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**Parent mental health and associations with mind-mindedness across two
infant interactions: free play and a teaching task**

A thesis
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Abstract

Mind-mindedness (MM) is the tendency of a parent to recognise and treat their child as having a mind of their own. The current study aimed to examine associations of parent mental health and wellbeing symptoms with parental MM across two infant interactions: a free play and a teaching task. Sixty-two parent-infant dyads from New Zealand and Australia participated in the interactions, which were recorded and then coded for positive and negatively valenced appropriate and non-attuned MM. In addition, parents also completed the Depression, Anxiety and Stress Scale (*DASS-21*; Lovibond & Lovibond, 1995), the Difficulties with Emotion Regulation Scale (*DEERS*; Gratz & Roemer, 2004) and the Parental Reflective Functioning Questionnaire (*PRFQ*; Luyten, Mayes, Sadler, Fonagy, Nicholls, Crowley & Slade, 2009) via an online survey.

The results showed that the proportion of appropriate positive MM comments differed across the tasks. Parents spoke more overall during free play but made more appropriate positive and negative comments in the teaching task. Greater parental stress and anxiety symptoms were associated with more appropriate negative mind-minded comments, with different patterns seen across the two tasks. In free play, stress was associated with appropriate negative MM; whereas in the teaching task, greater parent stress and anxiety were associated with more appropriate negative MM and fewer non-attuned MM comments. Appropriate and non-attuned MM comments were positively correlated with parental pre-mentalising. Increased parental difficulties with emotional regulation were linked to an increase in appropriate negative and also non-attuned MM comments. Stress explained 11.7% of the variance in appropriate negative MM comments in free play, and anxiety explained 12.1% of the variance in appropriate negative MM during the teaching task. Stress and PRFQ pre-mentalising together explained 23.2% of the variance in non-attuned MM comments in the teaching task

The current findings have implications for understanding how parental wellbeing is associated with differences in MM and extend existing research from free play contexts to the parent-infant teaching context. Understanding differences in MM as a function of parent mental health is important in targeting future MM interventions to support high-risk parents. This research was conducted over the COVID period with varying impacts. In particular, DERS and DASS scores were higher than other research conducted prior to COVID, so caution is required when considering the generalisability of the results. However, this may reflect the ‘new normal’ for a significant portion of time as COVID impact has been reported to be significant and ongoing.

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Table of contents

Abstract.....	i
List of tables and figures.....	v
Chapter 1 - Introduction.....	1
‘Good enough’ parenting	2
Attachment	3
Parental sensitivity	10
Mentalisation or reflective functioning	14
Mind-mindedness (MM)	17
Parental mental health	23
MM, free play and other contexts	30
Chapter 2 Methodology	38
Introduction	38
Ethics.....	38
Method	38
Participants	38
Online survey.....	39
Parent-child play sessions.....	41
Data analysis.....	42
Chapter 3 Results	43
Descriptive and Preliminary analyses	43
Inferential statistics	45
Correlation analyses	49
Regression analyses.....	52
Conclusion.....	54
Chapter 4 Discussion	55
MM across the teaching task and free play	56
MM and parental depression, anxiety and stress in free play and the teaching task.....	58
Parental RF and MM in free play and the teaching task	62
Parental difficulties with emotion regulation and MM in free play and the teaching task ..	63
MM and demographics.....	65
Strengths and limitations.....	67

Future research and implications.....	71
Conclusion.....	74
References.....	76
Appendix.....	90
Appendix A – Ethics approval	90
Appendix B –Research advertisement	91
Appendix C – Participant information sheet	92
Appendix D – Consent form	95
Appendix E - Teaching task list	96
Appendix F – Depression, anxiety and stress scale (DASS-21)	97
Appendix G – Difficulties in emotion regulation scale (DERS).....	98
Appendix H – Parental reflective functioning questionnaire (PRFQ)	99

List of tables and figures

Table 1.	44
Exploration of the household income status of the sample	44
Table 2.	46
Correlations related to parental age, child age and sibling numbers.....	46
Table 3.	47
Descriptive statistics DASS, PRFQ and DERS	47
Table 4.	48
Descriptive statistics for parent MM across both free play and teaching tasks	48
Table 5.	50
Correlations between DASS-21 subscales and MM	50
Table 6.	51
Correlations between PRFQ subscales and MM.....	51
Table 7.	52
Correlations between DERS and MM.....	52
Table 8.	53
Stepwise linear regression analyses.	53

Chapter 1 - Introduction

The quality of the early parent-infant relationship is now widely recognised as having life-long importance (Hoffman et al., 2017). In the initial years of life, infants form an attachment to their primary caregiver(s). This relationship's nature, or security, has implications for children's social, emotional, behavioural and cognitive development (Benoit, 2004; Brown et al., 2012; van Ijzendoorn & Bakermans-Kranenburg, 2009). Attachment theory has pointed to maternal sensitive responding as the primary determinant of infant attachment security. For several decades this was primarily conceptualised as maternal sensitive behaviour (Meins et al., 2001).

Meins (1997) called for a cognitive reconceptualisation of the measurement of maternal sensitivity, suggesting that a parent's capacity to think about their child's internal world - their thoughts, feelings, desires and intentions – may underlie the development of attachment security. Meins termed this capacity mind-mindedness (MM) (Meins et al., 2001). MM has been shown to relate to attachment security, partially explain the intergenerational transmission of attachment, and relate to children's developmental outcomes (Bernier & Dozier, 2016; McMahon & Bernier, 2017). The importance of MM for child development (Aldrich et al., 2021; Colonesi et al., 2019), and suggestions that parental mental health may impact the intergenerational transmission of attachment (Risi et al., 2021), has led to an interest in understanding how MM is related to parental mental health difficulties. This thesis will examine the associations of parental MM with parent mental health symptoms with a group of parents of infants aged between six and eighteen months.

The first chapter will review attachment theory, maternal sensitivity, MM, and the current literature examining the associations of MM with parental mental health.

‘Good enough’ parenting

At the outset, it is helpful to explore parenting and what is considered effective parenting before exploring the specifics of attachment. Parenting books and articles in the public domain promote various strategies or techniques, but finding a specific, consistent definition of effective parenting is challenging. Parenting occurs within a particular family and broader societal context, which impacts what is considered effective. Parenting is impacted by religious, cultural, neighbourhood and even policy-related factors (Bronfenbrenner, 1979; Kotchick & Forehand, 2002). Donald Winnicott conceptualised the ‘good-enough mother’, noting this would be a parent who provided sufficient support to enable the child to tolerate frustration in life and one who adapted to the infant's needs (Choate & Engstrom, 2014; Sadock et al., 2015). Importantly, this definition moves away from a ‘perfect parent’ ideal to emphasise helpful parenting interactions more often than not.

