys and Girls, and Tests of Sex Differences**

Measure	Overall, <i>M</i> ( <i>SD</i> ) <i>N</i> = 361	Boys, <i>M</i> ( <i>SD</i> ) <i>n</i> = 144	Girls, <i>M</i> ( <i>SD</i> ) <i>n</i> = 209	Gender comparison <i>t</i> (1,352)	Effect size Cohen's <i>d</i>
Mindfulness composite	3.12 (0.47)	3.14 (0.45)	3.10 (0.48)	0.87	0.09
Mindfulness awareness	3.06 (0.76)	3.08 (0.77)	3.05 (0.74)	0.37	0.04
Mindfulness describing	3.13 (0.70)	3.08 (0.68)	3.16 (0.72)	-1.08	0.11
Mindfulness nonjudging	3.29 (0.75)	3.35 (0.76)	3.25 (0.76)	1.19	0.13
Mindfulness nonreactivity	2.96 (0.65)	3.05 (0.68)	2.90 (0.63)	2.11*	0.23
Social Anxiety	2.47 (0.94)	2.28 (0.96)	2.61 (0.91)	-3.26**	0.35
Depression	2.13 (1.03)	1.91 (0.96)	2.28 (1.05)	-3.36**	0.37
Loneliness	2.28 (0.75)	2.27 (0.73)	2.29 (0.75)	-0.22	0.03
Peer victimization and exclusion	2.01 (0.80)	1.99 (0.80)	2.03 (0.80)	-0.39	0.05
Physical victimization	1.79 (0.90)	1.91 (0.94)	1.71 (0.87)	2.04*	0.22
Relational victimization	2.19 (0.92)	2.06 (0.90)	2.28 (0.94)	-2.19*	0.24

*Note.* \* $p < .05$ . \*\* $p < .01$ . All scores could range from 1 to 5. Eight participants did not report their gender.

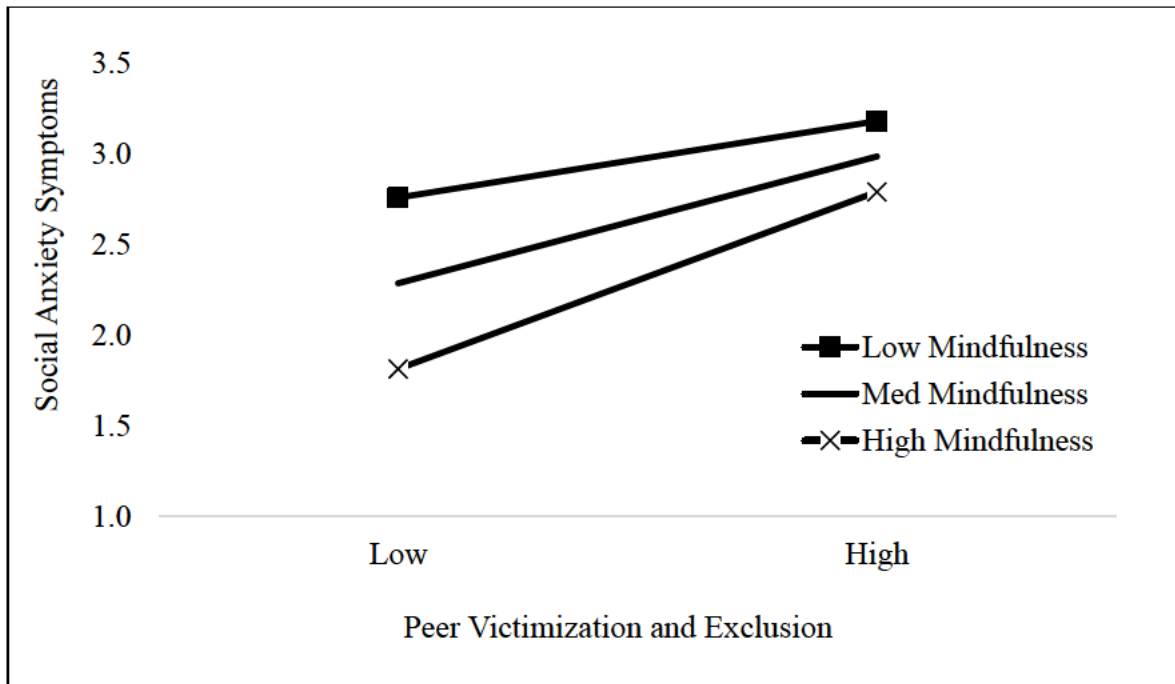
**Table 3**

**Results of Standard Multiple Regression Analysis Regressing Social Anxiety Symptoms, Depressive Symptoms and Loneliness, on Measures of Dispositional Mindfulness, Peer Victimization and Exclusion, Gender, and Age ( $N = 353$ )**

Independent variables	Social Anxiety Symptoms					Depressive Symptoms					Loneliness				
	95% CI(B)					95% CI(B)					95% CI(B)				
	<i>B</i>	<i>SE(B)</i>	Lower	Upper	$\beta$	<i>B</i>	<i>SE(B)</i>	Lower	Upper	$\beta$	<i>B</i>	<i>SE(B)</i>	Lower	Upper	$\beta$
Mindfulness	-0.85	0.09	-1.02	-0.67	-.42**	-0.85	0.10	-1.04	-0.66	-.39**	-0.47	0.07	-0.62	-0.33	-.30**
Peer victimization and exclusion (low/high)	0.63	0.09	0.44	0.81	.30**	0.82	0.10	0.62	1.02	.35**	0.69	0.04	0.54	0.84	.41**
Participant sex	0.32	0.08	0.16	0.48	.17**	0.37	0.09	0.19	0.54	.18**	0.03	0.07	-0.10	0.16	.02
Age	-0.04	0.03	-0.10	0.02	-.05	0.01	0.03	-0.05	0.07	.01	0.03	0.03	-0.02	0.08	.05

Note. \*  $p < .05$ . \*\*  $p < .01$ . Participant sex was coded, 0 = Boys, 1 = Girls. Peer victimization and exclusion was coded, 0 = Low, 1 = High. CI =

Confidence Interval.  $R^2$  and  $F$  values are reported in the text.

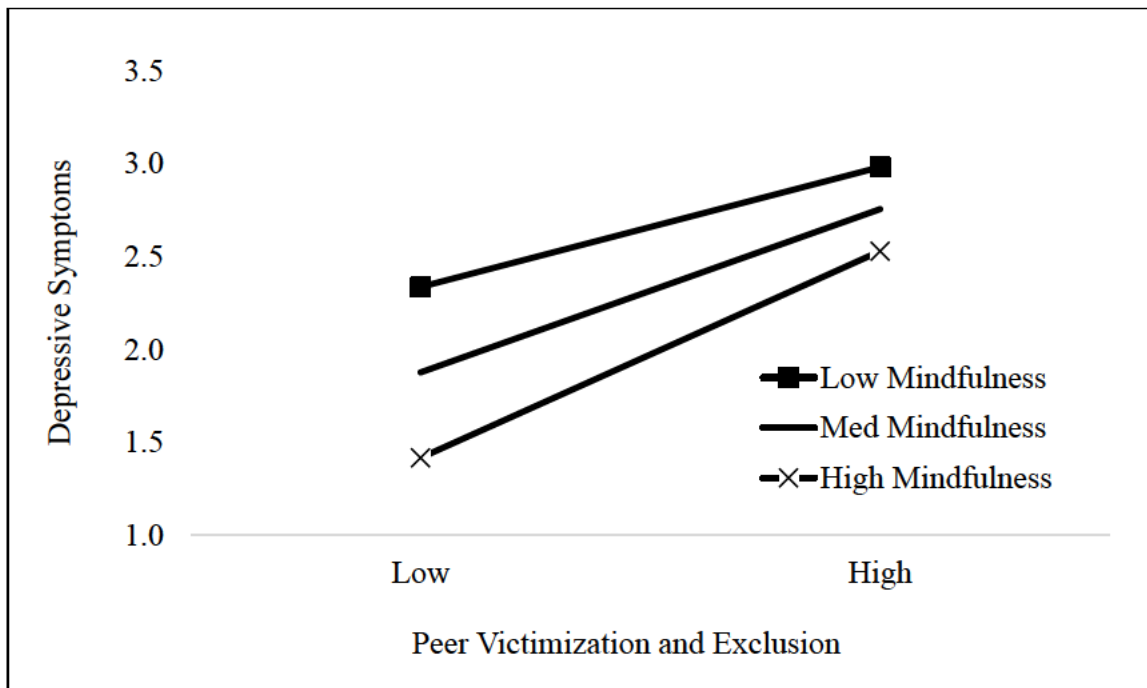


**Figure 1.** Associations between peer victimization and exclusion and social anxiety symptoms at low, medium, and high levels of dispositional mindfulness.

*Note.* Low mindfulness  $n = 130$ , medium mindfulness  $n = 104$ , high mindfulness  $n = 127$ .

model, it was significant and accounted for a significant 0.91% of the variance in depressive symptoms,  $\beta = .12$ ,  $F(1, 347) = 5.16$ ,  $p = .02$ . Simple slopes analysis indicated there was a significant positive association between PVE and depressive symptoms when dispositional mindfulness was low,  $B = 0.64$ ,  $p < .001$ , and the associations were significantly stronger at medium,  $B = 0.88$ ,  $p < .001$ , and high levels of dispositional mindfulness,  $B = 1.11$ ,  $p < .001$  (see Figure 2).

In the model of loneliness, composite dispositional mindfulness was significantly associated with less loneliness (see Table 3). Also, composite PVE (dichotomous low/high) was significantly associated with more loneliness. Overall,

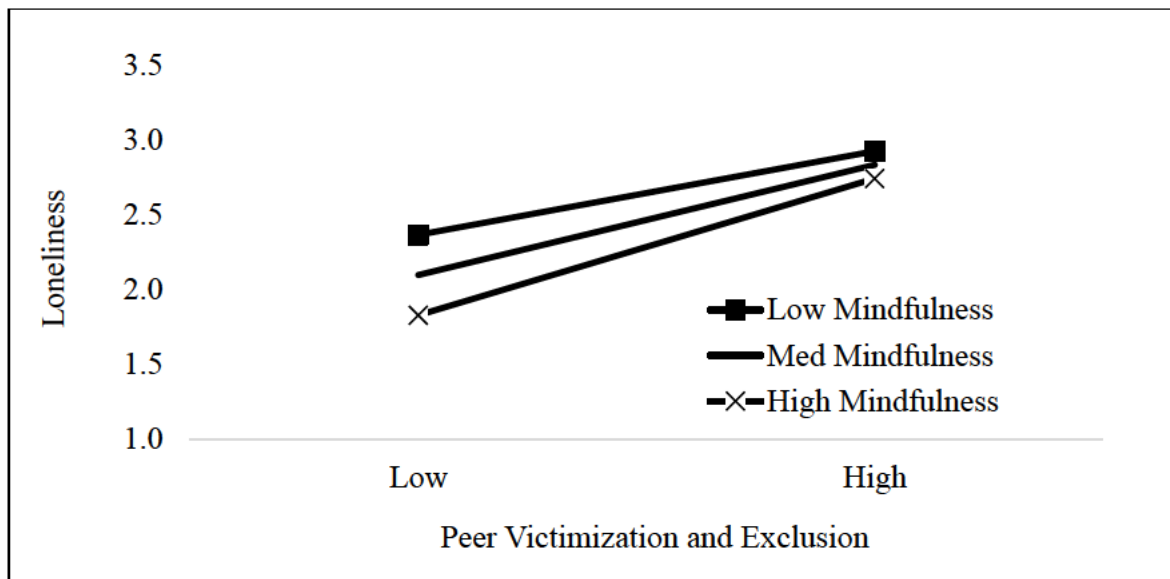


**Figure 2.** Associations between peer victimization and exclusion and depressive symptoms at low, medium, and high levels of dispositional mindfulness.

*Note.* Low mindfulness  $n = 130$ , medium mindfulness  $n = 104$ , high mindfulness  $n = 127$ .

32.3% of the variance was accounted for by the IVs,  $F(4, 348) = 41.42, p < .001$ . When the moderator term was examined in step 2 of this model, a significant moderator effect was found accounting for a significant 1.0% of the variance in loneliness,  $\beta = .13$ ,  $F(1,347) = 5.22, p = .02$ . Simple slopes analysis indicated there was a significant positive association between PVE and loneliness when dispositional mindfulness was low,  $B = .56, p < .001$ , and the associations were stronger at medium,  $B = .74, p < .001$ , and high levels of dispositional mindfulness group,  $B = .91, p < .001$  (see Figure 3).

The above primary analyses were repeated replacing the dichotomous yes/no indicator for PVE with the original continuous score. In these three models of social



**Figure 3.** Associations between peer victimization and exclusion and loneliness at low, medium, and high levels of dispositional mindfulness.

*Note.* Low mindfulness  $n = 130$ , medium mindfulness  $n = 104$ , high mindfulness  $n = 127$ .

anxiety, depression and loneliness, the interaction (composite mindfulness  $\times$  composite PVE continuous score) was not significant ( $p$  ranged from .188 to .959).

**Follow-up analyses: Subscales of mindfulness and PVE.** As can be seen in Table 4, all subscales of dispositional mindfulness except mindful awareness were uniquely associated with fewer social anxiety symptoms, while relational victimization was uniquely associated with elevated symptoms. In the second model shown in Table 4, the four subscales of dispositional mindfulness were negatively, and both physical and relational victimization were positively, associated with depressive symptoms. Finally, all subscales of dispositional mindfulness except mindful awareness were negatively associated with loneliness, while both physical and relational victimization were uniquely positively associated with loneliness. As previously found,

**Table 4**

**Results of Standard Multiple Regression Analysis Regressing Social Anxiety Symptoms, Depressive Symptoms and Loneliness, on Subscales of Dispositional Mindfulness, Physical and Relational Victimization, Gender, and Age ( $N = 353$ )**

Independent variables	Social Anxiety Symptoms					Depressive Symptoms					Loneliness				
	<i>B</i>	<i>SE(B)</i>	95% <i>CI(B)</i>			<i>B</i>	<i>SE(B)</i>	95% <i>CI(B)</i>			<i>B</i>	<i>SE(B)</i>	95% <i>CI(B)</i>		
			Lower	Upper	<i>β</i>			Lower	Upper	<i>β</i>			Lower	Upper	<i>β</i>
Mindfulness awareness	-0.08	0.06	-0.19	0.03	-.06	-0.15	0.06	-0.28	-0.03	-.11*	-0.04	0.05	-0.13	0.05	-.04
Mindfulness describing	-0.18	0.06	-0.30	-0.05	-.13**	-0.14	0.07	-0.28	-0.01	-.10*	-0.15	0.05	-0.25	-0.05	-.15**
Mindfulness nonjudging	-0.43	0.06	-0.54	-0.33	-.35**	-0.38	0.06	-0.50	-0.26	-.28**	-0.16	0.05	-0.25	-0.07	-.16**
Mindfulness nonreactivity	-0.15	0.06	-0.28	-0.02	-.10*	-0.21	0.07	-0.35	-0.07	-.13**	-0.14	0.05	-0.24	-0.03	-.12*
Physical victimisation (lo/hi)	0.14	0.10	-0.06	0.33	.06	0.46	0.11	0.24	0.68	.20**	0.39	0.08	0.23	0.55	.23**
Relational victimisation (lo/hi)	0.67	0.10	0.48	0.87	.32**	0.52	0.11	0.30	0.73	.22**	0.55	0.08	0.40	0.71	.33**
Participant sex	0.27	0.08	0.11	0.43	.14**	0.35	0.09	0.17	0.53	.17**	0.03	0.07	-0.11	0.16	-.02
Age	-0.05	0.03	-0.10	0.01	-.07	-0.01	0.03	-0.07	0.06	-.01	0.02	0.02	-0.03	0.07	.03

*Note.* \* $p < .05$ . \*\* $p < .01$ . Participant sex was coded, 0 = Boys, 1 = Girls. Physical and relational victimization were coded, 0 = Low, 1 = High. CI

= Confidence Interval.  $R^2$  and  $F$  values are reported in the text.

girls reported significantly more social anxiety and depressive symptoms. For social anxiety symptoms, 42.4% of the variance was accounted for by the IVs,  $F(8, 344) = 31.67, p < .001$ . For depressive symptoms, 38.7% of the variance was accounted for by the IVs,  $F(8, 344) = 27.15, p < .001$ . For loneliness, 37.4% of the variance was accounted for by the IVs,  $F(8, 344) = 25.71, p < .001$ .

When tested one at a time in 24 separate models, four of the eight moderator effects tested were significant (or marginally significant) in the model of social anxiety symptoms, one of the eight moderator effects tested was significant in the model of depressive symptoms, and no moderator effect was significant in the model of loneliness. For social anxiety symptoms, the significant interaction effects were mindful describing  $\times$  relational victimization ( $\beta = .09, p = .06$ ), mindful nonjudgement  $\times$  physical victimization ( $\beta = .09, p = .05$ ), mindful nonjudgement  $\times$  relational victimization ( $\beta = .11, p = .02$ ), and mindful nonreactivity  $\times$  physical victimization ( $\beta = .12, p = .01$ ). The pattern of findings was similar to the pattern shown in Figure 1, showing a stronger association between victimization and social anxiety symptoms when mindfulness (either nonjudgement or nonreactivity) was high relative to low. The one moderator effect in the model of depressive symptoms was mindful nonreactivity  $\times$  physical victimization ( $\beta = .11, p = .03$ ), and this effect was positive indicating a pattern similar to the pattern shown in Figure 2.

When the above follow-up analyses were repeated replacing the dichotomous yes/no indicators for physical and relational victimization with their original continuous scores, the pattern of results was similar. In particular, moderation effects were significant or marginally significant for four interactions in the models of social anxiety: mindful nonjudgement and nonreactivity across both physical and relational victimization ( $p$  ranged from .04 to .09). Also, moderation effects were significant for



mindful nonjudgement  $\times$  physical victimization and mindful nonreactivity  $\times$  physical victimization in the model of depression ( $p = .04$  and  $.02$ , respectively). No moderation effect was significant in the models of loneliness.