Epstein (2010) reviewed decades of research and views of parents and experts and identified ten essential parenting skill sets. The most important competency was reported to be love and affection, which included supporting, accepting the child, physical affection and quality time together. Further positive parenting competencies included parents managing their own stress and their child's stress. Parents with relationship skills supported them in maintaining a healthy relationship with their partner or spouse and other people. Parents who were able to engage in respectful and encouraging communication with their children convey a valuing of autonomy and independence. Parents can also promote and model the importance of ongoing learning and provide educational opportunities for their child. Parent steady income and future plans may also be important in providing for themselves and their children. Parent use of behavioural management strategies, especially positive reinforcement and modelling of a healthy lifestyle, can promote positive habits for their children.. Finally, parent support of their child's spiritual or religious development and awareness of the child's

activities and friends and taking precautions to protect their child are also considered important (Epstein, 2010).

Attachment

Attachment theory provides a strong foundation for understanding the impacts of ‘good enough’ parenting on infant and child development. Attachment explains a regulatory system where the child uses their connection with their primary caregiver as a secure base from which they can explore the world. The securely attached infant can return to their attachment figure for safety and comfort (Benoit, 2004; Hughes & Golding, 2012). In this way, attachment is a complex system and is more than just the relationship, connection, or bond between people. Research shows that attachment impacts multiple areas of our lives: social and emotional outcomes (Benoit, 2004; Brown et al., 2012; Rees, 2007; Siegel, 2012), our relationships (Cristina et al., 2020; Siegel, 2012), behaviour (Brown et al., 2012; Hill & McMahon, 2016; van Ijzendoorn & Bakermans-Kranenburg, 2009), mental health and resilience (Benoit, 2004; Siegel, 2012; van Ijzendoorn & Bakermans-Kranenburg, 2009) brain development (Hill & McMahon, 2016; Hughes & Golding, 2012; Siegel, 2012) and physical health (Puig et al., 2013), among others.

Bowlby (1958) first theorised about parent-infant attachment, integrating advances in evolutionary theory with cognitive and information systems models (Cassidy et al., 2013; Siegel, 2012). Harlow’s research with rhesus monkeys, highlighting the importance of maternal touch and maternal comfort beyond being fed, also influenced Bowlby’s thinking about early attachment relationships (Feinberg, 2015; Hughes & Golding, 2012; Lahousen et al., 2019). When a primary caregiver is consistently and reliably available and responsive to an infant’s needs, the infant develops a sense of security (Benoit, 2004; Sadock et al., 2015).

The infant sees the caregiver as dependable, creating a secure base from which the infant can explore the world (Sadock et al., 2015; Siegel, 2012).

Ainsworth expanded on Bowlby's work and identified that the mother and infant's interactions significantly influenced the infant's current and future behaviours, and patterns of attachment were noted (Sadock et al., 2015). Ainsworth explored attachment through her Strange Situation Procedure (SSP) and identified three attachment styles, secure, avoidant and resistant, with classification largely dependent on an infant's response to the caregiver following two separations and reunions (Brown et al., 2012). Main and Solomon (1986) subsequently identified a fourth attachment style - insecure-disorganised – where infants lack an organised or coherent system of relating to their attachment figure (van Ijzendoorn & Bakermans-Kranenburg, 1997).

Ainsworth noted that infants who have formed a close bond with a primary caregiver who is responsive to their needs in a warm, sensitive, and timely manner and can read their cues; have healthy social and emotional development (Chen, 2019; Hoffman et al., 2017). In the SSP, the secure child seeks proximity to the caregiver and can connect and then return to play on the caregiver's return. Research shows secure attachment to be around fifty-five to sixty-five per cent of infants in low-risk, non-clinical populations (Benoit, 2004; Karr-Morse & Wiley, 2012; Sadock et al., 2015; Siegel, 2012).

In insecure-avoidant attachment, the child may have experienced emotionally unavailable, rejecting, unresponsive, abrupt or aggressive parenting, so tends to stay near the caregiver but does not go to them when faced with a threat (Karr-Morse & Wiley, 2012; McLeod, 2018; Sadock et al., 2015; Siegel, 2012; Siegel & Hartzell, 2014). These infants often appear disinterested and may avoid or ignore the parent when they return in the SSP (van Ijzendoorn & Bakermans-Kranenburg, 1997). These children learn to inhibit strong emotions and avoid emotionally charged interactions (Karr-Morse & Wiley, 2012). Research

shows avoidant attachment to be around twenty to thirty per cent of infants in low-risk, non-clinical populations (Benoit, 2004; Karr-Morse & Wiley, 2012; Sadock et al., 2015; Siegel, 2012; van Ijzendoorn & Bakermans-Kranenburg, 1997).

Insecure-ambivalent or insecure-resistant attachment describes an attachment style where the parent may have been inconsistently available and pushes their own states of mind onto their children (Siegel & Hartzell, 2014). The child cannot depend on the parent for attunement and connection (Siegel & Hartzell, 2014). These children find exploratory play difficult even when there is no danger and may cling to the inconsistent parent; they are anxious, not easily soothed, and do not readily return to play after separation and reunion (Karr-Morse & Wiley, 2012; McLeod, 2018; Siegel, 2012). Research shows ambivalent attachment to be around five to fifteen percent of infants in low-risk, non-clinical populations (Benoit, 2004; Karr-Morse & Wiley, 2012; Sadock et al., 2015; Siegel, 2012; van Ijzendoorn & Bakermans-Kranenburg, 1997).

Finally, insecure-disorganised attachment describes an attachment style where the parents are frightened, frightening or disoriented in their communication with the child (Karr-Morse & Wiley, 2012; Verhage et al., 2016). Main describes these infants as facing an “irresolvable paradox”; the parent is both the source of fear and the only means of protection (Benoit, 2004; Shah et al., 2010). Thus when threatened, the child will behave in unusual ways; the child seeks comfort so may approach, then avoid the parent, freeze or turn in circles (Sadock et al., 2015; Siegel & Hartzell, 2014). Research shows disorganised attachment to be around fifteen per cent of infants in non-clinical populations (van Ijzendoorn & Bakermans-Kranenburg, 1997), with much higher rates - around seventy per cent - where parental maltreatment was found (Siegel, 2012).

Secure attachment is proposed to have three main functions; (1) the creation of safety and security for the infant; (2) the provision of a secure base from which the infant can then

explore their world; and (3) to support emotional regulation, distress tolerance, self-soothing, and creating joy (Divecha, 2017). In addition, some researchers have gone as far as to hail secure attachment as providing “psychological immunity” for children as they develop and when they are adults (Hoffman et al., 2017); with most viewing secure attachment as an important contributor to resilience through later adversity (Sroufe, 2021; Supkoff et al., 2012).

Decades of longitudinal research have shown that secure attachment is associated with more positive child outcomes across domains (Benoit, 2004; Brown et al., 2012; J. Fisher, 2017). Compared with their insecurely attached peers, securely attached children perform better academically, have better physical health, have more intimate and fulfilling relationships later in life and have better friendships (Benoit, 2004; Hoffman et al., 2017; Kerns & Brumariu, 2014; McMahon & Bernier, 2017; Puig et al., 2013). In comparison, children with insecure or disorganised attachments are more likely to have anxiety and difficulties regulating emotions and interacting with peers (Kerns & Brumariu, 2014). Early secure attachment is associated with greater child happiness, self-confidence, empathy, compassion, and endurance (Bennett, 2017; Mikulincer et al., 2005). Regulatory and survival functions in the right brain are thought to be strongly related to early parent-infant attachments (Schore, 2001). Attachment appears to promote the brain’s integrative capacities (Siegel & Hartzell, 2014), which support our ability to develop emotional, cognitive, and interpersonal abilities (Karr-Morse & Wiley, 2012; Lee & James, 2012; Siegel & Hartzell, 2014). Siegel (2010) notes early attachment status has been demonstrated to predict people’s attunement and connections with others, how they construct a personal narrative and the ability to have healthy, fulfilling relationships; further, traumatic experiences or disruptions in attachment impair integration. These longitudinal findings highlight the importance of understanding and promoting early secure parent-infant attachment relationships.

Schaffer and Emerson (1964) suggested that attachment develops through four stages. The asocial or pre-attachment stage is from birth to six weeks when an infant shows no specific attachment. The indiscriminate stage, sometimes called attachment in the making, is from six weeks to seven months, when the infant begins to show a preference for a primary and secondary caregiver. The infant is developing a stronger attachment to familiar adults but not yet showing an aversion to strangers. Discriminate, clear-cut or specific attachment stage is from seven months; the infant shows a strong attachment to one specific caregiver. The infant is growing bonds with other caregivers from ten months and is in the multiple attachment stage (Cherry, 2019; Edward, 2017; Lahousen et al., 2019; Sadock et al., 2015; Schaffer & Emerson, 1964).

It is important to note that attachment is relationship-specific; infants can form different attachments to different caregivers (Benoit, 2004; Siegel, 2012). The infant forms a hierarchy of attachments based on how the particular caregivers respond to the child's needs (Benoit, 2004). This is linked to how the adult caregiver's mind and patterns of communication shape the child's brain development. During the early months, an infant is regulated by the adult. Brain activation occurs in these interactions, depending on the quality of the interaction, creating a specific representational set of activations (Benoit, 2004; Siegel, 2012). These early caregiving interactions are thought to form the basis of the infant's attachment regulatory system, which they then carry forward through development (Sroufe & Waters, 2017).

To understand how attachment is reflected across the lifespan, Carol George, Nancy Kaplan, and Mary Main in 1984 developed the Adult Attachment Interview (AAI) (M. A. Fisher, 2017). The AAI is a semi-structured autobiographical narrative where the adult is asked a series of questions about their experiences of being parented growing up, and the impact on their adult personality. The coherence of the individual's narrative is thought to

reflect the organisation of the underlying state of mind about attachment rather than the specific experiences described (Siegel, 2012; van Ijzendoorn & Bakermans-Kranenburg, 2009). The development of the AAI allowed attachment researchers to empirically examine many of the core predictions of attachment theory, including intergenerational transmission (Siegel & Hartzell, 2014). Through narrative responses to the AAI, adult attachment can be classified as: secure/autonomous, said to correlate with secure attachment in the infant; dismissing, correlating with avoidant attachment in the infant; preoccupied, correlating with resistant or ambivalent in the infant; and finally unresolved, correlating with disorganised attachment in the infant (Siegel, 2012).

On the AAI, adults classified as secure-autonomous tend to value attachment relationships, describe their attachment experiences coherently, whether positive or negative and see them as important to their own personality. Adults with insecure-dismissing attachment minimised the importance of attachment in their own lives or idealised their childhood experiences but could not provide concrete illustrations of them. Adults with insecure-preoccupied attachments tended to maximise the impact of attachment and were still very preoccupied with their past and unable to describe it coherently or reflectively. Adults with an unresolved attachment showed signs of unresolved trauma experienced, usually involving the loss of attachment figures. A fifth category was more recently added, “cannot classify,” for adults where contradictory discourse strategies appeared throughout the AAI (van Ijzendoorn & Bakermans-Kranenburg, 2009).

It is important to note that while attachment security is considered relatively enduring, with lifelong developmental correlates, attachment classifications are also subject to change. In general, changes in attachment across the lifespan are thought to reflect ‘lawful discontinuity’, in that (within high-risk samples especially) there is a substantial change in attachment security from infancy to early adulthood but that these changes can be explained

based on changes in the wider social context of caregiving. For example, the seminal Minnesota study found that loss of social support and increases in social, economic and family stressors (especially child maltreatment and parental mental health difficulties) during childhood were associated with a move from security to insecurity (Weinfield et al., 2000). Both Bowlby and Ainsworth theorised about the possibility of change in the early attachment pattern. They discussed the potential for insecure infants to become secure, and Ainsworth also felt the reverse was possible (Main, 2000). Main and Goldwyn (1984) explored how an adult could come to have a secure attachment either consistently from infancy (continuous) or 'earned' (Feinberg, 2015; Roisman et al., 2002). An earned-security classification on the AAI is given to adults when they describe a problematic relationship with their parents in childhood. However, they have been able to integrate these experiences into a coherent narrative, reflecting a current secure internal representational relationship model. Research shows that both continuous secure and earned secure parents can be similarly effective parents (Pearson et al., 1994; Roisman et al., 2002). Both showed more warmth and structure with their preschool children than insecure parents; this highlights the importance of the parent's current state of mind regarding attachment. In their 23-year longitudinal study investigating earned-secure attachment, Roisman et al. (2002) determined that adults could overcome earlier negative experiences and develop an earned secure attachment through subsequent positive relationships such as psychotherapy. They could change their attachment from insecure to earned-secure (Guina, 2016). These findings highlight that while early infant caregiving and attachment have life-long implications, attachment is not necessarily 'set in stone' and has the capacity for change across the lifespan.