### Discussion

In this study, we tested whether dispositional mindfulness was associated with fewer internalizing symptoms (defined as social anxiety and depression) and feelings of loneliness among adolescents, while simultaneously testing the associations of experiences of PVE with symptoms and loneliness. We found that adolescents who report more PVE (combining both physical and relational) are higher in social anxiety, depression, and loneliness. Moreover, adolescents who reported more physical and relational victimization had a higher level of symptoms and felt lonelier, with adolescents reporting more relational victimization being higher in social anxiety, depression and loneliness and those reporting more physical victimization endorsing more depression and loneliness. Yet, at the same time, adolescents who scored higher on dispositional mindfulness reported less social anxiety, depressive symptoms, and loneliness, and this generally extended to all of the four subscales of mindfulness we measured, with only a few exceptions.

Further extending on these analyses, dispositional mindfulness was examined as a potential buffer of the negative effect of PVE on symptoms and loneliness. This was done by testing whether the association between PVE and internalizing symptoms was weaker at a high relative to lower levels of mindfulness. Overall, we did find interaction effects across all emotional adjustment measures when PVE, in all its forms, was dichotomized (high/low), but the findings were not consistent with what would have been expected based on a buffering hypothesis. Moreover, interaction effects were more intermittent, involving only some mindfulness subscales and either physical or relational victimization, when victimization was analysed as a continuous score.

Overall, however, when moderation was found, PVE was more *strongly* associated with symptoms and loneliness when mindfulness (especially nonjudgement and nonreactivity) was high compared to low. Thus, in general, adolescents reporting more mindfulness do also report fewer symptoms and less loneliness, so, on the one hand, mindfulness appears beneficial for adolescents' well-being. On the other hand, we did not support the notion that mindfulness protects adolescents who report high PVE (relative to their peers with lower PVE) from having elevated social anxiety and depressive symptoms and more feelings of loneliness.

### **Key Findings and Future Research Directions**

**Dispositional mindfulness, PVE, and internalizing symptoms.** The finding that adolescents who report a high level of PVE, both physical and relational, are experiencing more internalizing symptoms and loneliness was anticipated and is consistent with previous research (Ciesla et. al., 2012; Hambour et al., 2018; Pyszczynski & Greenberg, 1987). Internalizing symptoms included responses that are common reactions to adverse peer interactions, including PVE, and the associated threat to belonging (Baumeister & Leary, 1995; Leary, 1990). In fact, PVE had quite strong cross-sectional associations with symptoms and loneliness, supporting the widespread finding reported in two meta-analyses that victims of PVE experience poorer socioemotional adjustment (Hawker & Boulton, 2000; Reijntjes et al., 2010).

What has been less frequently studied is the association of dispositional mindfulness with internalizing symptoms and loneliness among adolescents. Yet, as a few previous studies of youth have reported (e.g., Hambour et al., 2018; Lavell, Webb, Zimmer-Gembeck, & Farrell, 2018), dispositional mindfulness appears to be a way of engaging with our internal and external environment and approaching emotion that is an asset for avoiding excessively heightened internalizing symptoms (e.g., Pepping et al., 2016). Accurately describing experience and being aware and in control of actions, two

important facets of dispositional mindfulness, has been expected to help adolescents remain in the present on a moment-by-moment basis both when alone and when interacting with others. This is expected to leave little opportunity for rejecting, avoiding, ruminating, or suppressing thoughts and feelings, instead encouraging acceptance and non-judgement of experiences (Ciesla et al., 2012), directly resulting in fewer symptoms of psychopathology. Overall, findings support mindfulness as a positive resource for many adolescents.

**Dispositional mindfulness as a buffer.** Dispositional mindfulness was also expected to buffer the detrimental effect of PVE on mental health. Although the results showed that the association of PVE with symptoms and loneliness did differ depending on adolescents' level of dispositional mindfulness, the pattern of results did not clearly support the buffering hypothesis. Instead, we found that PVE has an association with symptoms and loneliness at all levels of mindfulness, with the association stronger when mindfulness is high relative to when it is lower. When this moderation effect is considered alongside the finding that adolescents higher in mindfulness report fewer symptoms and less loneliness overall, this suggests two possibilities that require future research.

First, the findings suggest that there are harmful effects of PVE for all adolescents at all levels of reported dispositional mindfulness. Adolescents are facing the task of navigating social change and learning to regulate adaptively, while developing coping strategies for new and challenging social contexts (Gunnar, 2017; Johnson, Perry, Hostinar, & Gunnar, 2019; Lupien, McEwen, Gunnar, & Heim, 2009; Zimmer-Gembeck & Skinner, 2016). Rejection is distressing at any age, but there is evidence it could be even more potent during adolescence and this could explain the lack of a mindfulness buffering effect when adolescents are facing PVE (Sommerville, 2013). As adolescents mature and their meta-cognitive abilities and coping strategies

become more differentiated and flexible, it is possible a buffering effect of mindfulness may emerge. Such a developmental question deserves future research attention.

Second, mindfulness can benefit the emotional well-being of some adolescents, but it may be of most (or only) benefit to adolescents who do *not* report high PVE relative to their peers. This may be because PVE could be partially outside of adolescents' perceived control. When adolescents perceive little control over a situation, it is likely they attempt to take some control of their response to preserve their self-esteem (Kliewer & Sandler, 1992). Control may oppose mindful acceptance, therefore under distressing high PVE conditions even adolescents reporting high dispositional mindfulness may revert to control strategies rather than mindful acceptance qualities of non-judging and non-reacting to inner experience, functioning to keep their self-esteem intact. This hypothesis is somewhat consistent with a previous study where peer victimization was linked to declining dispositional mindfulness over time (Riggs & Brown, 2017). The experience of high PVE could redirect a young person's attention from the present moment to thoughts or rumination of PVE and worry about future PVE events; over time this effect could shift youth from traits of high mindfulness to being less mindful. The investigation of the prominent detrimental effect of PVE on the well-being of adolescents high in dispositional mindfulness could benefit from future longitudinal research to test this possibility.

It is also important to note that our follow-up analyses of dispositional mindfulness subscales, and physical separate from relational victimization, provide evidence that all main effects and interaction effects extend across most mindfulness subscales and to each form of victimization (when scored as dichotomous measures of low/high victimization). However, the findings were most consistent for the mindfulness subscales of nonjudgement and nonreactivity as related to social anxiety and depression. Thus, the associations between PVE and social anxiety and depression

were significantly stronger when mindful nonjudgement and nonreactivity were high, rather than low. This suggests that discrepancy or cognitive dissonance (Festinger, 1959) might be important to consider, as well. Adolescents who are highly nonjudgmental and nonreactive may find the experience of PVE particularly inconsistent with their own beliefs, attitudes and behavior, making it even more difficult to comprehend, dismiss or adapt to. Thus, nonjudgmental and nonreactive adolescents may be particularly at risk for emotional maladjustment when they experience PVE or other social adversity.

Finally, the findings raise a caution for mindfulness-based programs and intervention for children or adolescents. Such programs should be fully aware of the social circumstances and coping skills of their participants, as intervening to improve mindfulness may not be fully beneficial without additional attention to social adversity and other individual skills and competencies. It also points to the need for future research that can uncover the circumstances that explain exactly why, and especially when, mindfulness is of benefit to adolescents' well-being.

### **Limitations, Future Research, and Conclusion**

The present study had some limitations. First, all measures were self-reported. Although the reliability and validity of items used were established in past research, social desirability must be considered, and there is the possibility that associations were inflated due to shared method variance. Future research would benefit from using multiple reporters (e.g., peer reports of PVE). Second, all the data used was cross-sectional. Longitudinal research would enhance our understanding of how PVE could impact on later mindfulness and how mindfulness could impact on later PVE and symptoms.

In the present study, we conceptualized mindfulness as a personal internal resource implying that it is similar to and related to adaptive emotion regulation and

coping responses; these responses are presumed to be important for supporting positive and productive ways of interacting with others when facing stress. However, although there is evidence that mindfulness is associated with better emotion regulation and coping (Goodall et al., 2012; Roemer, Williston, & Rollins, 2015), we did not directly assess these in response to PVE. We also did not assess interactions with others in the face of (or involved in the) stressful events. Future research may benefit from investigating the role of emotion regulation or coping in the association between dispositional mindfulness, symptoms and loneliness. In addition, the resulting increased ability to form meaningful relationships with others that is synonymous with being more mindful (e.g., Brown and Ryan, 2003; Kabat-Zinn, 1993; Welwood, 1996) could also contribute to decreased internalizing symptoms and loneliness, although future research is needed to investigate this hypothesis.

Further, we assumed that mindfulness is a naturally varying dispositional resource and did not intervene to examine how improving mindfulness might reduce internalising symptoms or loneliness. Mindfulness is teachable, and emerging evidence appears promising that practice to increase mindfulness among young people reduces psychological symptoms (Zoogman et. al., 2015). This research is important to continue to understand whether mindfulness is a way to help youth avoid psychopathology.

In conclusion, dispositional mindfulness seems to be a personal resource that is associated with fewer symptoms and less loneliness. Nevertheless, although the association of PVE with symptoms of social anxiety, depression and loneliness did differ depending on adolescents' level of dispositional mindfulness, the pattern of results did not clearly support the hypothesis that mindfulness would protect or buffer against the negative effects of PVE. Instead, we found that PVE has a stronger association with symptoms when mindfulness was high relative to when it was low, suggesting that mindfulness is generally beneficial to emotional adjustment, but it does

not buffer against the negative effects of victimization and exclusion by peers and may provide more benefits when adolescents are facing fewer social threats.

### **Summary of Chapter 6**

In Study 1 (Chapter 6), the first aim of this thesis was addressed (see Chapter 1 and Chapter 5). That is, the study drew on both dispositional mindfulness research and stress and coping theories in order to examine the associations of adolescents' dispositional mindfulness with internalising symptoms of loneliness, social anxiety, and depression, while also accounting for the role of peer stress in adolescents' symptoms. Moreover, dispositional mindfulness was examined as a direct correlate of symptoms as well as a buffer of the effects of stress in the peer domain on symptoms. Multiple regression was used to test all associations. Moderation was then used to test whether the association of peer victimisation and exclusion with internalising symptoms was weaker for participants higher, relative to lower, in dispositional mindfulness.

Results indicated that more frequent experience of peer victimisation and exclusion was associated with more symptoms of social anxiety, depression, and loneliness. Further, adolescents who reported higher dispositional mindfulness also reported fewer symptoms of social anxiety, depression, and loneliness, even after controlling for gender and experiences of peer victimisation and exclusion. However, the findings did not support dispositional mindfulness as protective against the effects of peer victimisation and exclusion on internalising symptoms. Thus, it was not concluded that dispositional mindfulness was a buffer against the negative effects of peer victimisation and exclusion on adolescents' social anxiety, depression, and loneliness. Instead, we found that peer victimisation and exclusion had a stronger association with symptoms of social anxiety, depression, and loneliness when mindfulness was high relative to when it was medium or low. Yet, peer victimisation and exclusion was associated with greater social anxiety, depressive symptoms and loneliness at all levels of mindfulness. Thus, in general, adolescents reporting more mindfulness did also report fewer symptoms and less loneliness, so, on the one hand,



mindfulness appears beneficial for adolescents' well-being. On the other hand, we did not support the notion that mindfulness protects adolescents who report high peer victimisation and exclusion (relative to their peers with lower victimisation and exclusion) from having elevated social anxiety and depressive symptoms and more feelings of loneliness. In other words, dispositional mindfulness is promotive of better emotional well-being, but it is not protective against the association of peer victimisation and exclusion with adolescents' elevated symptoms of emotional problems and loneliness.

## **CHAPTER 7**

### **Study 2**

#### **Mindfulness, Rejection and Recovery of Positive Mood and Friendliness:**

##### **A Cyberball Study**

Chapter 7 contains Study 2, which is presented in the form of an unpublished manuscript that has been submitted for publication. The original formatting required for the submission to a journal was retained, but references for this chapter are included at the end of the thesis as part of the full reference list. This chapter was prepared utilising data collected from Australian undergraduate university students at an urban university. As described in Chapter 1 and Chapter 5, the aim of Study 2 was to examine whether dispositional mindfulness provides benefits such as reduced appraisal of threat, less reactivity to threat, and quicker or better recovery following the experience of social rejection. To achieve this aim, participants completed a measure of dispositional mindfulness and about 1-week later experienced a social rejection stressor (Cyberball). They reported on their experience immediately following the stressor and again some minutes later as a measure of recovery. Regression analyses were used to test all associations. Study 2 addressed the second aim of this thesis, as it examined whether dispositional mindfulness is advantageous for reactions and recovery from social rejection.

#### **Statement of Contribution to Co-authored Published Paper**

This chapter includes a co-authored paper that has been submitted for publication. The bibliographic details of this co-authored paper, including all authors, are:

Clear, S. J., Zimmer-Gembeck, M. J., Hawes, T., Barber, B. L., & Duffy, A. L. (2020).

Mindfulness, rejection and recovery of positive mood and friendliness: A cyberball study. Manuscript submitted for publication.

My contribution involved:

- Review of literature
- Co-development of hypothesis
- Selection of measures
- Co-programming of Cyberball game
- Development of methodology and design
- Collection of data and training and supervision of data collection staff
- Co-selection and completion of analyses
- Lead in writing of paper

### Abstract

Experiencing stressful events that threaten feelings of social belonging can have far-reaching negative impacts on well-being, but there are individual differences in sensitivity to threat that might be explained by dispositional traits. In particular, naturally occurring dispositional mindfulness may be one trait that can explain such differences. To test this possibility, 90 young adults ( $M = 19$  years,  $SD = 1.3$ ) completed a measure of dispositional mindfulness and, about one week later, participated in an induced social rejection task (Cyberball). Threat appraisal was collected by asking about perceived exclusion and rejection post-Cyberball, and participants reported their mood and friendliness before, after, and at 3mins of recovery, and their self-esteem and life meaning after Cyberball and at recovery. Participants higher in mindfulness reported better mood and less unfriendliness prior to Cyberball. Directly after playing Cyberball, a more heightened appraisal of threat, but not mindfulness, was associated with worse mood, less friendliness, lower self-esteem, and less life meaning. Mindfulness directly mitigated the negative effects of rejection on feelings of friendliness post rejection. When mindfulness and threat appraisal were considered in interaction, the association of perceived threat with pre- to post- changes in positive mood and friendliness was strongly negative when mindfulness was high relative to low. Further, mindfulness was associated with better recovery of mood and meaning by 3-min after Cyberball, and these effects were additive rather than interactive.

**Keywords:** belonging; relatedness; ostracism; psychological needs; stress

**Mindfulness, Rejection and Recovery of Positive Mood and Friendliness:  
A Cyberball Study**

In Self-Determination Theory (Ryan & Deci, 2000, 2017), and in other theories (Baumeister & Leary, 1995), relatedness to others (or social connection and belonging) is described as a core psychological human need that is met through intimate relationships, belonging to social groups, and feeling valued by others. When the need for relatedness is fulfilled, many positive personal and developmental outcomes follow (Schoch, Nikitin, & Freund, 2015; Skinner, Zimmer-Gembeck, & Connell, 1998; Vansteenkiste & Ryan, 2013). Conversely, the experience of social exclusion, ostracism or rejection has been found to be a powerful social signal of need threat, which can result in high levels of distress (Deci & Ryan, 2000; Vansteenkiste & Ryan, 2013; Zimmer-Gembeck, 2016) and even signs and symptoms of psychopathology (Stillman et al., 2009; Troop-Gordon, Rudolph, Sugimura, & Little., 2015; Williams, 1997, 2001).

Despite widespread evidence of the negative impact of rejection on well-being, research shows that individuals differ in their appraisals of situations as threatening to their relatedness, with some reporting heightened expectation and sensitivity compared to others (Downey & Feldman, 1996) even when situations are standardized across individuals (e.g., Zimmer-Gembeck & Nesdale, 2013). This variability suggests there are individual dispositional characteristics that both heighten and minimize the appraisal of rejection, ostracism and relatedness threat. In the present study, the aim was to test whether dispositional mindfulness minimized appraisal of relatedness threat, and was beneficial for recovery of positive mood following social rejection. Trait level (i.e., dispositional) mindfulness was expected to be adaptive for response and recovery given growing support for its beneficial properties for emotion regulation, stress responding, and well-being (Aldao, Jazaieri, Goldin, & Gross, 2014; Clear, Zimmer-Gembeck,

Duffy, & Barber, 2020; Hambour, Zimmer-Gembeck, Clear, Rowe, & Avdagic, 2018; Roeser & Pinela, 2014; Lucas-Thompson, Miller, Seiter, & Prince, 2019).

### **Dispositional Mindfulness and Social Threat**

Mindfulness has been described as observing and responding to one's internal and external environment, while being in the present on a moment-by-moment basis, and non-judgementally recognising and accepting experience (Kabat-Zinn, 1994).

Mindfulness can be cultivated through the practice of mindfulness meditation (Kabat-Zinn, 1990), however mindfulness has also come to be conceptualized as an inherent capacity or trait like personal strength, which some researchers have labeled as *dispositional mindfulness* (Brown & Ryan, 2003; Lucas-Thompson et al., 2019).

Dispositional mindfulness comprises an interacting set of cognitive, emotional and behavioral skills. In a conceptualization that has had a great deal of influence on the field, Baer et al. (2006) proposed five facets of dispositional mindfulness to aid in understanding its components and associations with stress, coping, and well-being. The five facets include the ability to pay attention, be aware, and perceive signals of emotion accurately, along with unbiased processing that leads to a more accurate view of reality. All five facets are proposed to work in conjunction to facilitate mindfulness, so that an overall mindfulness composite can be constructed by averaging the five facets.

However, one facet, observing, was not administered in this study based on previous research findings that it is not highly correlated with other subscales (Abujaradeh, Colaianne, Roeser, Tsukayama, & Galla, 2020; Hambour et al., 2018) and may be more valid when used with participants who practice meditation (Baer et al., 2006; Williams, Dalgleish, Karl, & Kuyken, 2014). In addition, the observing subscale has been found to have a positive association with emotional symptoms in some studies, whereas other subscales are associated with fewer emotional symptoms (e.g., Clear et al., 2020; Hambour et al., 2018).

When the focus has been on dispositional mindfulness, individuals higher in mindfulness have reported more positive emotional adjustment and experiences of more positive relationships with others (Aldao et al. 2014; Barnes, Brown, Krusemark, Campbell, & Rogge, 2007; Clear et al., 2020; Ciesla, Reilly, Dickson, Emanuel, & Updegraff, 2012; Jones, Wirth, Ramsey, & Wynsma., 2019; Norton, Abbott, Norberg, & Hunt., 2015), in addition to better cardiovascular responding in response to stress (Lucas-Thompson et al., 2019) and better attention and less rumination (Jones et al., 2019; Parsons, Dreyer-Oren, Magee, & Clerkin, 2019). Although the benefits accrued from dispositional mindfulness and mindfulness training are becoming well-known, only recently have associations with appraisals of need satisfaction or threat been reported. For example, in one study, individuals higher in mindfulness had better sleep quality and daytime functioning and this association was mediated by the appraisal of greater need satisfaction found among individuals higher in dispositional mindfulness (Campbell et al., 2015). Further evidence comes from a two-wave longitudinal study of athletes, whereby dispositional mindfulness was associated with increased well-being over time and this association was mediated by psychological need satisfaction (Chang, Chang, & Chen, 2018). Taken together, such studies suggest that dispositional mindfulness may impart benefits partly because it is associated with greater need fulfillment. Yet, it is unclear whether mindfulness might interfere with appraisal of threat (in addition to need fulfillment) when events occur that could be threatening. It might be expected that dispositional mindfulness would be protective against an appraisal of threat to relatedness because it includes the ability to describe and observe without judgment. Such abilities could translate into avoiding the negative self- and other-related beliefs that can follow from negative social experiences (Hankin & Abramson 2001; Zimmer-Gembeck, Nesdale, Webb, Khatibi, & Downey, 2016), resulting in appraising events as less personally threatening. In the current study, this

was tested by examining the association between mindfulness and threat appraisal following the game of Cyberball set to simulate social rejection.

### **Dispositional Mindfulness as a Buffer: Reactivity and Recovery from Stress**

Mindfulness has been described as a resource that supports better adaptation to stressful events and the distress that can follow from them (Clear et al., 2020; Lucas-Thompson et al., 2019; Roeser & Pinela, 2014), with some studies supporting this view (Barnes et al., 2007; Berry et al., 2018). For example, in one set of seven experiments, dispositional mindfulness was found to reduce defensive responses to mortality salience and existential threat (Niemiec et al., 2010). However, past research has rarely focused on the stress of social rejection. When social rejection has been the focus, the results have not been so clear. For example, in a cross-sectional survey study of adolescents (Clear et al., 2020), dispositional mindfulness did not buffer against the negative impact of peer victimization and exclusion on adolescents' internalising symptoms and feelings of loneliness. Instead, victimization was associated with greater social anxiety, depressive symptoms and loneliness at both low and high levels of mindfulness. This study captured reports of personal experiences of peer victimization and exclusion and examined whether current self-reported dispositional mindfulness buffered concurrent symptoms and loneliness. Reactions to experiences that threaten relatedness often can be immediate, followed by a quick recovery (Hartgerink, van Beest, Wicherts, & Williams, 2015), but no study to date has focused specifically on whether mindfulness is of benefit because it buffers against immediate negative reactions to social stress and aids quicker emotional recovery.

**Reactivity.** Research shows that the neural activation linked to social rejection is similar to the experience of physical pain (Eisenberger, Lieberman, & Williams, 2003; MacDonald & Jensen-Campbell, 2011). Interestingly, one of the first uses of mindfulness in modern psychology was as a tool for alleviating physical pain, whereby



early research reported that mindfulness meditation was an effective form of chronic pain management (Kabat-Zinn, Lipworth, & Burney, 1985). More recently, mindfulness training was found to be effective in reducing experimentally induced physical pain (Zeidan, Gordon, Merchant, & Goolkasian, 2010). In addition, neuroscientific research following a brief intervention of four 20-minute mindfulness meditation training sessions over four consecutive days suggests mindfulness meditation engages multiple brain mechanisms and areas associated with the cognitive modulation of pain, therefore it is suggested mindfulness training is capable of altering the subjective pain experience (Zeidan et al., 2010, 2011). Considering the experience of physical pain and social pain seem to share a similar pattern of neural activation, mindfulness, even when measured as dispositional mindfulness, could be effective in modulating the immediate level of social pain felt following an experience of relatedness threat in the form of social exclusion and rejection. If mindfulness can buffer reactions in this way, it would be unique, given that a meta-analysis of 120 Cyberball studies found that social exclusion was universally painful, and no trait or others factor could be found that inhibited negative emotional reactions to social exclusion (Hartgerink et al., 2015).

**Recovery.** A second possibility is that mindfulness could boost recovery of positive mood and other reactions following social rejection (Molet, Macquet, Lefebvre, & Williams, 2013). As described by Brown et al. (2007), dispositional mindfulness could have a direct role in the enhancement of self-regulated functioning that comes with ongoing attention and sensitivity to internal and external cues. In this view, individuals high in dispositional mindfulness would show better recovery after an interpersonally stressful event, because dispositional mindfulness would prevent participants from thoughts or behavior that are linked with negative affect and other poor outcomes following interpersonal stress (Aldao & Nolen-Hoeksema, 2010; Jones et al., 2019; Nolen-Hoeksema, 1998; Skinner & Zimmer-Gembeck, 2016). Mindfulness

might be a resource by helping individuals to avoid ruminating about the experience, reduce feelings of self-doubt or self-deprecation, avoid withdrawal or isolation from others, and avoid anger towards others or retribution in return (see Parsons et al., 2019).

Few past studies have examined whether mindfulness is a resource for better recovery from the distress of social rejection and exclusion using the Cyberball paradigm. In fact, we could locate only one study of social exclusion and mindfulness (Molet et al., 2013). In this study, two groups of undergraduate university students played a game of Cyberball; one group completed a brief 12-minute experimental induction of focused attention using a guided mindfulness breath activity and one group was a control. Results indicated both groups experienced the same degree of need threat immediately following social rejection, although the focused attention group showed improved recovery (Molet et al., 2013). This study supports the recovery model but not the reactivity model, whereby mindfulness could be expected to assist in a better recovery of mood or well-being from a stressful experience rather than buffer the initial reactions to the stressful experience.

### **The Current Study**

Social rejection has been described as so threatening that it can impair the sense of a meaningful existence and self-esteem (Baumeister & Leary, 1995; Williams, 1997, 2001; Zimmer-Gembeck, 2016). However, not all individuals are equally sensitive to rejection and ostracism; they vary in their appraisal of threat (Zimmer-Gembeck et al., 2013; Zimmer-Gembeck, Van Petegem, & Skinner, 2016). Individual capacities, such as dispositional mindfulness, may be at work here, providing benefits of reduced appraisal of threat, less reactivity, and quicker or better recovery (Lucas-Thompson et al., 2019; Molet et al., 2013). Our aim was to test these notions in young adults presented with a game of Cyberball set to exclude them from ball tossing with imagined confederates (Williams, 2009). It was hypothesized that individuals higher in

dispositional mindfulness would appraise less threat to relatedness following Cyberball (Hypothesis 1), and would recover more quickly from their immediate negative responses to the game before and after controlling for their threat appraisal (Hypothesis 2). We also examined reactivity to the game, but it was not clear that mindfulness would be a correlate, given that rejection is a powerfully negative experience for most people (Hartgerink et al., 2015; Zimmer-Gembeck, 2015, 2016). Finally, interactions were expected, whereby mindfulness was expected to buffer the negative impacts of threat appraisal on mood (Hypothesis 3).

## **Method**

### **Participants**

The 90 participants (16 to 23 years of age, 73% women) were students at a large Australian university selected from a pool of 495 students who had participated in a survey approximately 1-week prior to this study, which included a measure of dispositional mindfulness. This pool of students was classified as in the bottom third, middle third, and top third of dispositional mindfulness scores, and then stratified random sampling was used to identify individuals to contact. This resulted in a substantial range of dispositional mindfulness scores across the 90 participants, from 1.74 to 4.55. Of the 90 participants, 81% identified as being white/Caucasian, 10% Asian, 1% Australian First Peoples/Pacific Islander; the remaining 8% identified as other. The 90 participants allowed for 80% power to detect an effect size in regression of .25 (with  $\alpha = .05$ ).

### **Procedure**

After receiving approval from the Griffith University Human Research Ethics Committee for both studies (the larger survey of 495 students and this study), 105 students from the pool of 495 were re-contacted via phone or e-mail, with 90 (86%) participating. Participants attended a research laboratory where more information about

the study was provided and consent to participate was collected in writing prior to beginning the 30-minute session. Each participant was seated in front of a computer in a room alone and asked to complete a short questionnaire and then told the study was focused on mental visualization and, to practice their skills, they would be playing an internet ball-toss game with two same-sex students located at other universities. Cyberball, the internet ball tossing game, was designed to manipulate rejection (i.e., exclusion, ostracism) (Williams, Cheung, & Choi, 2000). The game was set for 74 total throws over 3.5 minutes, whereby the participant received the ball 3 times at the start of the game then not again for the remainder of the game. Participants then completed a brief post-Cyberball questionnaire. On finishing the questionnaire, participants were asked to remain seated while the other students at different universities finished the questionnaire. The experimenter waited 3 minutes before returning to the room. On returning, the experimenter asked the participant to complete a subset of the items from the Cyberball questionnaire for a second time according to how they felt “right now”. The 3-minute lag time was based on research that showed this time lag was sufficient to produce significant declines in perceptions of psychological need threat (Molet et al., 2013). Following a debrief, participants were thanked, advised of the aims of the study, and received a gift voucher.

### **Measures Completed One Time**

**Dispositional mindfulness.** Participants completed four subscales of the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006; see also Abujaradeh et al., 2020) to measure describing, acting with awareness, non-judgement of experience, and non-reactivity to inner experience. The describing subscale (8 items) measured the ability to recognize and mentally label stimuli and emotional states with words (e.g., “I am good at finding the words to describe my feelings”). The acting with awareness subscale (8 items) measured the ability to attend to one’s actions in the moment while

avoiding disassociation or acting automatically (e.g., “I do jobs or tasks automatically, without being aware of what I’m doing” – reverse coded). The non-judging of experience subscale (8 items) measured the ability to refrain from judgement or self-critical attitudes about one’s sensations, cognitions, and emotions (e.g., “I tell myself I shouldn’t be thinking the way I’m thinking” – reverse coded). The non-reactivity to inner experience subscale (7 items) measured one’s ability to allow thoughts and feelings to come and go, without attention becoming stuck (e.g., “I perceive my feelings and emotions without having to react to them”). Items were rated from 1 (*never or very rarely true*) to 5 (*almost always or always true*) and were averaged so that higher scores indicated more mindfulness, Cronbach’s  $\alpha$  ranged from .71 to .93.

**Appraised threat to relatedness.** Two items served as a measure of threat appraisal (“I was ignored”, “I was excluded”, Williams, 2009). These were completed immediately post-Cyberball. Items were rated from 1 (*not at all*) to 5 (*extremely*) and were averaged, Cronbach's  $\alpha = .72$ . The average score was very high,  $M = 3.98$ ,  $SD = 0.99$ , with only 11 participants with an average score under 3.

### **Repeated Measures**

Items were drawn from previous research to assess responses to social rejection (Williams, 2009). All items were rated from 1 (*not at all*) to 5 (*extremely*).

**Positive and negative mood.** Three items assessed positive mood (“I feel...good”, ...pleasant”, ...happy”) and two items assessed negative mood (“I feel...bad”, ...sad”). Items were averaged to create positive and negative mood composites, Positive Cronbach's  $\alpha = .77$  pre, .91 post, .88 recovery; Negative Cronbach's  $\alpha = .75$  pre, .81 post, .84 recovery.

**Anger, friendly, and unfriendly.** Anger (e.g., “I feel angry”), friendliness (e.g., “I feel friendly”), and unfriendliness (e.g., “I feel unfriendly”) were assessed with one

item each. They were administered pre, post, and recovery. These items were analysed separately, as they were not highly correlated with positive or negative mood or with each other.

**Self-esteem.** Five items assessed self-esteem (e.g., “I feel good about myself”) Items were completed twice only - immediately after the Cyberball task and again 3min later. Items were averaged so that higher scores indicated higher self-esteem, Cronbach's  $\alpha$  were .83 post and .85 recovery.

**Meaning.** Four items assessed meaningful existence (e.g., “I feel invisible” - reversed). Items were completed twice only - immediately after the Cyberball task and again 3min later. Items were averaged so that higher scores indicated more meaning, Cronbach's  $\alpha$  were .71 post and .79 recovery.

### Overview of Data Analyses

After reporting associations of all measures with gender and age, results are presented in three parts. First, to test whether individuals higher in dispositional mindfulness perceived less threat to relatedness, the correlation of dispositional mindfulness with threat appraisal immediately following Cyberball is presented. In addition, as a preliminary test of whether mindfulness (as well as perceived threat) was related to reactivity and recovery from Cyberball, correlations of mindfulness and perceived threat with all other measures are presented.

Second, to focus on the impact of mindfulness on *reactivity* to Cyberball, before and after considering threat to relatedness, we regressed the five post-Cyberball measures, which were also completed before Cyberball, on the following independent variables: the same response measured pre-Cyberball, dispositional mindfulness and appraisal of relatedness threat, and the mindfulness  $\times$  threat interaction. Variables were

entered in three steps, with the pre-measure and mindfulness entered in Step 1, threat entered in Step 2, and the interaction entered in Step 3.

Third and finally, to test the hypothesis that mindfulness should aid *recovery*, before and after considering threat to relatedness, we regressed each of the seven 3-minute recovery responses on the following independent variables: the same response measured post-Cyberball, dispositional mindfulness and appraisal of relatedness threat, and the mindfulness  $\times$  threat interaction. Again, variables were entered in three steps, with the post-Cyberball measure and mindfulness entered in Step 1, threat entered in Step 2, and the mindfulness  $\times$  threat interaction entered in Step 3. Thus, overall, we fit five “reactivity” and seven “recovery” regression models.

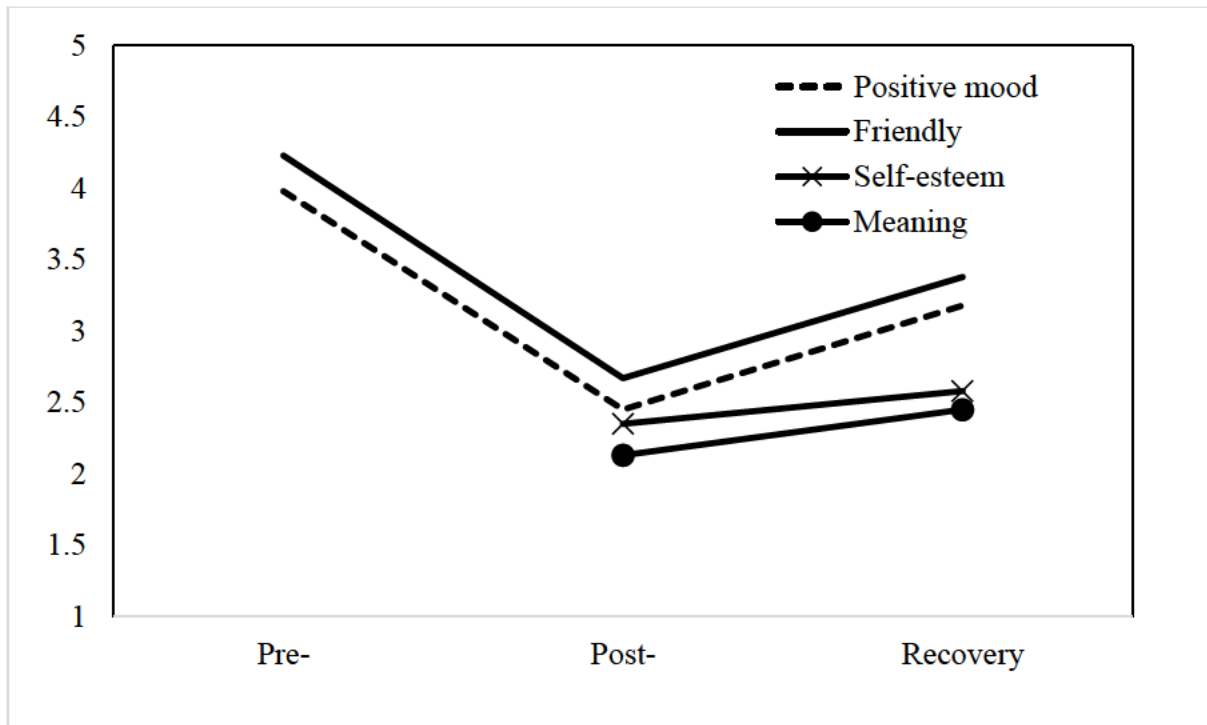
## Results

### Associations of All Measures with Age and Gender, Descriptive Statistics, and Correlations

Age was not significantly correlated with any other measure,  $r$ 's ranged from  $|.00|$  ( $p = .994$ ) for the association of age with pre-Cyberball friendliness to  $|.20|$  ( $p = .066$ ) for the association with recovery-Cyberball unfriendliness. There were two gender differences, with pre-Cyberball friendliness higher,  $r = .23$ ,  $p = .028$  and recovery-Cyberball self-esteem lower,  $r = -.23$ ,  $p = .030$ , in females than males.