Research exploring attachment across the lifespan has shown that an infant's attachment with their caregivers impacts their later attachment as adults. In turn, a parent's own attachment state of mind can influence the attachment security their infant develops with

them, known as intergenerational transmission (Shah et al., 2010). Essentially, individuals repeat the patterns of their relationships earlier in life throughout their lives (Brumbaugh & Fraley, 2006). Meta-analytic evidence suggests that while parental sensitive responding mediates the transmission of parent to infant attachment security, this mechanism is relatively modest. Approximately 75% of intergenerational transmission of attachment remains unexplained by parental sensitive behaviour. This has been termed the ‘transmission gap’ (McMahon & Bernier, 2017; van Ijzendoorn & Bakermans-Kranenburg, 2009).

In recent decades, significant developments in understanding human anatomy, brain development, and technology have occurred. These have contributed to a deeper understanding of attachment, particularly the impacts of attachment on neuropsychiatric development (Siegel, 2012). Despite these new developments the transmission gap remains (McMahon & Bernier, 2017).

Parental sensitivity

Bowlby hypothesised that attachment experiences were carried over as a mental model that guides perception and responses in current and future relationships. Main et al. (1985) furthered this, proposing that adults organise attachment-relevant information into mental representations, or internal working models, of attachment. Therefore, understanding parental representations of attachment and how they are expressed in caregiving interactions is key to understanding the intergenerational transmission of attachment (Shah et al., 2010). A parent’s state of mind regarding attachment is thought to influence the way the parent responds to the infant’s needs, behaviours, signals, and emotions. This interactive caregiving behaviour is referred to as parental sensitivity, which is thought to form the experiential basis from which infants develop their working model of the world (Tarabulsy et al., 2005).

According to Bowlby, children are most likely to develop a secure attachment when they have confidence in their attachment figures and know they provide a secure base (Cassidy et al., 2017). Providing a secure base is key to allowing infants, children, and adolescents to explore their world, knowing they can return to their parents for comfort and support (Marvin et al., 2002). Despite Bowlby reporting the secure base to be a central concept in developmental psychiatry, there is limited literature related to this area (Jones & Cassidy, 2014). Although limited, the evidence suggests that parents with insecure attachment may have difficulties with the challenges and stresses of being a secure base for the infant. Furthermore, the infant of insecure parents may be less willing or able to use the parent as a secure base (Emery et al., 2008; Jones & Cassidy, 2014). It therefore appears that the secure base consists of two interrelated components: the parent's provision of the secure base and the child's use of a secure base.

Secure base provision and maternal sensitivity are closely linked; to provide a secure base, the parent must be sensitive to the infant's needs. In describing 'good enough' parenting, Winnicott noted that a secure base is an internal representational model based on the overall pattern of parent behaviour (Sadock et al., 2015). For example, infants (in a low socio-economic status sample) could tolerate high levels of maternal insensitivity and still develop a secure attachment with their mother, if she was not frightening or extremely hostile specifically when the infant was distressed and if she was sufficiently behaviourally responsive to the infant's signals (Cassidy et al., 2005).

Significant evidence highlights that infants develop healthy relationships and effective behavioural and social-emotional skills when they have early sensitive interactions with their caregivers (Leerkes et al., 2009). The primary caregiver's sensitivity refers to the quality of their responses to their infants' cues and their timely and appropriate responses. Ainsworth et al. (1974) noted that parental sensitivity had four essential components: parental awareness of

and accurate interpretation of signals and appropriate and prompt responses. A sensitive caregiver, therefore, would be one who – more often than not - responded quickly to the infant, and the responses matched the infant's cues and developmental needs and the current contextual requirements (Leerkes et al., 2009; Steenhoff et al., 2019). Furthermore, the parent's sensitivity to the infant's communications and signals predicts a secure organisation (Brahm et al., 2016; Main, 2000). Further, it is noted that parental intrusiveness negates sensitive parenting behaviour (Steenhoff et al., 2019).

It should be kept in mind that the vast majority of attachment research has been conducted with mothers; hence the terms 'mother' and 'maternal' have been adopted through this section when describing empirical research. Though it is likely that similar processes occur for fathers, co-parents, adoptive parents, foster parents and other caregivers, this terminology currently reflects the majority of research (Newland et al., 2014). Moving beyond maternal sensitivity will be important for future research (Malmberg et al., 2016).

Some research has been conducted on paternal sensitivity, and some deductions are made that paternal sensitivity would be similar to maternal sensitivity if the father were the primary caregiver, but further research is required. Branger et al. (2019) studied maternal and paternal sensitivity with 109 families with four-month-old infants across four different observational settings. They concluded that mothers and fathers were equally sensitive across contexts. Steenhoff et al. (2019) conducted research with 52 mothers and 41 fathers and their five-year-old children; they concluded that the measures more accurately measured maternal sensitivity than paternal sensitivity. Despite this, they did not identify behaviour solely related to mothering or fathering. They found a similar dyadic pattern across both mothers and fathers during the dyadic interactions. The parent's sensitivity was correlated with child involvement, while a correlation was also found between parental limit-setting and child compliance. Finally, the child withdrew more as parental intrusiveness increased for both

mothers and fathers (Steenhoff et al., 2019). Brown et al. (2012) examined concurrent and longitudinal associations among father's involvement, parental sensitivity and father-child attachment security at thirteen months and three years. They found that father-child attachment security was relatively stable, that secure attachment at thirteen months predicted greater levels of parental sensitivity at three years and that sensitivity at age three mediated the association between attachment security at thirteen months and three years. Tamis-LeMonda et al. (2004), Belsky et al. (2005), and Feldman and Klein (2003) all found that both mothers and fathers acted equally sensitively towards their children, but Tamis-LeMonda et al. (2004) found that fathers had slightly lower intrusiveness than mothers. Together, these findings suggest that paternal sensitivity may function in a similar way as maternal sensitivity in the development of infant and child attachment, although far fewer studies have focused on fathers compared with mothers.