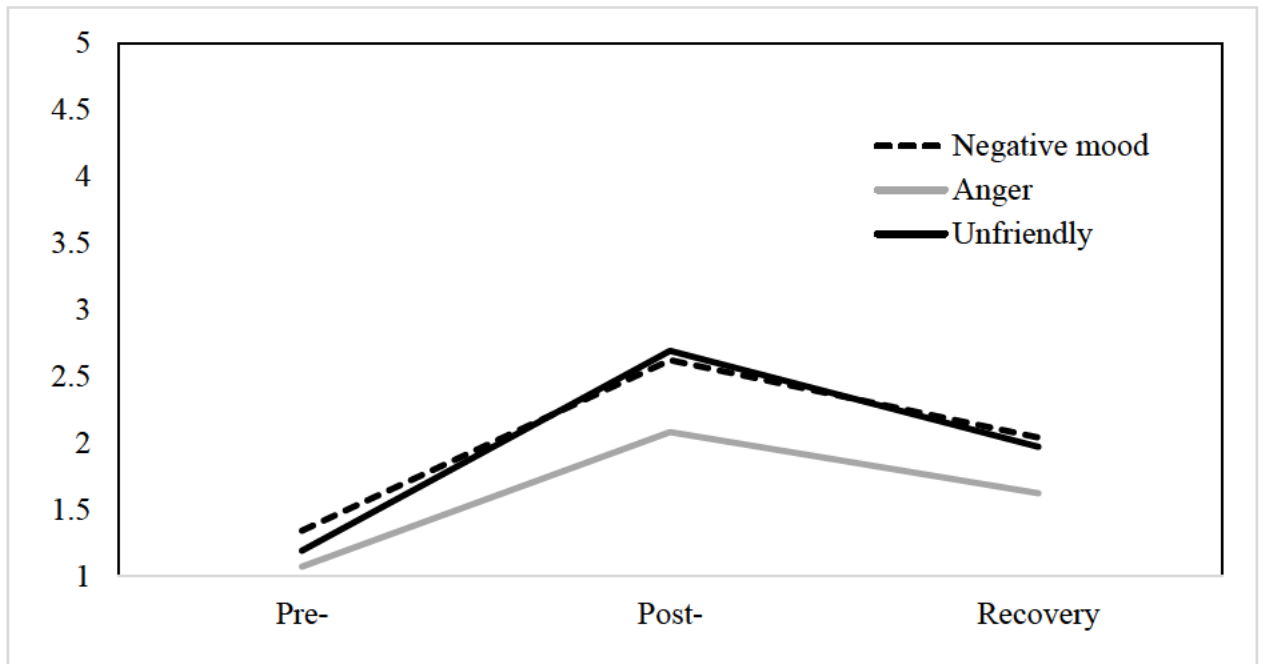
### Descriptive Statistics and Correlations

Figure 7.1 shows the average positive mood responses and Figure 7.2 shows the average negative mood responses from before to recovery from the Cyberball task. Paired  $t$ -tests showed that negative mood measures increased significantly from pre- to post-Cyberball, whereas positive mood measures declined, paired  $t(89)$  ranged from



**Figure 7.1.** Average positive responses pre-Cyberball, post-Cyberball, and 3-minutes following Cyberball ( $N = 90$ ).

**Note.** Measures of self-esteem and meaning were only completed post and at recovery.



**Figure 7.2.** Average negative responses pre-Cyberball, post-Cyberball, and 3-minutes following Cyberball ( $N = 90$ ).



|7.68| to |16.18|, all  $p < .001$ . In addition, from post-Cyberball to 3 minutes later, there was a significant recovery across all measures, paired  $t(89)$  ranged from |3.57| to |9.49|, all  $p < .01$ .

*Ms*, *SDs*, and Pearson's correlations between dispositional mindfulness and threat appraisal with all pre, post, and 3-minute mood measures are shown in Table 7.1. As can be seen, and in contrast to what was expected (Hypothesis 1), dispositional mindfulness was not significantly correlated with appraisal of threat (and this was found for each dispositional mindfulness subscale), but did have many significant correlations with responses before, during and at recovery from the Cyberball task. Partially supporting Hypothesis 2, individuals higher in dispositional mindfulness reported higher pre and recovery positive mood, and lower pre and recovery negative mood. Individuals higher in dispositional mindfulness also reported less unfriendliness pre-Cyberball, more friendliness at post and recovery, and a greater sense of meaningful existence at recovery. Appraised threat was not associated with pre-Cyberball mood, but was associated with more negative reactivity and less recovery across all measures taken post-Cyberball and at 3-minute recovery, with the only exception anger at recovery.

### **Reactivity: Predicting Post-Cyberball relative to Pre-Cyberball Mood**

At Step 1, mindfulness was not associated with positive mood, negative mood, anger, or unfriendliness, but it was associated with more friendliness post- relative to pre-Cyberball (see Tables 7.2 and 7.3). When threat appraisal was entered at Step 2, it was associated with more post-Cyberball negative mood, anger and unfriendliness, and less post-Cyberball positive mood and friendliness. In the third step of each regression model, when the mindfulness  $\times$  threat appraisal interaction was entered, it was significant in the models of positive mood (see Table 7.2 and Figure 7.3) and friendliness (see Table 7.3 and Figure 7.4). Figures 7.3 and 7.4 show pre- and post-Cyberball reports at low and high levels of

**Table 7.1**

**Correlations of Dispositional Mindfulness and Threat Appraisal with pre-Cyberball, Post-Cyberball, and 3-min Recovery Measures ( $N = 90$ )**

Measure	Dispositional Mindfulness, $r$	Threat appraisal, $r$	$M$	$SD$
Threat appraisal (perceived rejection and exclusion)	--	--	3.98	0.99
Total Mindfulness	--	-.09	3.15	0.75
Mindful awareness	.86	-.07	3.12	0.91
Mindful describing	.81	-.03	3.40	0.81
Mindful nonjudging	.87	-.02	3.03	1.02
Mindful nonreactivity	.82	-.20	3.02	0.80
Positive mood - pre	.42**	-.09	3.98	0.62
Positive mood - post	.20	-.35**	2.45	0.96
Positive mood - recovery	.23*	-.27**	3.18	0.91
Negative mood - pre	-.42**	-.10	1.34	0.56
Negative mood - post	-.16	-.57**	2.62	1.08
Negative mood - recovery	-.35**	.22*	2.04	0.87
Angry - pre	-.10	-.11	1.07	0.25
Angry - post	-.12	.39**	2.08	1.20
Angry - recovery	-.15	.10	1.62	0.96
Friendly - pre	.10	-.01	4.23	0.72
Friendly - post	.22*	-.25*	2.67	1.02
Friendly - recovery	.25*	-.29**	3.38	0.91
Unfriendly - pre	-.24*	-.07	1.19	0.52
Unfriendly - post	-.07	.46**	2.69	1.25
Unfriendly - recovery	-.13	.25*	1.97	1.06
Self-esteem - post	.19	-.50**	2.35	0.75
Self-esteem - recovery	.19	-.42**	2.58	0.79
Meaning - post	.10	-.61**	2.13	0.72
Meaning - recovery	.27**	-.28**	2.45	0.87

\* $p < .05$ . \*\* $p < .01$ .

Table 7.2

**Results of Regressing Post-Cyberball Mood on Pre-Cyberball Mood, Mindfulness, Threat, and the Mindfulness  $\times$  Threat Interaction ( $N = 90$ )**

Independent variables	Positive mood			Negative mood			Anger		
	<i>B</i> ( <i>SE B</i> )	$\beta$	<i>B</i> CL	<i>B</i> ( <i>SE B</i> )	$\beta$	<i>B</i> CL	<i>B</i> ( <i>SE B</i> )	$\beta$	<i>B</i> CL
Step 1									
DV, pre-Cball	0.51 (0.17)	.33**	0.17 / 0.86	0.24 (0.22)	.12	-0.21 / 0.68	-0.50 (0.51)	-.11	-1.52 / 0.51
A. Mindfulness	0.07 (0.14)	.06	-0.21 / 0.35	-0.16 (0.17)	-.11	-0.49 / 0.17	-0.20 (0.17)	-.13	-0.54 / 0.14
Step 2									
DV, pre-Cball	0.47 (0.16)	.31**	0.15 / 0.80	0.40 (0.18)	.21*	0.04 / 0.76	-0.29 (0.48)	-.06	-1.24 / 0.67
A. Mindfulness	0.05 (0.14)	.04	-0.22 / 0.32	-0.03 (0.14)	-.02	-0.30 / 0.24	-0.14 (0.16)	-.09	-0.46 / 0.18
B. Threat	-0.30 (0.09)	-.31**	-0.49 / -0.12	0.64 (0.09)	.59***	0.45 / 0.83	0.45 (0.12)	.37***	0.21 / 0.69
Step 3									
DV, pre-Cball	0.43 (0.16)	.28**	0.11 / 0.75	0.38 (0.18)	.20*	0.01 / 0.74	-0.34 (0.49)	-.07	-1.31 / 0.62
A. Mindfulness	0.08 (0.13)	.06	-0.18 / 0.35	-0.05 (0.14)	-.03	-0.32 / 0.23	-0.14 (0.16)	-.09	-0.46 / 0.18
B. Threat	-0.33 (0.09)	-.34**	-0.51 / -0.15	0.65 (0.09)	.60***	0.46 / 0.84	0.44 (0.12)	.36***	0.20 / 0.68
A $\times$ B	-0.25 (0.13)	-.19*	-0.50 / -0.01	0.13 (0.13)	.09	-0.13 / 0.38	-0.13 (0.17)	-.08	-0.46 / 0.20

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

**Note.** CL = 95% confidence interval; Lower / Upper; Threat = perceived rejection and exclusion during Cyberball. Positive Mood: Step 1  $R^2 = .13$ ,  $F(2,87) = 6.38^{**}$ , Step 2  $\Delta R^2 = .10$ ,  $\Delta F(1,86) = 10.80^{**}$ , Step 3  $\Delta R^2 = .04$ ,  $\Delta F(1,85) = 4.11^*$ . Negative Mood: Step 1  $R^2 = .04$ ,  $F(2,87) = 1.73$ , Step 2  $\Delta R^2 = .34$ ,  $\Delta F(1,86) = 46.79^{***}$ , Step 3  $\Delta R^2 = .01$ ,  $\Delta F(1,85) = 0.98$ . Anger: Step 1  $R^2 = .02$ ,  $F(2,87) = 1.07$ , Step 2  $\Delta R^2 = .14$ ,  $\Delta F(1,86) = 13.96^{***}$ , Step 3  $\Delta R^2 = .01$ ,  $\Delta F(1,85) = 0.58$ .

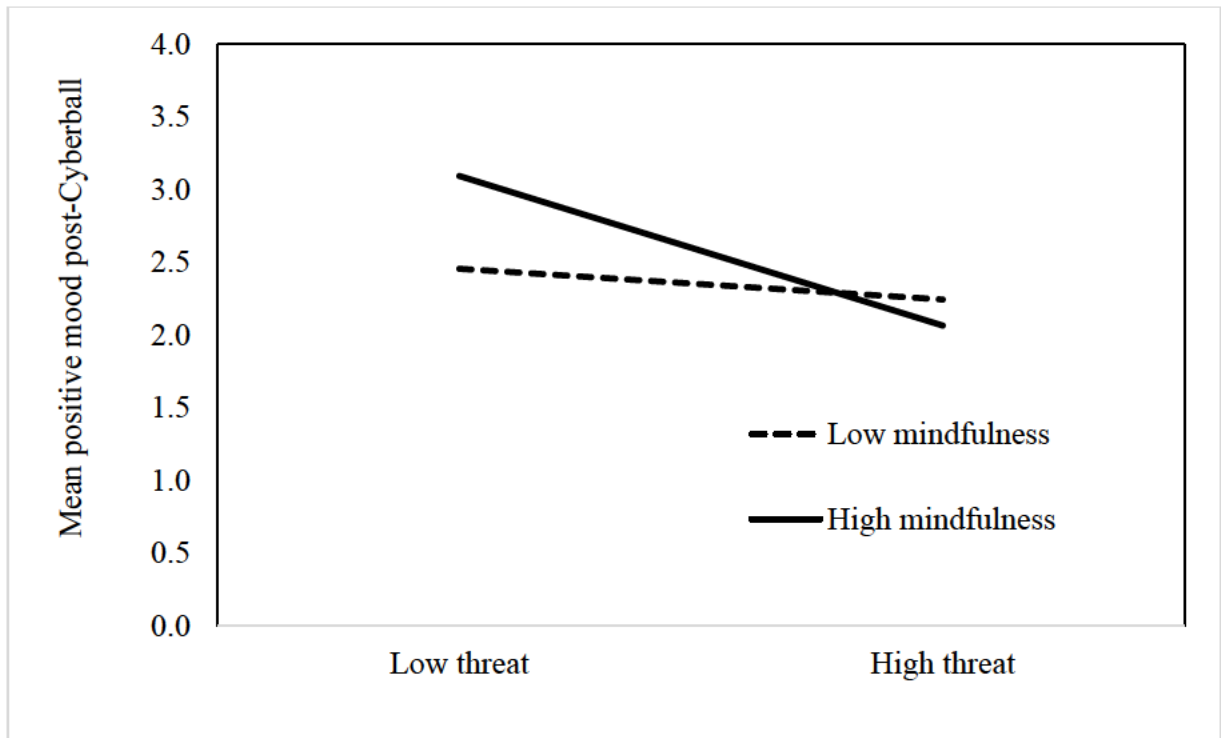
Table 7.3

**Results of Regressing Post-Cyberball Friendliness on Pre-Cyberball Friendliness, Mindfulness, Threat, and the Mindfulness  $\times$  Threat Interaction ( $N = 90$ )**

Independent variables	Friendly			Unfriendly		
	$B$ ( $SE B$ )	$\beta$	$B$ CL	$B$ ( $SE B$ )	$\beta$	$B$ CL
Step 1						
DV, pre-Cball	0.23 (0.15)	.16	-0.06 / 0.52	-0.08 (0.27)	-.03	-0.61 / 0.45
A. Mindfulness	0.28 (0.14)	.21*	0.01 / 0.56	-0.13 (0.18)	-.08	-0.50 / 0.23
Step 2						
DV, pre-Cball	0.23 (0.14)	.16	-0.06 / 0.51	0.03 (0.24)	.01	-0.45 / 0.51
A. Mindfulness	0.25 (0.14)	.19	-0.02 / 0.53	-0.05 (0.17)	-.03	-0.38 / 0.28
B. Threat	-0.23 (0.10)	-.23*	-0.44 / -0.03	0.57 (0.12)	.46***	0.33 / 0.82
Step 3						
DV, pre-Cball	0.19 (0.14)	.13	-0.10 / 0.46	0.03 (0.24)	.01	-0.45 / 0.51
A. Mindfulness	0.28 (0.14)	.21*	0.01 / 0.55	-0.05 (0.17)	-.03	-0.39 / 0.28
B. Threat	-0.26 (0.10)	-.25*	-0.46 / -0.06	0.58 (0.12)	.46***	0.33 / 0.82
A $\times$ B	-0.33 (0.14)	-.24*	-0.61 / -0.05	0.04 (0.17)	.02	-0.29 / 0.37

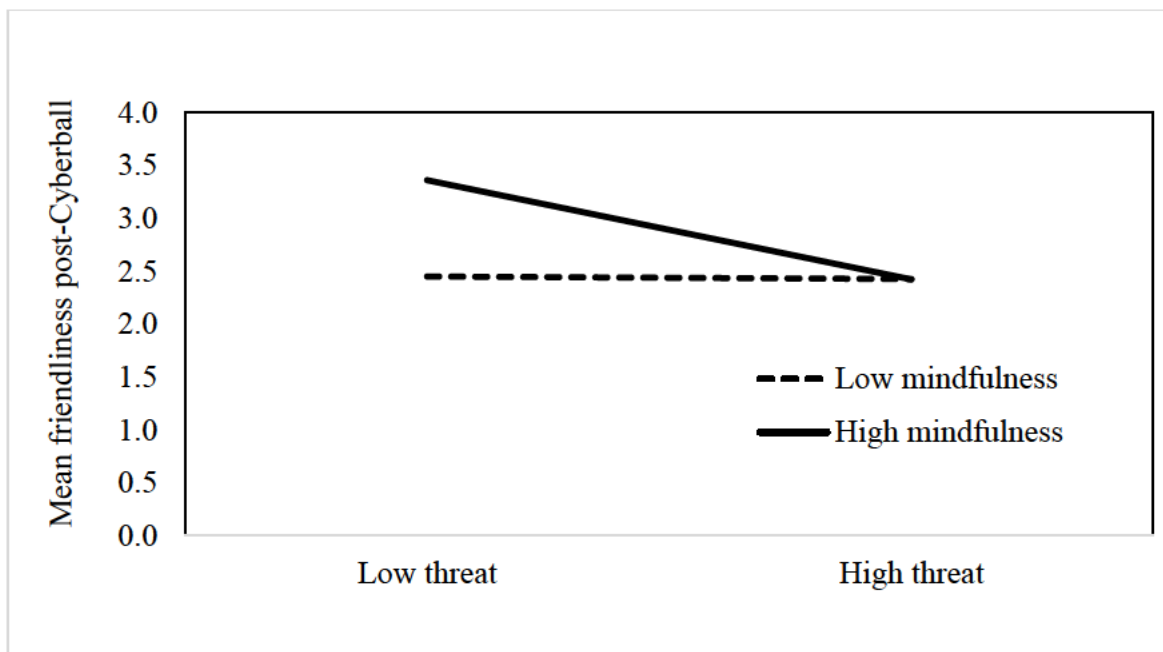
\* $p < .05$ . \*\*\* $p < .001$ .