While parental sensitivity appears important for infants to develop their working model and security, research findings have suggested substantial complexities. For example, Meins (2013b) found that mothers in the insecure-resistant and insecure-avoidant categories were indistinguishable based on current measurements of maternal sensitive behaviour. As noted previously, over 75% of attachment transmission cannot be explained by caregiver sensitivity, and this 'transmission gap' is wider for high-risk families (Verhage et al., 2016). These findings led Meins (1999) to call for a return to Ainsworth's original conceptualisation of sensitivity as both a behavioural and a cognitive construct. In particular, Meins focused on Ainsworth's original emphasis on the caregiver's ability to perceive things from the infant's point of view rather than on observable sensitive behaviour per se. Meins described this construct as 'mind-mindedness' (MM) and hoped it would provide information to fill the transmission gap (McMahon & Bernier, 2017).

Mentalisation or reflective functioning

Although developed independently within different fields, MM shares many parallels with mentalising. As outlined above, MM evolved from developmental and attachment frameworks. Mentalising was also strongly informed by developmental and attachment thinking while also developing within the context of psychodynamic and developmentally informed intervention (Sharp & Fonagy, 2008). Both approaches are interested in how parental representations of their child's internal world might explain the intergenerational transmission of attachment. Bateman and Fonagy (2004) described mentalisation as the ability to think about the mental states of ourselves and others and to realise that these are separate from but contributing to our own and others' behaviours. The reflective self was identified by Fonagy et al. (1991) as an internal observer that reflects on the conscious and unconscious mental experiences: "reflective functioning (RF; Fonagy, Steele, Steele, Moran, & Higgitt, 1991)...measures the ability to read and interpret behaviours in light of the mental processes that underlie them and, at the most general level, reflects an individual's ability to understand others as intentional agents and see themselves in the same manner" (Sleed et al., 2020, p. 310). More recently extended to the parenting domain, mentalising describes a parent's capacity to understand their own mental states and those of their child, with curiosity and flexibility and to see their child as a "psychological agent" (Camoirano, 2017; Yatziv et al., 2018). In the early years of a child's development, mental processes are pre-reflective, and the child goes on to develop full RF based on the caregivers' capacity to accurately perceive the infants' intentionality (Fonagy et al., 1998). As such, the child is developing mentalisation capacity based on how his own experiences are being reflected upon (Fonagy et al., 1998).

Sharp and Fonagy (2008) noted that both MM and mentalising shared many parallels related to the parental capacity to treat the child as a psychological agent. They, however,

differ in their operationalisation; MM involves an evaluation of interactions within the parent-child dyads, while mentalising reflects metacognitive representations the parent holds about the relationship with the child (Sharp & Fonagy, 2008). Furthermore, MM is conceptualised as a relational quality, and mentalising is more of a cognitive-behavioural competence (Barreto et al., 2015). According to Laranjo et al. (2014), MM is more than just a reflection of mentalising ability within the parent-child relationship. They argued that MM reflects a specific aspect of the parent-child attachment relationship. In support, Meins et al. (2006) found that children's mental state terms used to describe a character in a story were unrelated to children's theory of mind development, yet parent's MM is consistently related to children's theory of mind development (McMahon & Bernier, 2017). In addition, Barreto et al. (2015) found that parents' mentalising and MM were no longer significantly correlated after controlling for mental health symptoms, socio-demographic covariates and child temperament. These findings provide some support for mentalising and MM as related but distinct constructs.

Fonagy et al. (1998) operationalised the underlying construct of mentalising in terms of an individual's RF capacity. He developed the Reflective Self-Function Scale (RFS) to examine this empirically. The scale was designed to be used with the AAI so that markers of the parents' ability to understand their own and the mental states of others while recalling their childhood experiences with their attachment figures could be detected through the interview. Four markers were identified as evidence of RF, and the individual received an overall score ranging from negative RF (minus one) to exceptional RF (nine). The four markers are: 'awareness of the nature of mental states', 'explicit effort to tease out mental states underlying behaviour'; 'recognising developmental aspects of mental states'; and 'mental states in relation to the interviewer' (Camoirano, 2017; Fonagy et al., 1998).

The gold standard for measuring RF is considered to be the RFS applied to the Parent Development Interview (PDI) or the AAI. The PDI-RF, developed in 2004, was designed to evaluate parents' mental representation of themselves as parents and of their children (Anis et al., 2020; Slead et al., 2020). The RFS was also applied to the Pregnancy Interview, creating a PI-RF. The Pregnancy Interview functioned as the PDI but for pregnant mothers, so focused on evaluating the mother's views of herself during pregnancy, about her unborn child and her expectations of her future as a parent (Camoirano, 2017). Using the PDI-RF, both Grienberger et al. (2005) and Slade et al. (2005) found that parental RF was related to maternal behaviour and the child's later attachment security. In addition, Slade et al. (2005) found that mothers classified as autonomous on the AAI during pregnancy later had higher levels of RF on the PDI-RF when their infant was ten months old. Furthermore, their infants were more likely to be securely attached at 14 months of age. There is also evidence that low maternal RF is associated with ambivalent-resistant and disorganised infant attachment (Camoirano, 2017). Several other studies were reviewed, supporting the importance of RF as a key requirement to adequate caregiving and forming a secure attachment (Camoirano, 2017). RF helps children attribute mental states to others and as such, makes them able to find the behaviours of others to be meaningful and predictable (Fonagy & Target, 1997). The child can develop RF through evolving relational interactions with the caregiver (Fonagy & Target, 1997). Whilst we have come to know that RF is important for developing secure attachment in that it allows for the parent and child to reflect upon the mental state of each other, the specific influence remains poorly defined.