**Note.** CL = 95% confidence interval; Lower / Upper; Threat = perceived rejection and exclusion during Cyberball. Friendly: Step 1  $R^2 = .08$ ,  $F(2,87) = 3.57^*$ , Step 2  $\Delta R^2 = .05$ ,  $\Delta F(1,86) = 5.06^*$ , Step 3  $\Delta R^2 = .05$ ,  $\Delta F(1,85) = 5.63^*$ . Unfriendly: Step 1  $R^2 = .01$ ,  $F(2,87) = 0.26$ , Step 2  $\Delta R^2 = .20$ ,  $\Delta F(1,86) = 22.23^{***}$ , Step 3  $\Delta R^2 = .00$ ,  $\Delta F(1,85) = 0.05$ .



**Figure 7.3.** The association of appraisal of threat to relatedness with post-Cyberball positive mood at low (-1SD) and high (+1SD) level of mindfulness.

**Note.** Pre-Cyberball positive mood was controlled and was set to the mean (3.98) for this illustration.



**Figure 7.4.** The association of appraisal of threat to relatedness with post-Cyberball friendliness at low (-1SD) and high (+1SD) level of mindfulness.

**Note.** Pre-Cyberball friendliness was controlled and was set to the mean (4.23) for this illustration.

mindfulness and low and high levels of threat, whereby the effect of appraised threat on pre- to post- measures of positive mood and friendliness was stronger when mindfulness was high relative to low. Although interactions were hypothesized, this pattern did not conform to expectation of mindfulness as a buffer (i.e., Hypothesis 3). Instead, these interactions were explained by the higher level of positive mood and friendliness found among individuals reporting low threat appraisal and high mindfulness.

### **Recovery: Predicting Recovery Relative to Post-Cyberball Response**

Providing support for Hypothesis 2, mindfulness was associated with Cyberball recovery across two of the seven measures (see Tables 7.4 – 7.6). Mindfulness was associated with more recovery from negative mood (see Table 7.4) and meaning (see Table 7.6) 3-minutes after Cyberball, relative to post-Cyberball. Threat was not associated with recovery, and no mindfulness  $\times$  threat to relatedness interaction was significant, so there was no support for Hypothesis 3 with regards to recovery.

### **Discussion**

The aim of this study was to examine whether dispositional mindfulness is of personal benefit for reactions and recovery from social rejection. In general, mindfulness was associated with a number of positive moods and feelings towards others before the start of the Cyberball game. Also, directly after playing Cyberball, all participants reported some threat to relatedness (i.e., they felt excluded) and reacted negatively, but a more heightened appraisal of threat was associated with worse mood, self-esteem, and friendliness towards others. As hypothesized, mindfulness directly mitigated the negative effects of rejection on feelings of friendliness post rejection, but was not associated with other changes in mood and reactions when examined from pre- to post-rejection. When mindfulness and threat appraisal were considered in combination, the association of perceived threat with both pre- to post- changes in

**Table 7.4****Results of Regressing Mood at Recovery on Post-Cyberball (Cball) Mood, Mindfulness, Threat, and the Mindfulness  $\times$  Threat Interaction ( $N = 90$ )**

Independent variables	Positive mood			Negative mood			Anger		
	<i>B</i> ( <i>SE B</i> )	$\beta$	<i>B</i> CL	<i>B</i> ( <i>SE B</i> )	$\beta$	<i>B</i> CL	<i>B</i> ( <i>SE B</i> )	$\beta$	<i>B</i> CL
Step 1									
DV, post-Cball	0.64 (0.07)	.68***	0.50 / 0.79	0.42 (0.07)	.52***	0.28 / 0.55	0.44 (0.07)	.55***	0.30 / 0.58
A. Mindfulness	0.12 (0.09)	.10	-0.07 / 0.30	-0.30 (.10)	-.27**	-0.50 / -0.11	-0.11 (0.11)	-.09	-0.34 / 0.12
Step 2									
DV, post-Cball	0.63 (0.08)	.67***	0.48 / 0.79	0.48 (0.08)	.60***	0.32 / 0.65	0.48 (0.08)	.61***	0.33 / 0.63
A. Mindfulness	0.12 (0.09)	.10	-0.07 / 0.30	-0.31 (0.10)	-.26**	-0.50 / -0.11	-0.12 (0.11)	-.09	-0.34 / 0.11
B. Threat	-0.03 (0.07)	-.03	-0.17 / .12	-0.13 (0.09)	-.14	-0.30 / 0.05	-0.13 (0.09)	-.14	-0.32 / 0.05
Step 3									
DV, post-Cball	0.66 (0.08)	.70***	0.50 / 0.82	0.49 (0.08)	.61***	0.32 / 0.66	0.47 (0.08)	.59***	0.32 / 0.62
A. Mindfulness	0.10 (0.09)	.09	-0.08 / 0.29	-0.30 (.10)	-.26**	-0.50 / -0.11	-0.10 (0.11)	-.08	-0.33 / 0.12
B. Threat	-0.01 (0.08)	-.01	-0.16 / 0.14	-0.13 (0.09)	-.15	-0.31 / 0.05	-0.15 (0.09)	-.15	-0.33 / 0.04
A $\times$ B	0.14 (0.10)	.11	-0.06 / 0.33	-0.05 (0.10)	-.04	-0.25 / 0.15	-0.20 (0.12)	-.15	-0.43 / 0.04

\*\* $p < .01$ . \*\*\* $p < .001$ .

**Note.** CL = 95% confidence interval; Lower / Upper; Threat = perceived rejection and exclusion during Cyberball. Positive Mood: Step 1  $R^2 = .50$ ,  $F(2,87) = 44.19^{***}$ , Step 2  $\Delta R^2 = .00$ ,  $\Delta F(1,86) = 0.13$ , Step 3  $\Delta R^2 = .01$ ,  $\Delta F(1,85) = 1.98$ . Negative Mood: Step 1  $R^2 = .38$ ,  $F(2,87) = 27.14^{***}$ , Step 2  $\Delta R^2 = .01$ ,  $\Delta F(1,86) = 1.96$ , Step 3  $\Delta R^2 = .00$ ,  $\Delta F(1,85) = 0.25$ . Anger: Step 1  $R^2 = .32$ ,  $F(2,87) = 20.51^{***}$ , Step 2  $\Delta R^2 = .02$ ,  $\Delta F(1,86) = 2.11$ , Step 3  $\Delta R^2 = .02$ ,  $\Delta F(1,85) = 2.85$ .

**Table 7.5****Results of Regressing Friendliness at Recovery on Post-Cyberball (Cball) Friendliness, Mindfulness, Threat, and the Mindfulness  $\times$  Threat Interaction (N = 90)**

Independent variables	Friendly			Unfriendly		
	<i>B</i> ( <i>SE B</i> )	$\beta$	<i>B</i> CL	<i>B</i> ( <i>SE B</i> )	$\beta$	<i>B</i> CL
Step 1						
DV, post-Cball	0.47 (0.08)	.53***	0.31 / 0.63	0.43 (0.08)	.51***	0.27 / 0.58
A. Mindfulness	0.16 (0.11)	.13	-0.06 / 0.38	-0.13 (0.13)	-.10	-0.39 / 0.13
Step 2						
DV, post-Cball	0.44 (0.08)	.49***	0.27 / 0.60	0.42 (0.09)	.50***	0.25 / 0.60
A. Mindfulness	0.15 (0.11)	.12	-0.07 / 0.37	-0.13 (0.13)	-.09	-0.39 / 0.13
B. Threat	-0.15 (0.08)	-.16	-0.31 / 0.02	0.01 (.11)	.01	-0.21 / 0.24
Step 3						
DV, post-Cball	0.45 (0.09)	.51***	0.28 / 0.62	0.42 (0.09)	.50***	0.25 / 0.60
A. Mindfulness	0.14 (0.11)	.12	-0.08 / 0.36	-0.12 (0.13)	-.09	-0.39 / 0.14
B. Threat	-0.13 (0.09)	-.15	-0.30 / 0.04	0.00 (.11)	.00	-0.22 / 0.23
A $\times$ B	0.09 (0.12)	.07	-0.14 / 0.32	-0.13 (0.14)	-.09	-0.39 / 0.15

\*\*\* $p < .001$ .

**Note.** CL = 95% confidence interval; Lower / Upper; Threat = perceived rejection and exclusion during Cyberball. Friendly: Step 1  $R^2 = .32$ ,  $F(2,87) = 20.58^{***}$ , Step 2  $\Delta R^2 = .02$ ,  $\Delta F(1,86) = 3.06^*$ , Step 3  $\Delta R^2 = .01$ ,  $\Delta F(1,85) = 0.60$ . Unfriendly: Step 1  $R^2 = .27$ ,  $F(2,87) = 16.06^{***}$ , Step 2  $\Delta R^2 = .00$ ,  $\Delta F(1,86) = 0.02$ , Step 3  $\Delta R^2 = .01$ ,  $\Delta F(1,85) = 0.85$ .



**Table 7.6**

**Results of Regressing Self-esteem and Meaning at Recovery on Post-Cyberball (Cball) Self-esteem and Meaning, Mindfulness, Threat, and the Mindfulness  $\times$  Threat Interaction ( $N = 90$ )**

Independent variables	Self-esteem			Meaning		
	<i>B</i> ( <i>SE B</i> )	$\beta$	<i>B</i> CL	<i>B</i> ( <i>SE B</i> )	$\beta$	<i>B</i> CL
Step 1						
DV, post-Cball	0.76 (0.08)	.72***	0.60 / 0.92	0.53 (0.11)	.44***	0.31 / 0.75
A. Mindfulness	0.06 (0.08)	.06	-0.10 / 0.22	0.27 (0.11)	.23*	0.05 / 0.48
Step 2						
DV, post-Cball	0.73 (0.09)	.69***	0.55 / 0.91	0.54 (0.14)	.45***	0.26 / 0.82
A. Mindfulness	0.06 (0.08)	.06	-0.10 / 0.22	0.27 (0.11)	.23*	0.05 / 0.48
B. Threat	-0.05 (0.07)	-.06	-0.19 / 0.08	0.01 (0.10)	.02	-0.19 / 0.22
Step 3						
DV, post-Cball	0.73 (0.09)	.70***	0.55 / 0.92	0.55 (0.14)	.46***	0.27 / 0.83
A. Mindfulness	0.05 (0.08)	.05	-0.10 / 0.21	0.26 (0.11)	.23*	0.05 / 0.48
B. Threat	-0.04 (0.07)	-.06	-0.18 / 0.09	0.02 (0.10)	.03	-0.18 / 0.23
A $\times$ B	0.05 (0.08)	.05	-0.11 / 0.21	0.05 (0.11)	.04	-0.17 / 0.27

\* $p < .05$ . \*\*\* $p < .001$ .

**Note.** Self-esteem: Step 1  $R^2 = .54$ ,  $F(2,87) = 50.29^{***}$ , Step 2  $\Delta R^2 = .00$ ,  $\Delta F(1,86) = 0.58$ , Step 3  $\Delta R^2 = .00$ ,  $\Delta F(1,85) = 0.41$ .

Meaning: Step 1  $R^2 = .27$ ,  $F(2,87) = 15.68^{***}$ , Step 2  $\Delta R^2 = .00$ ,  $\Delta F(1,86) = 0.02$ , Step 3  $\Delta R^2 = .00$ ,  $\Delta F(1,85) = 0.20$ .

positive mood and friendliness was stronger when mindfulness was high relative to low. Further, the most striking finding was the reduction in the anticipated decline in mood and friendliness in individuals high in mindfulness *and* low in appraisal of threat. Finally, mindfulness was associated with better recovery of mood and meaning by 3-min after Cyberball, and these effects were additive rather than interactive.

Mindfulness has been found to have significant benefits for stress responding, well-being and positive feelings of relatedness in previous research (Barnes, et al., 2007; Berry et al., 2018; Clear et al., 2020; Jones et al., 2019; Lucas-Thompson et al., 2019; Roeser & Pinela, 2014; Ryan & Brown, 2003; Zimmer-Gembeck, 2020). These findings were partially supported in the current study; we found more positive and less negative mood, and less unfriendliness among participants higher in mindfulness prior to participation in the Cyberball task. While this was informative, we also expected individuals higher in dispositional mindfulness to both appraise less threat to relatedness following social rejection and to maintain a more positive (or less negative) mood after social rejection. Surprisingly and in contrast to Hypothesis 1, individuals higher in dispositional mindfulness did not perceive less threat to relatedness from the Cyberball experience, relative to participants who reported a lower level of dispositional mindfulness. This suggests that the threat of rejection and exclusion is strong and immediate from Cyberball and, as has been found in previous research (Hartgerink et al., 2015), a trait level individual difference such as dispositional mindfulness is not sufficient to protect against the immediate emotional pain and negative feelings that can emerge from feeling rejected and excluded.

In support of SDT (Ryan & Deci, 2000, 2017; Skinner et al., 1998, 2005; Vansteenkiste, & Ryan, 2013), and consistent with previous research (Stillman et al., 2009; Troop-Gordon et. al., 2015; Zimmer-Gembeck, 2016), the detrimental reports of mood and feelings towards others following a threat to the need for relatedness was

pervasive in the current study. In general, there were quite negative reactions to Cyberball across all participants, although the results showed that participants who appraised the task as more threatening reported less positive and more negative mood, more anger, less friendliness and more unfriendliness towards others, and lower self-esteem and meaningful existence compared to the participants who perceived less threat. Overall, the negative impact of a heightened threat appraisal on feelings about the self and others is clear. In line with SDT and consistent with previous research, the underlying threat to the need for relatedness likely underpins the negative feelings about self and others reported by participants (Williams & Nida, 2011).

Beyond investigating the impact of perceived threat to relatedness on responses and reactivity to induced social rejection, our primary study aim was to examine the role of dispositional mindfulness. In particular, it was expected that mindfulness would dampen emotional reactions and speed recovery from social rejection. Partially supporting this hypothesis, dispositional mindfulness was found to be beneficial for one reaction post-Cyberball (relative to pre-Cyberball); participants who reported higher dispositional mindfulness also reported more friendliness on the post-game measure. Further, interactions between mindfulness and relatedness threat revealed additional impact of mindfulness. In both cases, there was *less* reactivity (i.e., less decline in positive mood and friendliness) among individuals who were both high in mindfulness and low in perceived threat. It appears here it is the combination of mindfulness and low perceived threat that is of most benefit for positivity immediately following social rejection. Given that mindfulness and threat appraisal were not significantly related in this study, future research might work to isolate what can account for low perception of threat apart from mindfulness. One possibility is rejection sensitivity. Some cross-sectional survey research has examined rejection sensitivity, finding that it is negatively associated with most subscales of the Five Facet Mindfulness Questionnaire (Hafner,

Pepping, & Wertheim, 2019; Peters, Eisenlohr-Moul, & Smart, 2016) and that mindfulness protects against the negative impact of rejection sensitivity on negative affect (Peters et al., 2016).

Theory and research evidence suggest individuals higher in dispositional mindfulness would not only report less negative reactivity to stress, but also should show better recovery after a stressful event due to enhanced self- or emotion-regulation (Brown et al., 2007; Hafner et al., 2019; Hambour et al., 2018; Lucas-Thompson et al., 2019; Molet et al., 2013; Skinner & Zimmer-Gembeck, 2016). In other words, individuals higher in dispositional mindfulness should recover more quickly from their immediate negative responses to the Cyberball game before and after controlling for threat appraisal (Hypothesis 2). In partial support of this hypothesis, dispositional mindfulness was associated with better recovery from negative mood and reported more meaning in life when measured 3min after Cyberball and analyzed relative to measures taken post-Cyberball. This finding was consistent with a previous Cyberball study where participants who completed an experimental mindfulness induction prior to playing the game showed improved recovery (Molet et al., 2013). However, there was no support for mindfulness as a buffer against the negative impact of greater threat appraisal, given that there were no significant dispositional mindfulness  $\times$  threat to relatedness interactions. Thus, mindfulness was promotive of recovery but not protective against negative reactions to the threat of rejection and exclusion.

Only a subset of measures designed to assess reactivity and recovery from social rejection were associated with mindfulness. It is unclear why these findings were intermittent rather than consistent. One potential explanation is the age of participants in the current study. Social rejection may be particularly difficult to adjust to in the age group included here, making it difficult for mindfulness to be consistently promotive of less negative responses and better recovery. Research has found that Cyberball

negatively affects adolescents and emerging adults' more than it does young adults (Pharo, Gross, Richardson, & Hayne, 2011). This has been considered as an indication of the greater social affiliation behaviors found among many adolescents and emerging adults, and a reflection of the increased importance of, and sensitivity to, stress in social relationships at this time of life (Romeo, 2013; Somerville, 2013; Zimmer-Gembeck, 2016). Despite this, however, we did control for threat appraisal, making it unlikely that heightened salience of social rejection accounts for the current findings.

Another possible explanation is the advanced cognitive and emotional regulation capacities needed for enacting mindfulness-related coping actions quickly and competently. Such advanced skills may not be developed and/or easily accessible to teenagers, perhaps especially when they are overwhelmed with the "hot" negative feelings that come with social rejection (Reyna & Farley, 2006). In a review on the development of coping skills and emotion regulation capacity, skills in using advanced cognitive coping skills were still developing into the early 20s (Skinner & Zimmer-Gembeck, 2016). Theories and studies of brain development (Casey, Heller, Gee, & Cohen, 2019) and other research and reviews (Cohen et al., 2016; Rudolph et al., 2017; Zarrett & Eccles, 2006) support this same conclusion showing that advances in cognitive and emotional development may still continue into the early 20s or beyond. Mindfulness has been described as a metacognitive skill, and metacognition is not believed to be fully formed until at least the second decade of life (i.e., until the late teens or early 20's; Bishop et al., 2004; Friedel et al., 2015; Kuhn, 2000). Also, just like risk perceptions and decision-making, events that bring about intense emotions may interfere with regulatory abilities, like mindfulness and emotion regulation (Reyna & Farley, 2006). It is likely these advanced abilities, and the capacity to enact these skills in stressful situations, develops throughout adolescence and into emerging adulthood when young people become more self-reliant and gain a greater understanding of

emotion and the control/regulation of emotions, and their coping strategies become more self-generated, sophisticated and differentiated (Ciesla et al., 2012; Davidson & Kaszniak, 2015; Trowbridge & Lawson, 2016; Zimmer-Gembeck & Skinner, 2011).

Despite some promising findings that mindfulness is a resource for maintaining more positivity and better recovery from social rejection, two limitations of the present study should be acknowledged. First, the participants were university students and included more young women than young men, so the generalizability of findings may be limited. Second, any type of social acknowledgement after playing Cyberball has been found to decrease the sting of the experience (Rudert, Hales, Greifeneder, & Williams, 2017). Although researchers were informed and trained to minimize personal interactions during the task, a confederate did enter the room and talk with each participant to administer the 3-minute recovery survey.

In conclusion, a key finding was that dispositional mindfulness promotes more positive emotions and views of others, and it seems to reduce negative reactions and promote better recovery of positivity following social rejection. Also, appraisal of threat from the experience of social rejection has strong associations with mood, feelings about others, self-esteem and feelings of meaning in life. Yet, a combination of high dispositional mindfulness and low appraisal of threat from rejection was associated with additional mitigation of negative reactions to social rejection. It would be productive for future research to expand this study to consider factors that can explain variation in the perception of the threat from rejection, given that it was not associated with mindfulness in this study. Individual characteristics or responses to stress, such as rejection sensitivity or social anxiety could be risk factors (Gardner & Zimmer-Gembeck, 2018; Rudolph & Zimmer-Gembeck, 2014). It might also be worthwhile considering attributions for the cause of rejection, given that evidence shows that blaming others

when excluded or rejected can maintain more positive feelings, both generally and specifically with regards to the self (Bourgeois & Leary, 2001).

### Summary of Chapter 7

Study 2 (Chapter 7) addressed the second aim of the research in this thesis (see Chapter 1 and Chapter 5). That is, Self-Determination Theory (Ryan & Deci, 2000, 2017) and mindfulness theory and research (Baer et al., 2006; Brown & Ryan, 2003; Clear et al., 2020; Kabat-Zinn, 1994) were drawn upon to examine whether dispositional mindfulness provides benefits to well-being after the experience of social rejection and exclusion in the Cyberball task. The benefits of interest from dispositional mindfulness included reduced appraisal of relatedness threat (measured as perceived rejection and exclusion during Cyberball), less emotional and social reactivity to the Cyberball task, and quicker or better recovery of mood, friendliness, self-worth and meaning in life. Participants completed a measure of dispositional mindfulness and about 1-week later completed an induced social rejection task (Cyberball) in the laboratory. Youth reported on their mood, social feelings and meaning in life immediately following the stressor (their *reactivity*) and again 3min minutes later as a measure of *recovery*.

Unexpectedly, results indicated that dispositional mindfulness, the total score and each subscale, was not correlated with threat appraisal, but was associated with more positivity before Cyberball. In multivariate models, mindfulness was independently associated with better recovery of mood, feelings of friendliness and meaning, and threat appraisal was associated with more negative reactivity across all measures. The combination of dispositional mindfulness and threat appraisal was also linked to reactivity; youth high in mindfulness and low in perceived threat were less negatively impacted, showing less decline in positive mood and friendliness from pre- to post-Cyberball.

Overall, dispositional mindfulness is a resource for presenting with more positive emotions and friendly feelings towards others and can aid greater recovery from social rejection even after only 3 minutes. Also, the combination of high dispositional mindfulness and low appraisal of threat to relatedness is an aid to positivity in the face of rejection and exclusion. Given that the experience of social rejection had such a powerful effect on mood, feelings about others, self-esteem and meaning in life, finding beneficial resources for managing rejection, such as mindfulness, continues to be important for identifying how to assist youth as they develop and work to maintain important social relationships in their lives.



## CHAPTER 8

### General Discussion

The overarching purpose of the current thesis was to investigate the possible beneficial role of dispositional mindfulness in the lives of adolescents and young adults. The potential benefits included less experience of peer victimisation and exclusion, less appraised threat to relatedness from social rejection, fewer internalising symptoms (i.e., loneliness, social anxiety, and depressive symptoms), less negative emotional and social reactions to social rejection, and buffering against the impact of peer victimisation and exclusion on internalising symptoms. In addition, the specific role dispositional mindfulness played in young adults' responses to peer victimisation and exclusion and if benefits were seen in reactivity or recovery from social rejection were also a major focus of this thesis.

Chapter 1 provided an overview of the rationale for the current thesis, including an introduction to dispositional mindfulness theory and research, and links to emotional and social well-being in adolescence. Following this overview, Chapters 2, 3, 4, and 5 offered a general background for the two studies in Chapters 6 and 7. The measurement of mindfulness and the five facets of mindfulness were described in Chapter 2. Chapter 3 covered dispositional mindfulness and associations with emotional adjustment and responses to stress among adults and adolescents. Chapter 3 also described dispositional mindfulness and evidence supporting it as a natural tool to assist adolescents to manage and regulate their responses to interpersonal stress and to curb internalising symptoms such as loneliness, social anxiety, and depression. In addition, Chapter 3 described the theoretical foundation underlying this research, such as Self-Determination Theory (Ryan & Deci, 2000, 2017), while also describing evidence of the importance of supportive and positive peer relationships in adolescence and young adulthood, and how peer victimisation and exclusion can contribute to internalising symptoms. Chapter 4

described the negative consequences of social rejection including reactivity and recovery from the threat to the need for relatedness that occurs following social rejection, and how dispositional mindfulness can contribute to effective regulation and reduction of social rejection distress. Chapter 5 drew together theory and research to present an overview of the current studies and thesis.

Chapters 6 and 7 contained the two empirical studies. Chapter 6 (Study 1) drew upon a unique sample of 361 Australian adolescents, aged 11-18 years, recruited from a large independent public high school. In Chapter 7 (Study 2), the participants were 90 adolescents and young adults, aged 16-23 years, recruited at a large urban university. Chapter 6 (Study 1) focused on testing associations of dispositional mindfulness and peer victimisation and exclusion with internalising symptoms of loneliness, social anxiety, and depression. A primary aim was to examine whether dispositional mindfulness buffered (i.e., moderated) the negative effect that the experience of peer victimisation and exclusion has on internalising symptoms (i.e., loneliness, social anxiety, and depression). Chapter 7 (Study 2) continued this focus with a laboratory study that involved measuring dispositional mindfulness in a large number of students and then selecting those with a range of scores to participate in a simulated experience of social rejection about one week later. This study was designed to test whether individuals higher in dispositional mindfulness would appraise less threat from social rejection, but a more noteworthy aspect of the study was testing whether individuals higher in dispositional mindfulness would react less negatively and recover more quickly from social rejection before and after controlling for the level of threat they perceived (i.e., their appraised threat to relatedness). This was accomplished by participants attending the research laboratory at the university and engaging in a simulated experience of peer social rejection via an online ball tossing game called Cyberball.

## General Conclusions

In addition to the conclusions from each study described in Chapters 6 and 7, three general conclusions can be drawn from the common findings across the two studies within this thesis. The first general conclusion concerns adolescents' and young adults' capacity for dispositional mindfulness and associations with emotional and social adjustment. The second general conclusion concerns the specific role of dispositional mindfulness in buffering against or interfering with negative appraisals and negative outcomes from the stress of social rejection. Lastly, the third general conclusion concerns the internalising symptoms and negative mood (as well as impact on feelings towards others and life meaning) that was associated with peer victimisation and exclusion and the appraisal of a high level of threat from the experience of social rejection.

**General conclusion 1: Adolescents and young adults who report more dispositional mindfulness report better adjustment.** Although both studies in this thesis were correlational, results suggest that dispositional mindfulness could be a positive individual resource adolescents can draw on to avoid excessive symptoms of social anxiety and depression. Moreover, in addition to finding better emotional health among adolescents higher in dispositional mindfulness, this finding also extends to social health; adolescents higher in mindfulness reported fewer symptoms of loneliness. This provides some evidence that mindfulness may facilitate better friendships or, at least, adolescents higher in mindfulness experience the relationships that they do have as more fulfilling, emotionally and socially. Further, Study 1 adolescents who reported higher dispositional mindfulness also reported fewer symptoms of social anxiety, depression, and loneliness, even after two factors known to be associated with symptoms were adjusted – gender (girls often report more symptoms; Boyd, Kostanski, Gullone, Ollendick, & Shek, 2000; Nolen-Hoeksema & Girgus, 1994) and peer

victimisation and exclusion (adolescents who experience peer victimisation and exclusion often report more symptoms; Gini et al., 2018; Hawker & Boulton, 2000; Moore et al., 2017; Reijntjes et al., 2010). The findings from this thesis are consistent with a small number of published intervention studies, reviews, and a meta-analysis that have examined the benefits of mindfulness training among adolescents (e.g., Biegel, Brown, Shapiro, & Schubert, 2009; Burke, 2010; Ciarrochi et al., 2011; Dunning et al., 2019; Miller, Wyman, Huppert, Glassman, & Rathus, 2000; Schonert-Reichl & Lawlor, 2010; Singh et al., 2007; Tan, 2016; Zack, Saekow, Kelly, & Radke, 2014). These studies find that mindfulness training is associated with reduced depression, stress and anxiety, and increases in self-esteem, well-being, and social competence and behaviour.

Given that the studies conducted here were correlational, it remains possible that those with better mood or fewer symptoms of anxiety or depression might have a better capacity for, or tend to report more, dispositional mindfulness. However, most research in the field of dispositional mindfulness has considered associations with symptoms and relationships to be unidirectional, whereby dispositional mindfulness is expected to be a foundation or a precursor facilitating fewer symptoms, greater well-being, and better relationships (Ciarrochi et al., 2011; Pratscher et al., 2018; Tan & Martin, 2016). The potential for bidirectional associations between these constructs should be highlighted, nonetheless. Transactional models of psychopathology (Leve & Cicchetti, 2016; Masten & Cicchetti, 2010) state that the relationship between risk and resilience factors and the development of psychopathology may be dynamic and reciprocal. There has, however, been a striking lack of research exploring bidirectional relationships between dispositional mindfulness and symptoms of psychopathology and social competence or relationship development. Only one such study could be found which supported the use of the transactional model, testing bidirectional relationships between mindfulness and psychopathology (Gomez-Odrizola & Calvete, 2020). In this longitudinal three wave

study of 855 adolescents (the short form Five Factor Mindfulness Questionnaire-Adolescent; Cortazar, Calvete, Fernandez-Gonzalez, & Orue, 2019, was used to measure dispositional mindfulness and time points were separated by 6 months), depressive symptoms predicted a decline in mindful describing, non-reacting, and non-judging, and mindful acting with awareness predicted a decline in depressive symptoms (Gomez-Odrizola & Calvete, 2020). Results were consistent for high and low depression groups. This study also highlights the importance of using multi-facet measures of mindfulness when investigating transactional relationships, as some facets were found to be more important than others depending on the direction of the relationship between mindfulness and the risk or resilience factor being investigated.

Further evidence that the association between mindfulness and symptoms is bidirectional comes from mindfulness intervention research. For example, one study investigated the difference in treatment outcomes for 71 patients diagnosed with an anxiety disorder and co-occurring depression symptoms (Arch & Ayes, 2013). Patients were randomised into two groups, a mindfulness-based stress reduction treatment and a cognitive behaviour therapy treatment. At 3-month follow-up, mindfulness-based stress reduction outperformed cognitive behaviour therapy in patients with moderate to severe depressive symptoms and average anxiety sensitivity. It appeared mindfulness-based stress reduction treatment had a better outcome than cognitive behaviour therapy for patients with co-occurring anxiety and depression symptoms. This could be interpreted to suggest that patients with a particular level or combination of symptoms have an increased ability to engage in and maintain mindfulness practices, ultimately leading to an improved outcome of reduced symptoms. Overall, it appears there is new emerging evidence for a bi-directional relationship, where dispositional mindfulness or mindfulness training could lead to better well-being over time, with better well-being then allowing one to become more mindful over time.

Exactly how mindfulness and mindfulness-based interventions help with better well-being, or the mechanism of action by which mindfulness is associated with fewer symptoms of mental health, has attracted much research attention (e.g., Gu et al., 2015). For example, self-esteem, psychological need satisfaction, compassion for self and others, attentional processes, and rumination have been argued as possible mediators in these associations (Brown et al., 2007; Chang et al., 2018; Ciesla et al., 2012). One mediator, self-esteem, seems particularly relevant in the context of this thesis, considering the role it plays in the perception of others' behaviour (e.g., perception of peer victimisation and exclusion). Self-esteem has been proposed as a mechanism by which mindfulness may change emotional, behavioural, and cognitive responses to stimuli (Paul et al., 2013; Rasmussen & Pidgeon, 2011). It has been suggested that when the self is under threat by others, mindfulness, along with self-esteem as a mediator, may ease self-identification with the threat thereby avoiding an ego driven negative response and making it less likely to experience distress when excluded (Brown et al., 2008). In a commentary on "quiet ego" functioning, Hepner and Kernis (2007) theorised that, when an individual has high self-esteem that is secure rather than fragile, there is low ego involvement, and an individual is less likely to perceive the ambiguous behaviour of others as having a hostile intent. This is only one example of the many proposed mediation models that deserve attention when investigating how mindfulness is associated with fewer symptoms of mental health and better relationships. In contrast, the mechanism of action by which lower symptoms of mental health or better relationships might produce more mindfulness has received minimal research attention. Understanding bi-directional relationships is a start, however the next generation of research could also expand this to identify mediators and their role in these transactional models. For example, perhaps mindfulness boosts self-esteem, empathy and compassion, changes attentional processes, and reduces rumination, which

then leads to lower internalising symptoms; conversely, alleviating some symptoms (through cognitive behavioural therapy or mindfulness-based interventions, for example) may disrupt rumination and increase self-compassion, thus opening up personal space to be more mindful.

**General conclusion 2: Dispositional mindfulness does not seem to protect youth from the negative impact of peer victimisation and exclusion or social rejection, however there is some promise that mindfulness may aid recovery from a single episode of rejection.** Results from this thesis were consistent across Chapter 6 (Study 1) and Chapter 7 (Study 2) that dispositional mindfulness did not protect or buffer against negativity associated with the stress of peer victimisation and exclusion (internalising symptoms and loneliness in Study 1) or social rejection (mood, feelings for others, and life meaning in Study 2). When interpreting these findings, it was important to consider that the type of social rejection measured in Chapter 6 (Study 1) was different from the type experienced in Chapter 7 (Study 2). Chapter 6 (Study 1) asked about the frequency of personal experience of a range of problems with known peers; probably repeated and chronic; also, self-perceived (similar to threat appraisal in Chapter 7); and including physical and relational victimisation and exclusion. In contrast, Chapter 7 (Study 2) was a single event of social exclusion with “unknown peers” in an online context. Interestingly, in Chapter 6 (Study 1) peer victimisation and exclusion had a stronger association with symptoms of social anxiety, depression, and loneliness when mindfulness was high relative to when it was medium or low. This finding was the opposite to what was expected and suggests that mindfulness may actually be a risk for mental health problems when adolescents experience peer victimisation and exclusion. Mindfulness is characterised by a receptive state of mind where a young person is aware of, and sensitive to, what is going on around them in the present moment, as opposed to a non-mindful state where experiences are filtered or

manipulated through cognitive appraisals, evaluations, past experiences, and beliefs (Brown, Ryan, Creswell, & Niemiec, 2008). When the self is under repeated threat by others, it is possible that being mindful leaves a young person exposed and unable to protect themselves from the threatening experience of peer victimisation and exclusion. This lowered protection consequently provokes psychological distress, rather than being somewhat protected by our ability to filter the experience of peer victimisation and exclusion and cognitively change its meaning to be less damaging to the self (Brown et al., 2008). In further support of this, findings from Chapter 7 (Study 2) indicated that dispositional mindfulness was not correlated with threat appraisal. This suggests that the processes of dispositional mindfulness and threat appraisal operate separately and independently, and perhaps social threat is more potent than dispositional mindfulness's protective capacity.

Despite these findings that mindfulness does not independently buffer the reaction to peer victimisation and exclusion and resulting psychological symptoms, there is still promise for the role of mindfulness in threatening social situations such as social rejection. Findings from Chapter 7 (Study 2) suggest that there is some potential or promise in the proposed recovery hypothesis, where adolescents and young adults with greater potential for dispositional mindfulness would recover more efficiently from the problematic negative symptoms following experiences of peer problems and rejection. Regarding the recovery hypothesis, evidence from Chapter 7 (Study 2) for the greater recovery from negative mood, friendliness, and of a sense of meaningful existence among those higher in dispositional mindfulness indicates some potential for additional investigation. Considering the different types of social rejection measured in Chapter 6 (Study 1) and experienced in Chapter 7 (Study 2), it is possible mindfulness is more helpful for recovery from isolated exclusion events with strangers where individuals possibly can avoid contact with these strangers in the future. However, it



seems less helpful or even a risk when peer victimisation and exclusion is chronic or repeated and difficult to avoid in the future.