The 'gold standard' methodology for measurement of parental RF – application of the RFS to either the PDI or AAI are time-consuming for researchers and participants and requires specialist training to code reliably. These constraints led to the development of two alternative self-report measures: the Reflective Functioning Questionnaire (RFQ) and the

Parental Reflective Function Questionnaire (PRFQ) (Anis et al., 2020). Anis et al. (2020) had determined convergent validity and concluded with their research that the PRFQ was both valid and reliable as a brief multifaceted measure of parental RF. As noted by Pazzagli et al. (2018), the PRFQ assesses low and high mentalising capacities across three dimensions, pre-mentalising, certainty about mental states and interest or curiosity in mental states. The pre-mentalising or non-mentalising modes of thought is where there is an impairment in mentalisation parents cannot attain a view of the child's inner world (Luyten, Nijssens, et al., 2017; Pazzagli et al., 2018). A parent enters certainty of mental state when they are overly sure, thinking they always know the child's wants and mental state without acknowledging how impossible it is to always know exactly the thoughts of another (Luyten, Nijssens, et al., 2017; Pazzagli et al., 2018). Ideally, one wants to have interest or curiosity where the parent is genuinely curious and willing to understand the child's thoughts, feelings and state of mind (Luyten, Nijssens, et al., 2017; Pazzagli et al., 2018).

RF and mentalising are key areas related to parent-child interactions and attachment but do not explain the transmission gap. There are links between RF, mentalisation and MM. The parent's RF and mentalisation abilities are likely required for them to be MM.

Mind-mindedness (MM)

MM as described above, was initially defined to focus more specifically on the cognitive components of the broader construct of sensitivity: the parent's ability to engage at the mental state level with the infant, not just their behavioural responses to the infants' physical and emotional needs (Hill & McMahon, 2016; McMahon et al., 2016). The ability to see the infant as having a mind of their own would allow the parent to reflect on the needs and wants of the infant from the infant's perspective. A parent could appropriately intuit the

infant's thoughts and feelings, or a parent could misinterpret and make non-attuned comments. Meins (1999) proposed that parents' attuned or appropriate comments during interactions (e.g., "*you're bored with that one*" when the infant pushes a toy away) reflected an underlying attunement with the infants' mental state. Meins argued that the parents' capacity or willingness to understand the infant's perspective could be a unique mechanism, beyond sensitive behaviour, in developing attachment security. Although MM was seen as an attempt to complement and refine the measurement of sensitivity to fill the transmission gap, it is important to note that it is seen as a distinct predictor of attachment and separate to sensitive behaviour and recognises that both may play a unique role in attachment transmission (McMahon & Bernier, 2017).

Despite the theoretical view of MM offering the key to bridging the transmission gap, few published studies have examined empirical associations between MM and infant, child or parent attachment. McMahon and Bernier (2017) reviewed twenty years of research on MM. They searched for articles specifically relevant to MM and parent-child relationships and where the coding of MM predominantly followed the coding manual. Ninety papers were found, with only 67 in English. Less than ten of these examined associations between MM and attachment, and even fewer tested MM as a potential mediator in the relationship between parent and infant or child attachment.

MM can be assessed in two ways; both rely on analysing verbatim transcripts of caregiver discourse (McMahon & Bernier, 2017). The first is an observational measure where MM comments are derived from the parents' verbal references to their infants' mental states during free play interactions with their infants. The second is the representational/interview measure, which assesses the caregiver's spontaneous tendencies to refer to the internal mental states of their child when asked to 'describe your child'. The representational/interview measure has typically been used with older children, and the observational measure with

infants. The observational method allows for the coding of parent-to-infant comments as appropriate or non-attuned, whereas the accuracy of the parents' MM statements cannot be inferred using the interview method.

McMahon and Bernier (2017) noted that of the studies they reviewed, 38 used the observational measure of MM and were either conducted at home or in the laboratory. Most studies that examined MM in relation to sensitive behaviour used the observational measure. McMahon and Bernier (2017) reported fourteen studies showing an association between MM and maternal sensitive behaviour, with only two reporting nil findings. They summarized that significant positive correlations were found between the proportion and/or frequency of appropriate MM comments across various maternal sensitivity indices. Interestingly, however, few studies reported on non-attuned comments (e.g., parent says "*you love that toy*" when the infant is fussing and pushes away the toy). A few did note a negative association or close to no correlation with an overall small effect size between sensitivity and non-attuned comments (McMahon & Bernier, 2017). When considering MM using the observational measure and attachment, a higher proportion of MM comments were associated with secure attachment across seven studies (McMahon & Bernier, 2017). Furthermore, appropriate MM and maternal sensitivity were independent predictors of attachment security, and MM accounted for almost double (12.7%) the variance in attachment that maternal sensitivity (6.5%) did (McMahon & Bernier, 2017). McMahon and Bernier (2017) concluded that parent MM measured in various ways exerts both direct and indirect effects through sensitivity on attachment security and that both MM or parental mentalising and sensitivity had complementary roles with significant direct effects when controlling for other effects.

The potential use of the representational/interview measure of MM with infants warrants further discussion. McMahon and Bernier (2017) identified 33 studies using the interview method. Seven of these examined an association between MM and sensitive

behaviour, and overall a small to moderate association between mind-related descriptors of the child and sensitivity was found. Two studies only found a significant association when positively-valenced mental state descriptors were considered (e.g., 'he's a really *happy* kid' versus 'he used to seem quite *grumpy* a lot of the time'). The child's developmental age was highlighted as important when interpreting MM findings using the two measures. Bernier and Dozier (2003) examined MM using the interview method among mothers of 64 foster children (aged between 6 months and 2 ½ years). They found while MM mediated the relation between the adult state of mind regarding attachment and infant attachment security, MM was negatively related to attachment security. Bernier and Dozier suggested that it may be that many of these comments reflect parents attributing more advanced mental states that are not yet developmentally appropriate in very young infants. The appropriate or non-attuned nature of these comments may therefore be especially important (McMahon & Bernier, 2017). These findings highlight that the observational measure may be a better indicator of MM during infancy.

A complex interplay between MM, sensitivity and parental RF has been found. Rosenblum et al. (2008) examined associations between sensitivity, MM (measured through observation of play) and parental RF (measured via interview). They found that mothers' capacity to reflect on mental states during the interview positively correlated with their references to their child's internal states during the interaction. However, in multivariate analyses, MM comments did not explain significant variance in overall reflective comments; suggesting that while related, observations of MM interactions may reflect a more specific avenue of parents' RF. In other words, RF may be a more global capacity to influence mind-related comments (McMahon & Bernier, 2017). Riva Crugnola et al. (2018) studied RF, maternal attachment, emotional availability and MM across a group of adolescent and adult mother and infant dyads. They found that the adolescent mothers had higher rates of insecure

attachment, had lower RF, were less sensitive and structured, more hostile and intrusive and made fewer attuned and appropriate mind-related comments than the adult mothers. Arnott and Meins (2007) reported a negative correlation between adult RF and non-attuned mind-related comments, less non-attuned comments were made the higher the adult RF was. The sample size was, however, small.