Overall, mindfulness was not advantageous for reducing reactivity, however there was some evidence for recovery, suggesting that mindfulness may operate indirectly through the enhancement of self-regulated functioning that comes with ongoing attention and sensitivity to internal and external cues (Brown et al., 2007). In this view, individuals high in dispositional mindfulness would show improved recovery after a socially stressful event, because dispositional mindfulness would prevent participants from reliving the stressful experience through rumination. Much of the available literature on mindfulness intervention research among adolescents focuses on improving symptoms of depression, a condition partly characterised by rumination on past events (e.g., Paul et al., 2013; Royuela-Colomer & Calvete, 2016). There is some evidence to suggest mindfulness interventions are particularly effective for treating depression, and more effective for treating anxiety when there are some co-occurring depression symptoms, rather than anxiety alone (Brown et al., 2008). This suggests there is something unique about the relationship between mindfulness and depression. A reduction in rumination has been suggested as a prominent mechanism through which mindfulness may have a positive impact on symptoms of depression. For example, in a study investigating the effect of dispositional mindfulness on general stress among adolescents, results suggested rumination mediated the association between dispositional mindfulness and general stress, where low rumination was the mechanism through which high mindfulness was connected to lower general stress (Cielsa et al., 2012). Chapter 7 (Study 2) provides preliminary evidence that higher dispositional mindfulness is associated with a greater recovery from negative mood, friendliness, and of a sense of meaningful existence following experience of social exclusion, and

indicates some potential for additional investigation in to the role of rumination as a mechanism of action in this recovery process.

**General conclusion 3: Social threat and rejection have pervasive negative effects.** Chapters 6 and 7 (Studies 1 and 2) demonstrate that when adolescents or young adults report more experience of peer victimisation and exclusion they report poorer social-emotional functioning and, even in the lab with just a single experience of exclusion from a ball tossing game, mood, feelings about others, self-esteem and meaning in life were negatively affected. Such findings add to the longstanding view that there are detrimental effects of rejection and, conversely, benefits of belonging. Peer group inclusion, close relationships, and support from peers are important for adolescent and young adult well-being and development, including being associated with better physical and psychological health (Deci & Ryan, 2000; Scholte & van Aken, 2006; Skinner et al., 1998; van Petegem et al., 2018; Vansteenkiste, & Ryan, 2013; ). In some widely cited theories (Baumeister & Leary, 1995; Ryan & Deci, 2000), feeling socially connected fulfils a basic psychological human need to be related to others and to belong to social groups and relationships. In particular, Self-Determination Theory (Ryan & Deci, 2000) identifies the need for relatedness, expanding on this to identify the social-contextual conditions that meet or thwart the fulfillment of the needs for relatedness, as well as two other basic psychological needs of autonomy and competence. Relatedness, in Self-Determination Theory, is the need to belong and be valued by others and, as discussed in this thesis, social rejection is a powerful signal of need threat that can be distressing and psychologically damaging (Deci & Ryan, 2000; Vansteenkiste & Ryan, 2013; Zimmer-Gembeck, Van Petegem et al., 2016). Moreover, the three Self-Determination Theory needs of relatedness, autonomy, and competence can be seen as interconnected, working together for the goal of developing a well-adjusted healthy individual identity that is engaged in many levels of society. Although

these are often described as separate needs, the fulfillment or thwarting of one can assist with the fulfillment or thwarting of others. For example, a lack of fulfillment of the need for relatedness can make one feel restricted in their choices (lacking autonomy) and incompetent not just in their social life, but also in domains that depend on social relationships (e.g., work and educational opportunities). This spill over and connection between needs means that a lack of fulfillment of the need for relatedness can have far-reaching negative impacts on other domains and contexts.

In addition to the description of relatedness as a core psychological need in Self-Determination Theory (Ryan & Deci, 2000), the need to belong has also been described as a fundamental human desire. The belongingness hypothesis (Baumeister & Leary, 1995) states that humans have a strong and inherent drive to form and maintain interpersonal relationships that provide them with positive connections and support. Much of our daily human behaviour is thought to be founded in this strong enduring desire to belong to groups, and to interact with and relate to others – basically, to form close relationships. The belongingness hypothesis is a motivational theory, and similar to Self-Determination Theory, connections to others function to protect the social self by motivating development and change. While the threat to belongingness and relatedness are adverse and cause some significant distress in the immediate short term, they potentially function to protect or motivate the individual in the long term. In other words, the distress and initial negative outcomes from feelings of a lack of relatedness or belongingness may actually be adaptive. For example, need threat may be uncomfortable, but it may also motivate action – such as ending unhealthy relationships marked by rejection and victimisation, in the pursuit of more healthy relationships that foster the development of relatedness, autonomy, and competence. As previously mentioned, dispositional mindfulness is characterised by a receptive state of mind involving awareness and sensitivity to the present moment. This mindful ability may aid

relationship formation and development through more accurate perceptions of repeated threat or social rejection or less anxiety about being rejected by known peers (Brown, Ryan, Creswell, & Niemiec, 2008). To date, the results have been mixed. As anticipated in Brown et al. (2008), dispositional mindfulness has been associated with less anxiety about rejection and negative affect in research (Peters et al., 2015). However, other recent research findings suggest that dispositional mindfulness may be protective against rejection sensitivity via the mechanism of improved emotion regulation (Hafner, Pepping, & Wertheim, 2019). In addition, dispositional mindfulness has been found to regulate rejection fears and facilitate more constructive behaviours in relationships (Dixon & Overall, 2016).

Such views of the need for relatedness and the need to belong suggest that social rejection *should* result in negative feelings, so negative reactions and sensitivity to rejection may be normative. Instead of avoiding negative feelings from rejection, the goal would be to have options and resources that assist with good recovery when rejection occurs. Perhaps we can never or should not even try to help people to not feel bad when they are rejected as negative responses may be opportunities for growth and development. In summary, while the initial negative feelings of rejection are not pleasant, potentially the goal and our focus should not be to completely protect people from negative feelings about being rejected, but rather to help them recover more quickly, and support them to enact strategies such as mindfulness that would help them do this.

### **Implications for Future Research Directions**

The current thesis offers a few considerations for future research in this area. Firstly, future attempts at understanding how dispositional mindfulness operates among adolescents and young adults would benefit from carefully selecting the most appropriate mindfulness measure based on the aims of the research. The findings in this

thesis and recommendations from previous research recommend that a multi-faceted measure of mindfulness is the most comprehensive and most useful in multivariate studies (Pallozzi et al., 2017). However, the length of the questionnaire and fatigue of participants is an important consideration in the pursuit of accurate data, particularly with young participants (Abujaradeh et al., 2020). While the full version of the Five Facet Mindfulness Questionnaire (Baer et al., 2006) was used in this thesis, shorter versions have subsequently been created for adolescents that may yield more concise and accurate responses from participants in future research (e.g., Pallozzi et al., 2017). In addition, researchers are encouraged to be aware of the diversity and ensuing controversy around the definition and measurement of mindfulness (Abujaradeh et al., 2020; Grossman, 2011; Rickert et al., 2020; Warren et al., 2020). An awareness that the ‘Westernisation’ of mindfulness for use in research is convenient, but may not capture the real or traditional meaning or content of mindfulness, is important to keep in mind (Dreyfus, 2011; Grossman, 2011). This is particularly the case if the aims of the research are to inform mindfulness intervention, as a potential distortion of the meaning of mindfulness may negatively impact the development and integrity of mindfulness-based interventions.

Second, future research using multiple informants (e.g., parent or peer reports of mindfulness alongside mindful expression of behaviours) would add to our current knowledge significantly (Rickert et al., 2020; Warren, Wray-Lake, & Shubert, 2020). While using self-report measures has been the most common approach to research on mindfulness, there has been some suggestion that they may not accurately capture mindfulness in action or capture the behaviours that are assumed to occur when one is “mindful” (Grossman, 2011; Keating et al., 2004). In other words, individuals’ experiences of their own mindfulness may differ from their expression or behavioural displays of mindfulness. For example, a new study by Rickert et al., (2020) used trained

observer and student reports to measure teachers' mindful behaviours. While there was some variability, in general, they found that students' and trained observers' perceptions of teachers' expressions of mindfulness (measured by assessing dimensions of calm, clear, kind, reactive, distracted, and critical behaviour) aligned to an extent to teachers own perceptions of their mindfulness. This study provided preliminary support that multi-informant measures combining observations and self-report may be beneficial to consider in further developing the ability to accurately measure mindfulness, but that there is some covariation between multiple reporters. Another concern regarding self-report is the capacity to fully understand the complex items included on many measures of mindfulness. Developmentally, adolescents may lack the capacity for self-reflection required to accurately understand and answer self-report items, providing further evidence for the need to use multiple informants when collecting data.

Third, longitudinal research to examine mindfulness as both an antecedent and a consequence of internalising symptoms, social experiences or other factors would enhance our understanding of the unfolding cascades of mindfulness and other aspects of human functioning or well-being. For example, to extend on the findings in Chapter 6 (Study 1) future research could examine if the experience of peer victimisation and exclusion would impact on later mindfulness and if mindfulness would impact on later peer victimisation and exclusion and symptoms. The experience of high peer victimisation and exclusion could redirect a young person's attention from the present moment to thoughts or rumination about peer victimisation and exclusion and worry about future victimisation and exclusion events; over time this effect could shift youth from traits of high mindfulness to being less mindful. The investigation of the prominent detrimental effect of peer victimisation and exclusion on the well-being of adolescents high in dispositional mindfulness could benefit from future longitudinal research to test such possibilities.

Fourth, studies investigating peer victimisation and exclusion in the form of a single occurrence of social exclusion, as seen in Cyberball research, could benefit from controlling for personal history of peer victimisation and exclusion. For example, Chapter 7 (Study 2) did not control for personal history of personal victimisation and exclusion, however individuals with more victimisation and exclusion history including repeated and chronic negative experiences could have felt more rejection/ostracism during Cyberball than individuals without peer victimisation and exclusion history. One study was located that supported this notion, finding that victims with a history of bullying had more pronounced responses to a single episode of social exclusion in Cyberball than students who had not been involved in bullying problems in the past (Ruggieri, Bendixen, Gabriel, & Alsaker, 2013). This study measured a history of physical and relational bullying combined, however, as Cyberball is a relational experience it would be interesting to examine if these results would be different if the measure of history was relational bullying experiences only. Perhaps history of victimisation and exclusion and threat appraisal in Chapter 7 (Study 2) would have correlated positively. Considering the type of peer victimisation and exclusion and history and how they might account for subsequent sensitivity to experiences of victimisation and exclusion would be worthwhile in future research.

Fifth, future research examining developmental changes in the association between dispositional mindfulness and peer victimisation and exclusion or social rejection with increasing age may benefit from extending on the current research to include a wider variation of age groups. Social rejection and peer victimisation and exclusion are distressing at any age, but there is evidence they could be even more harmful for social emotional development during adolescence and young adulthood (Sommerville, 2013). Expanding the age range of Chapter 7 (Study 2) to older participants (i.e., adults) could potentially lead to findings supporting the buffering

hypothesis, where mindfulness may have a buffering effect when individuals are facing peer victimisation and exclusion or social rejection. As adolescents and young adults mature and their meta-cognitive abilities and coping strategies become more differentiated and flexible, it is possible a buffering effect of mindfulness may emerge. Such a developmental question deserves future research attention. As previously discussed, the ability to answer self-report questionnaires and understand mindfulness content may also improve with age and lead to different findings.

Finally, it was assumed that mindfulness is a naturally varying dispositional resource in the present studies and there were no attempts to improve mindfulness in either study. Mindfulness is teachable, but some also argue that this ability depends on constant practice (Carmody & Baer, 2008). Training in mindfulness has shown promise as an intervention to improve the well-being of children and adolescents, and these findings have been summarised in at least two meta-analyses (Dunning et al., 2019; Zoogman et al., 2014). Yet, there is much to understand regarding how best to design and implement programs. For example, a recent systematic review by Emerson et al. (2020) has raised a number of concerns about the implementation of mindfulness interventions and programs in schools. These include a problematic wide dissemination of varying interventions and programs in recent years without full regard for evidence of their efficacy. Moreover, intervention implementation may not always be of the highest quality, raising concerns about intervention integrity (i.e., inclusion of core mindfulness practices), fidelity, and teacher training and competence across identified school-based studies. In addition, many studies in the review lacked a detailed description of the mindfulness-based intervention delivered due to the inability to report on content in manuals without training or purchasing materials. Emerson et al. (2020) described a conflict between science and commercialisation, leading to a lack of transparency in some papers, and subsequent costs for scientific veracity. This leaves



concerns for the potential inappropriate commercialisation of mindfulness for financial gain, at the expense of integrity for the construct. Mindfulness intervention has become very popular, so some have argued it is at risk of being viewed as a fad or losing its core components and original foundations (Dreyfus, 2011; Grossman, 2011). However, there is enough promise in the approach that future research investigating mindfulness training or intervention should continue in order to better understand whether mindfulness is a low-cost, efficient, feasible, and acceptable way to promote better well-being and social relationships in children, adolescents and young adults.

### **Applied Implications: Supporting Adolescents and Young Adults**

Findings from the current thesis can be applied to consider approaches used by professionals working with adolescents and young adults across a variety of settings including in schools, the community, and individualised clinical work. Although the findings of the studies conducted here are correlational, when considered alongside other research (e.g., Baer, 2003; Biegel et al., 2009; Burke, 2010; Ciarrochi et al., 2011; Dunning et al., 2019; Miller et al., 2000; Pratscher et al., 2018; Schonert-Reichl & Lawlor, 2010; Singh et al., 2007; Tan & Martin, 2016; Zack et al., 2014), they suggest that improving mindfulness can improve emotional adjustment and, perhaps, reduce feelings of loneliness (or potentially improve social relationships). However, those working with young people should be aware that mindfulness interventions are probably not a one size fits all approach, and, in fact, could potentially be harmful to some young people. In particular, practitioners implementing such programs should be fully aware of the social circumstances and coping skills of their participants, as intervening to improve mindfulness may not be fully beneficial without additional attention to social adversity and other individual skills and competencies. For example, based on the findings of this thesis, individuals who have experienced a high amount or had experience more chronic peer victimisation and exclusion may find practicing

mindfulness, which involves awareness and attention to the present moment, brings with it more distress. While mindfulness-based programs have good intentions, for young people with experiences of victimisation or social rejection, these interventions could, in fact, not be sufficient and may not reduce social anxiety, depression, and loneliness. Interventions with groups or individuals who may have experienced or are experiencing social adversity might be more successful if they focus on addressing social difficulties before attempting mindfulness-based interventions. It also points to the need for future research that can uncover the circumstances that explain exactly why, and especially when, mindfulness is of benefit to adolescents' and young adults' well-being.

As clinicians' ethical considerations are important to consider with any intervention, given that young people attend with many vulnerabilities. Harm in clinical practice has been defined as "a sustained deterioration that is caused directly by the psychological intervention" (p. 2) (Duggan, Parry, McMurran, Davidson, & Dennis, 2014). Deterioration includes worsening of symptoms or the onset of a new problem (Dimidjian & Hollon, 2010). Overall, the wide reaching benefits of mindfulness interventions are documented in the literature, however the potential of harmful outcomes of mindfulness interventions, particularly in vulnerable populations, has been raised but has been under-researched (Baer, Crane, Miller, & Kuyken, 2019; Burrows, 2016). A more focused approach on ethical implications may be warranted depending on the target population of the intervention. For example, is the program a universal mindfulness training for well-adjusted youth based in a supportive school environment? Or is the target population youth who are struggling and at high risk for mental health concerns and alienation from support systems? As outlined above, mindfulness interventions are not a one size fits all approach, and care would be needed if considering a mindfulness intervention for young people under particular social

emotional stressors.

Once a decision has been made that a mindfulness-based approach is a good fit for the target population, the following recommendations are presented for consideration to minimise or mitigate the risk of harm by the intervention. Baer et al., (2019) suggest that potential harm may be categorised as relating to participant, program, and clinician/teacher factors. First regarding participant factors, a comprehensive intake interview to gather relevant personal information including history of trauma, peer victimisation and exclusion, and psychiatric history is important (Lindahl, Fisher, Cooper, Rosen, & Britton, 2017). Exclusion criteria including severe depression, severe social anxiety, recent bereavement, and PTSD have been recommended for mindfulness interventions (Kuyken, Crane, & Williams, 2012) due to adverse risks such as panic, anxiety, and reexperiencing of trauma (Burrows, 2016). Subsequent monitoring of individual data throughout the intervention would aid in detecting and understanding emerging harm and benefits. In addition, psychoeducation information sessions, including examples of potential experiences that might arise when practicing mindfulness for young people, may help participants anticipate and prepare for likely challenges and know how to seek help if they experience distressing symptoms.

Secondly, program factors including considering the intensity of the mindful practice, while gradually building mindfulness skills and complexity seems a good approach for concurrently managing young people's well-being. It has been suggested that youth will engage in most activities that adults in positions of authority prescribe, whether they are efficacious or not (Shute, 2019), therefore gradual building and ongoing monitoring will assist the clinician monitor efficacy and well-being, ultimately increasing the likelihood of doing no harm without relying directly on participant reports of harm. Finally, clinician/teacher factors that should be considered include their

level of competency and training, ability to build relationships, and ability to recognise unexpected and distressing symptoms in participants (Baer et al., 2019). Further, the clinician or teacher should be available for individual check ins before and after each session to debrief and help with unpleasant and difficult experiences, as well as celebrating success and pleasant experiences resulting from the mindfulness intervention.

An alternative approach to enhancing the mindful disposition in young people is through mindful parenting interventions. Mindful parenting approaches and research have been gaining momentum and evidence for their efficacy across a broad range of areas, including improving parent-child relationships, well-being, self-regulation, and behaviour problems (Duncan, Coatsworth, & Greenberg, 2009). In addition, research grounded in Self-Determination Theory (Deci & Ryan, 2000; Ryan & Deci, 2000) suggests that in a parent-child relationship, when needs for autonomy and relatedness are supported by the parent, this sets the foundation for the adolescent to establish positive and supportive peer relationships of their own (Inguglia, Ingoglia, Liga, Coco, Cricchio, 2015). Therefore, mindful parenting could support the need for relatedness through supporting the development of good peer relationships (Chang, Huang, & Lin, 2015). Furthermore, the results of this thesis highlight that there may be some challenges in supporting mindfulness directly with young people, therefore the approach of mindful parenting interventions may be beneficial especially where social circumstances might prevent the young person from directly engaging in a mindfulness intervention. For instance, young people with experiences of peer victimisation and exclusion, social rejection, or who exhibit clinical socioemotional problems, might benefit from changing parenting practices to align with mindful parenting, building a positive parent-child relationship, and supporting their need for relatedness as a foundation for positive youth development and more positive peer relationships.