MM appears to differ across socio-cultural parenting contexts. Fishburn et al. (2017) conducted three studies; the first two found lower MM for adoptive parents compared to biological parents. In their third study, when considering MM across foster carers involved with child protection services and parents involved with child protection services, they found the MM across both groups was identical but lower than the community sample. Across all three studies, nonbiological carers' tendency to describe their children with references to the preadoption or placement experiences was negatively related to MM. The nonbiological carers' descriptions appeared to highlight a tendency to describe their child in relation to their history either with their birth family or in the care system, thus highlighting the specific relational nature of MM.

It appears that MM remains relatively stable and is associated with secure attachment. Meins (1998) found that mothers of securely attached 11-13-month-old infants were more likely to attach meaning to their infant's utterances, and this remained stable from up to 20 months. Meins et al. (2002) in a follow-up at age 3 years, then found that the mothers of the previously classified secure children described their children with proportionally more mind-related descriptors. In exploring the relationship between maternal MM, perspective-taking abilities of the child and attachment security at 44 and 51 months, it was found that higher perspective-taking abilities distinguished the stable secure from the stable insecure group and non-attuned comments predicted lower perspective-taking abilities and insecure attachment (Meins et al., 2018). These findings suggest whilst MM appears to remain relatively stable

and is associated with secure attachment, it is impacted by several factors such as socio-cultural parenting context, perceptions of the parent in relation to the child's narrative and their perspective-taking abilities.

In addition, it appears that maternal MM is associated with children's socio-emotional development. For example, early MM predicts the child's later theory of mind performance and their capacity to understand other people by ascribing mental states to them (Meins et al., 2002), child behavioural outcomes (Hobby et al., 2022; Sharp & Fonagy, 2008), cognitive development (Meins et al., 2003) and executive functioning (Hill & McMahon, 2016). MM has also been associated with other aspects of parent-child interactions. In particular, MM has been correlated with parents' tendency to provide the infant with autonomy support (Bernier et al., 2010; Bordeleau et al., 2012; Colonnesi et al., 2017; Lundy & Fyfe, 2016). The quality of the attachment relationship and social and emotional development was also noted to be linked to MM (Laranjo et al., 2008; Meins et al., 2013; Meins et al., 2001). Aldrich et al. (2021) conducted a meta-analysis to understand the impact of parental MM on the child's developmental capacities. They concluded that there was a modest ($r = 0.14$) but significant positive correlation between parental MM and children's positive developmental outcomes. These findings highlight the importance of MM for children's socio-emotional and behavioural development.

From the above research, it is evident that there is a link between maternal sensitivity and attuned mind-related comments, but that sensitivity and MM appear to be independent predictors of attachment security. Further, RF appears to be related to MM, although there is evidence these are distinct constructs and further research is needed to empirically examine associations. Finally, MM appears to be relatively stable and linked with secure attachment.

Parental mental health

Parent-child interactions, including MM, occur within the wider context of parenting. Parents' mental health impacts that of their infant; additionally, the parenting experience and wider context can also impact a parents' mental health (Naughton et al., 2018; Reupert et al., 2013). Parents of young children are at particular risk for mental health difficulties. An audit for a Central Coast Mental Health Service in New South Wales noted that 28% of patients were identified as parents and the Australian Bureau of Statistics data reported that for all Australian children, 23.3% lived in a family with parental mental illness (Maybery et al., 2009). Further 2005 data reflects this estimate of almost one-quarter of Australian children living with a parent with a mental illness (Naughton et al., 2018). Tobias et al. (2009), exploring New Zealand data, noted that sole parents had a significantly higher prevalence of mental illness than partnered parents. A United Kingdom study has noted that up to one in five young people lives in families with a parent with a mental illness. A study that combined the 2008 to 2014 National Survey on Drug Use and Health (NSDUH) data found 12.8 million parents (18.2%) had any mental illness in the past year, and 2.7 million parents (3.8%) had a severe mental illness in the prior year (Stambaugh et al., 2017). Together these findings indicate a substantial number of children are being raised by parents experiencing mental health difficulties across the globe.

The mental health of a parent can have a substantial impact on their children. An infant can be effected by parental mental health through shared genetic predisposition as well as the parent's mental health impacting their availability to their infant and specific parenting behaviours (Goodman & Gotlib, 1999). Research indicates that having a parent with mental illness puts the child at a 33% risk of developing a mental illness themselves (Leijdesdorff et al., 2017; Naughton et al., 2018; Reupert & Maybery, 2016). The mental health of a parent also increases the risk of poor school performance or dropping out of school, difficulties with

peer relationships and social skills, behavioural and development difficulties and challenges with day-to-day living (Leijdesdorff et al., 2017; Naughton et al., 2018; Reupert & Maybery, 2016). It was also noted that children of parents with mental health difficulties had lower rates of perceived competence and, in adulthood, had higher substance abuse rates (Reupert & Maybery, 2016). In addition, the more severe and the longer the exposure to parental mental health problems, the greater the distress in adulthood (Kamis, 2021). A child's physical health may also be negatively impacted by parental mental health (Wolicki et al., 2021). A parent's mental ill-health can therefore have far-reaching impacts on the infant and extend into their later life.

Limited research on an association between parental mental health and MM is available, and results vary. McMahon and Meins (2012) found that there was an indirect relationship between MM and negative maternal behaviour and that this was mediated through parenting stress. The mothers who reported lower parenting stress and showed less hostility in their interactions with their child used more mental state words to describe their child. MM was unrelated to maternal depression or perceived social support (Meins et al., 2011; Pawlby et al., 2010).

In their two studies exploring MM between adoptive and biological parents, Fishburn et al. (2017) found lower MM for the adoptive parents compared to the biological parents. Fishburn et al. (2017) second study noted that this group difference was independent of parental mental health and was also not fully explained in terms of children's behavioural difficulties. No differences in MM scores were found when comparing mothers with severe mental health problems with a community group or maternal psychological well-being. Yet, other research has found modest correlations between depression symptoms and parenting stress (Hill & McMahon, 2016). McMahon and Bernier (2017) noted that emerging evidence suggests that the tendency for MM to be present before childbirth may be associated with

traits such as personality or mental health. Specifically, those aspects are related to attunement to emotional cues and relational capacities.