## Conclusion

Dispositional mindfulness has been described as a naturally occurring capacity for sustained attention to thoughts, feelings and sensations in the present on a moment-by-moment basis, in a way that is characterised by curiosity, openness, non-judgement, and acceptance. In this thesis, dispositional mindfulness was found to be associated with better emotional well-being, but it was not protective (i.e., did not buffer) against the association of peer victimisation and exclusion with adolescents' elevated symptoms of loneliness, social anxiety, and depression. Further, dispositional mindfulness was a resource for presenting with more positive emotions and friendly feelings towards others prior to Cyberball and was associated with greater recovery from the negative mood following social exclusion during Cyberball. Threat appraisal was also considered (i.e., how rejected participants felt after Cyberball), finding that higher threat appraisal was associated with more negative reactions across all measures. Also, participants with high dispositional mindfulness and low appraisal of threat reported the most positivity following social exclusion. Yet, there remain many unanswered questions about how dispositional mindfulness, as well as training in mindfulness, can promote better social and emotional well-being in youth. Future research studies examining dispositional mindfulness and stress, particularly significant stressors known to be detrimental to mental and physical health such as victimisation and social exclusion (La Greca & Harrison, 2005; Lopez, & DuBois, 2005; Stillman et al., 2009; Troop-Gordon et al., 2015; Williams, 1997; Williams, 2001; Zimmer-Gembeck, 2016; Zimmer-Gembeck et al., 2016), under the frameworks of stress and coping theories and Self-Determination Theory could answer some of these questions. In particular, such research could provide an enhanced understanding of what it is about mindfulness that is beneficial and when it is beneficial to the social and emotional well-being of young people. Such research could also provide information important for guiding and enhancing current

mindfulness-based intervention approaches that are universal and targeted towards young people in school settings (see Emerson et al., 2020; Felver, Celis-do, Tezanos, & Singh, 2016; Zenner, Herrnleben-Kurz, & Walach, 2014 for reviews) or are selective and focus on young people experiencing symptoms of psychopathology or social adversity (see Dunning et al., 2019; Kallapiran, Koo, Kirubakaran, & Hancock, 2015 for reviews). Finally, there is potential for considering how mindful parenting can impact on youth mindfulness, well-being and social relationships, and whether mindfulness-based parenting interventions have direct benefits to young people experiencing social emotional problems. Mindful parent-child relationships could be crucial to supporting youth's need for relatedness, providing a foundation for young people to learn skills to form positive and long-lasting peer relationships outside the home, ultimately improving their socioemotional well-being.

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## APPENDIX A



### School of Psychology

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## PARENT INFORMATION SHEET – STUDY 1

### Identity Formation, Dispositional Mindfulness, and Functioning in Adolescents

#### RESEARCH TEAM:

##### Chief Investigators:

Prof Melanie Zimmer-Gembeck  
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[m.zimmer-gembeck@griffith.edu.au](mailto:m.zimmer-gembeck@griffith.edu.au)  
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Phone: 5678 8688

Sarah Clear  
School of Applied Psychology  
[s.clear@griffith.edu.au](mailto:s.clear@griffith.edu.au)  
Phone: 5678 8688

Dear Parent/Guardian,

Currently, a research project is being conducted to investigate youth 1) mindfulness, defined as being aware of present experience with acceptance and non-judgement (Kabat-Zinn, 1994), and 2) their conception of who they are (their "identity formation"). The aim is to examine how mindfulness and identity formation are associated with youths' emotions, coping with stress, well-being and academic success. We will also be focused on what helps young people to manage the task of figuring out who they are, and what helpful strategies young people engage in that encourage adaptation and resilience to reduce the problems related to stressors like peer exclusion and making educational and vocational choices. Your child's school principal and teacher have also endorsed this research.

#### What your child will be asked to do

Participation in this research will involve your child completing a questionnaire at school. The questionnaire completed by your child will be administered using a paper and pencil survey but may also be administered on an iPad, taking approximately 45 minutes. Administration of the questionnaire will take place in a classroom setting, at a

time which is considered suitable by the teacher, and which is not considered disruptive of your child's learning.

### **The expected benefits of the research**

The findings of the research project will make a significant contribution to our knowledge regarding how adolescents form an understanding of who they are, how they manage stress by using mindfulness or other techniques, and how these relate to well-being. Further, this project will make clearer the processes underlying and contributing to concerns related to problematic identity formation, and what we can do to increase children's resilience to, and coping with, stressors like peer exclusion and aggression, and help students to feel competent and do well in school.

Your child will receive a small gift for participating (e.g., a sticker, a pen, or another school-related gift).

### **Risks to your child**

The risks associated with participating in this research are minimal. Should your child feel uncomfortable answering any questions, he or she will not be required to do so. If you or your child wishes to, you can withdraw from the research at any point. Your child will have the opportunity to talk to a researcher following the completion of the survey, if he/she wishes to do so.

### **Your child's confidentiality**

The confidentiality of your child's responses is guaranteed. Your child will not be required to record his or her name on the response sheets. Rather than using names, each child will have a unique code that will allow us to link their responses. We will maintain a separate file with contact details for your child. In any reports resulting from the research, no individual participant will be identifiable.

### **Participation is voluntary**

Participation in this study is completely voluntary. If, at any time, you or your child wishes to withdraw from the study, you are free to do so, without penalty and without having to explain the reasons for withdrawal. Teachers will provide students who do not have consent to participate with an alternate task. This is usually an assignment to do or a book to read.

### **Questions/Further information**

If you have any questions about the study, please do not hesitate to contact Professor Zimmer-Gembeck or any other member of the research team shown above.

### **The ethical conduct of this research**

Griffith University conducts research in accordance with the *National Statement on Ethical Conduct in Human Research*. This project has been approved by the Griffith University Human Ethics Committee (GU ethics reference number 2016/538) If potential participants have any concerns or complaints about the ethical conduct of the research project they should contact the Senior Manager, Research Ethics and Integrity on 373 54375 or [research-ethics@griffith.edu.au](mailto:research-ethics@griffith.edu.au)

### **Feedback to you**

Throughout this project and once the research project has been completed, summaries of the results will be given to your child's school. The school may provide information to you via a newsletter or other contacts, and you are welcome to contact us at any time for an update on the study and the results.



**Parental Consent**

Please complete the attached Parent Consent Form, indicating whether you are willing to allow your child to participate in this study. Once you have completed the form, please return it to your child's teacher as soon as possible.

Yours faithfully,

Professor Melanie Zimmer-Gembeck

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**PARTICIPANT INFORMATION SHEET – STUDY 1**

**Identity Formation, Dispositional Mindfulness, and Functioning in Adolescents**

**RESEARCH TEAM:**

**Chief Investigators:**

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Sarah Clear  
School of Applied Psychology  
[s.clear@griffith.edu.au](mailto:s.clear@griffith.edu.au)  
Phone: 5678 8688

Dear Participant,

Currently, a research project is being conducted to investigate youth 1) mindfulness, defined as being aware of present experience with acceptance and non-judgement (Kabat-Zinn, 1994), and 2) their conception of who they are (their "identity formation"). The aim is to examine how mindfulness and identity formation are associated with youths' emotions, coping with stress, well-being and academic success. We will also be focused on what helps young people to manage the task of figuring out who they are, and what helpful strategies young people engage in that encourage adaptation and resilience to reduce the problems related to stressors like peer exclusion and making educational and vocational choices.

**What you will be asked to do**

Participation in this research will involve you completing a questionnaire at school. The questionnaires will be administered using a paper and pencil survey but may also be administered on an Ipad, taking approximately 45 minutes. Administration of the questionnaire can take place at home, or in the setting in which you learned about this project.

**The expected benefits of the research**

The findings of the research project will make a significant contribution to our knowledge regarding how adolescents form an understanding of who they are, how they manage stress by using mindfulness or other techniques, and how these relate to well-being. Further, this project will make clearer the processes underlying and contributing to concerns related to problematic identity formation, and what we can do to increase

children's resilience to, and coping with, stressors like peer exclusion and aggression, and help young people to feel competent and increase well-being. Additionally, you will receive a small gift for participating (e.g. a gift voucher).

### **Risks to you**

The risks associated with participating in this research are minimal. You will not be required to provide responses should you feel uncomfortable answering any questions. If you wish to, you are also free to withdraw from the research at any point. You will have the opportunity to talk to a researcher following the completion of the survey, if you wish to do so. If you should feel distressed, you may wish to contact Kids Helpline 1800 55 1800, Headspace ([www.headspace.org.au](http://www.headspace.org.au)) or the Griffith Psychology Clinic 1800 188 295.

### **Your confidentiality**

The confidentiality of your responses is guaranteed. You will not be required to record your name on the response sheets. Rather than using names, each participant will have a unique code that will allow us to link their responses. We will maintain a separate file with your contact details. In any reports resulting from the research, no individual participant will be identifiable.

### **Participation is voluntary**

Participation in this study is completely voluntary. If, at any time, you wish to withdraw from the study, you are free to do so, without penalty and without having to explain the reasons for withdrawal.

### **Questions/Further information**

If you have any questions about the study, please do not hesitate to contact Professor Zimmer-Gembeck or any other member of the research team shown above.

### **The ethical conduct of this research**

Griffith University conducts research in accordance with the *National Statement on Ethical Conduct in Human Research*. If potential participants have any concerns or complaints about the ethical conduct of the research project they should contact the Senior Manager, Research Ethics and Integrity on 373 54375 or at [research-ethics@griffith.edu.au](mailto:research-ethics@griffith.edu.au).

### **Feedback to you**

You are welcome and encouraged to contact us at any time for an update on the study and the results.

### **Parental Consent**

Please have your parent complete the attached Parent Consent Form, and return it to the researcher or setting in which you learned about this project.

Yours faithfully,

Professor Melanie Zimmer-Gembeck

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**PARENT CONSENT FORM – STUDY 1**

**Identity Formation, Dispositional Mindfulness, and Functioning in Adolescents**

**RESEARCH TEAM:**

**Chief Investigators:**

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Phone: 5678 8688

By signing below, I confirm that I have read and understood the information package and in particular that:

- I understand that my child's involvement in this research will require him or her to complete a questionnaire relating to emotions, coping, mindfulness, identity formation, and academics.
- I have had questions answered to my satisfaction;
- I understand the risks involved;
- I understand that there will be no direct benefit to my child from his/her participation in this research;
- I understand that my and my child's participation in this research is voluntary;
- I understand that if I have any additional questions I can contact the research team;
- I understand that my child is free to withdraw at any time, without comment or penalty;
- I understand that I can contact the Manager, Research Ethics, at Griffith University Human Research Ethics Committee on 3735 5585 (or [research-ethics@griffith.edu.au](mailto:research-ethics@griffith.edu.au)) if I have any concerns about the ethical conduct of the project.

I \_\_\_\_\_ (parent/guardian) (please tick one of the boxes below)

☐

Agree

☐

Do not agree

for my child \_\_\_\_\_ (child's name), \_\_\_\_\_ (age)  
\_\_\_\_\_ (gender), to participate in this research. Home teacher's name  
\_\_\_\_\_

Signed: \_\_\_\_\_ (parent/guardian)    Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

- I agree to be contacted in the future about this research (Please circle) **YES** or **NO**

Contact phone number: (1) \_\_\_\_\_  
(2) \_\_\_\_\_

Contact email: (1) \_\_\_\_\_  
(2) \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

**PLEASE RETURN THIS FORM**

## APPENDIX B



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### INFORMATION FOR PARTICIPANTS – STUDY 2

#### The Young Identities Project: Mindfulness, Well-being, & Health

##### RESEARCH TEAM:

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Prof Bonnie Barber  
[b.barber@griffith.edu.au](mailto:b.barber@griffith.edu.au)  
5678 0895

Dear Student,

We are conducting research on your 1) mindfulness, defined as being aware of present experience with acceptance and non-judgement (Kabat-Zinn, 1994), and 2) your ability to respond to stress. The aim is to examine how mindfulness is associated with your emotions and coping with stress. We will also be focused on what helpful strategies you engage in to reduce the problems related to stress. Participants must be a Griffith University student and under 22 years old.

##### What you are being asked to do

Participation in this research will involve you completing some pen and paper questionnaires, playing an online ball tossing game and answering a question about your experience that will be recorded, taking approximately 60 minutes in total.

##### The expected benefits and risks of the research

The findings of the research project will make a significant contribution to our knowledge regarding how young adults manage stress by using mindfulness or other techniques, and how these relate to well-being. Further, this project will make clearer what we can do to increase young people's resilience to, and coping with, stressors like peer exclusion. You will receive partial course credit in your first year psychology course for participating. There are minimal risks anticipated in participating in this study. However, if you do experience distress, you may wish to contact a counsellor at Lifeline on 131114.

**Your confidentiality**

The confidentiality of your responses and results is guaranteed. You will not be required to record your name on the questionnaire or the online game. Rather than using names, you will have a unique code that will allow us to link your responses. We will maintain a separate file with your contact details. In any reports resulting from the research, no individual participant will be identifiable.

**Participation is voluntary**

Participation in this study is completely voluntary. If, at any time, you wish to withdraw from the study, you are free to do so, without penalty and without having to explain the reasons for withdrawal.

**The ethical conduct of this research**

Griffith University conducts research in accordance with the *National Statement on Ethical Conduct in Human Research*. This project has been approved by the Griffith University Human Ethics Committee (GU ethics reference number 2016/538). If potential participants have any concerns or complaints about the ethical conduct of the research project they should contact the Senior Manager, Research Ethics to 373 54375 or [research-ethics@griffith.edu.au](mailto:research-ethics@griffith.edu.au).

**Feedback and further information**

Results from this questionnaire will be compiled with other results for reporting and your individual responses will not be identified. If you would like a copy of the aggregated results on completion, or if you have any questions about the study, please do not hesitate to contact a member of the research team shown above.

Yours faithfully,

Professor Melanie Zimmer-Gembeck

**Completion and submission of the attached consent form will be deemed as your consent to participate in this research. If you wish, please retain this cover sheet for your own reference. Thank you kindly for your participation!**



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**PARTICIPANT CONSENT FORM – STUDY 2**

**The Young Identities Project: Mindfulness, Well-being, & Health**

**RESEARCH TEAM:**

**Chief Investigators:**

Prof Melanie Zimmer-Gembeck  
[m.zimmer-gembeck@griffith.edu.au](mailto:m.zimmer-gembeck@griffith.edu.au)  
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Prof Bonnie Barber  
[b.barber@griffith.edu.au](mailto:b.barber@griffith.edu.au)  
5678 0895

By signing below, I confirm that I have read and understood the information package and in particular that:

- I understand that my involvement in this research will require me to complete a questionnaire relating to mindfulness and stress, play an online ball tossing game, and answer a question about my experience.
- I understand that my answer to the question about my experience will be audio recorded. The researcher will have access to the audio recording for the purpose of transcribing information contained in the recording. Following transcription the audio recording will be deleted, this will occur a maximum of 30 days after recording. The transcription will not contain any identifying information and will be stored on the secure Griffith University Research Storage Service for the duration of this study.
- I have had questions answered to my satisfaction;
- I understand the risks involved;
- I understand that there will be no direct benefit to me from participation in this research;
- I understand that my participation in this research is voluntary;
- I understand that if I have any additional questions I can contact the research team;
- I understand that I am free to withdraw at any time, without comment or penalty;
- I understand that I can contact the Manager, Research Ethics, at Griffith University Human Research Ethics Committee on 373 54375 or research-



ethics@griffith.edu.au if I have any concerns about the ethical conduct of the project.

### Legal Privacy Statement

The conduct of this research involves the collection, access and/ or use of your identified personal information. The information collected is confidential and will not be disclosed to third parties without your consent, except to meet government, legal or other regulatory authority requirements. A de-identified copy of this data may be used for other research purposes. However, your anonymity will at all times be safeguarded. For further information consult the University's Privacy Plan at <http://www.griffith.edu.au/about-griffith/plans-publications/griffith-university-privacy-plan> or telephone (07) 3735 4375.

### Student:

I \_\_\_\_\_ (name) (please tick one):

☐

Agree

☐

Do not agree

\_\_\_\_\_ (age) \_\_\_\_\_ (gender), to participate in this research.

Signed: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

I agree to the use of information I provide in future research projects that are an extension of, or closely related to, this research.

☐

**YES**

☐

**NO**

**PLEASE RETURN THIS FORM**

## PARTICIPANT HELP SEEKING CARD – STUDY 2

### Where to seek help...

*If you, or one of your friends, are going through a tough time please seek help*

It is important to talk to a parent, friend, counsellor, or a guidance officer if you have any concerns. There are also a number of services listed below that can help you.



- **Student Services Gold Coast Campus**  
5552 8734
- **Headspace**  
5509 5900 - 2/126 Scarborough Street, Southport
- **Lifeline**  
13 11 14 - 24 hour crisis line  
5579 6000 - Counselling for children, adolescents, families and adults
- **Family Relationship Advice Line**  
1800 050 321 - Help dealing with family relationship or separation issues

#### *Psychology Services:*

- **Griffith University Psychology Clinic**  
1800 188 295
- **CBT Professionals**  
5551 0251
- **Lakeside Rooms**  
5562 0466

\* If you would like to talk further about the study or this research project, please contact Sarah Clear on 5678 9105, or [s.clear@griffith.edu.au](mailto:s.clear@griffith.edu.au)