Studies examining associations between parental depression and MM are mixed, with some reporting no significant correlation (Barreto et al., 2015; Demers et al., 2010c; Fishburn et al., 2017; Meins et al., 2011; Walker et al., 2012) and others reporting a moderate negative correlation (Lok & McMahon, 2006; Rosenblum et al., 2008; Schacht et al., 2013). Lok and McMahon (2006) found that mothers who had clinical levels of depression used less mind-related comments, and depressive symptoms were moderately related to MM. In addition, the mothers with depressive symptoms were more intrusive, hostile, and less sensitive. Interestingly they also noted that mothers of female children used more mentalising language than those of male children. In an inpatient sample, mothers with a clinical diagnosis of depression appeared to be marginally less MM; however, there was no difference between the in-patient and community samples when comparing various diagnostic groups (depression, bipolar, schizophrenia). Pawlby et al. (2010) noted that on admission, mothers with depression were slightly less likely to make appropriate MM comments about their infant, contrary to their expectations a mother having a severe mental illness did not necessarily make the mothers more likely to less accurately interpret their infant's internal states. Based on their review of the literature, McMahon and Bernier (2017) concluded that MM is likely related to the parent's current mood to some degree.

MM may allow a parent to see the child's behaviour as associated with internal states, rather than perceiving it as intentional, irrational or irritating; McMahon and Meins (2012) argued that this perspective likely reduces parents' stress. Camisasca et al. (2017) findings supported this, with results indicating that higher MM was associated with lower parenting stress. Camisasca and Di Blasio (2014) also explored specific dimensions of parental stress and MM, noting maternal stress can mediate the effect of MM on the child's internalising and

externalising behaviours. They showed that MM predicted parenting stress and child adjustment, further that parenting stress, dysfunctional parent-child interactions, and a difficult child mediated the link between internalising and externalising behaviours and MM. Hobby et al. (2022) findings suggested that specific considerations are needed as some contexts may benefit from different levels of appropriate MM; for example, low parent distress and child internalizing behaviours may benefit from higher appropriate MM while high parent distress and child externalizing behaviours may benefit from moderate levels of appropriate MM. Together these findings suggest an overall negative association between MM and parental stress. However, studies are relatively limited. This is particularly relevant to consider in relation to the current study, which was conducted over the time when COVID was present. Browne et al. (2021) reported the COVID pandemic impacted the family unit, the caregivers and the children, impacting psychological functioning, parenting, family functioning and the children's mental health.

Disorders that impact mentalising and relational capacity appear to be associated with differences in MM. In their review, McMahon and Bernier (2017) noted that compared with adults with no diagnosis, adults with Autism Spectrum Disorder (ASD) provided fewer mentalistic descriptions of self and others. Kristen et al. (2014) noted lower appropriate MM was linked with caregivers diagnosed with ASD. McMahon and Bernier (2017) reported two limited sample size studies indicated that MM of mothers with Borderline Personality Disorder (BPD) may be compromised; these mothers made almost four times as many non-attuned comments than a community sample. Schacht et al. (2013) found that the capacity for mentalisation was reduced in mothers diagnosed with BPD, the mothers had a reduced understanding of emotions and poorer emotion labelling, and there was a marginal association with lower MM.

It is important to note, however, that this research may be confounded by the potential complexities of coding MM in clinical populations. For example, Pawlby et al. (2010) suggested that mothers with severe mental illness demonstrated lower levels of MM in ways that were not captured by the current coding scheme, such as commenting in an irritated voice about the infants' focus when the infant ignored the parents' bids for attention. It would appear the mother understood the infant's mental state but that the way it was occurring would not improve the quality of the relationship. They suggested that an adapted MM coding scheme may be required for clinical populations.

Non-attuned MM comments are generally less frequent, so they are not as well researched (Hobby et al., 2022). Zeegers et al. (2017) conducted a meta-analysis and noted that non-attuned MM and insecure attachment between the parent-child are strongly associated. In two studies exploring MM and mental illness, Schacht et al. (2017) noted that mothers with significant mental illness scored lower for both appropriate and non-attuned comments than mothers who were psychologically well in their first study. In the second study they found that the mothers with significant mental illness had elevated levels of non-attuned comments.

Easterbrooks et al. (2017) found that post-traumatic stress disorder (PTSD) symptoms in the mother or maternal trauma exposure changed the expected association between MM and regulating the child's behaviour. Further, it was found that for mothers with a trauma history who did not have PTSD, there was a negative correlation between MM and the child's behaviour problems. However, mothers with PTSD showed an opposite pattern – with higher MM associated with greater behaviour problems. This suggests children of mothers with PTSD may become dysregulated by the mother's hyperarousal and hypervigilance in relation to their internal states. A recent study by Camisasca et al. (2017) found that mothers with persistent birth-related trauma symptoms at 17 months after the birth used fewer appropriate

mind-related comments with their infant and reported higher parenting stress, specifically the symptom of hyperarousal predicted both parental stress and MM. Camisasca et al. (2017) noted that MM fully mediated the association between the hyperarousal symptoms and the dysfunctional interactions component of the parenting stress measure. Considering these studies together highlights the impact trauma, and specifically, hyperarousal symptoms appear to have on MM; however, as there are only two studies, further research would be required.

Parental stress is a complex construct and will have many facets. Hayes and Watson (2013) conducted a meta-analysis of parenting stress and suggested that to understand stress it must be compared across different contexts. Kirk and Sharma (2017) researched mothers of children with ASD and concluded that MM did not have a protective effect on parental stress. McMahon (2012) concluded that there was an indirect link between negative maternal behaviours and MM, which was mediated by parenting stress. Exploring MM in parents of preschoolers, Walker et al. (2012) investigated the difference in MM between a clinical and community sample. They explored if there was a relationship between parental MM, depression, parenting stress, and children's emotional and behavioural difficulties. They found that MM in the clinical group was related to parenting stress: increased stress was correlated with lower levels of MM in the clinical group and no association for the community group. MM was negatively correlated with children's emotional and behavioural difficulties in the community group; however, there was no association for the clinical group. It is noted that the clinical samples were also significantly younger and more likely to be single parents. Depression in either the clinical or community group did not appear to correlate with MM. Overall MM was significantly lower in the clinical group than in the community group. There was no difference in the proportion of positive comments between

the two, but the negative mind-related comments were significantly higher in the clinical group.

Considering all the research together, it becomes clear that there are many questions that remain unanswered and gaps in the research. The findings related to parental mental health, stress and MM are inconsistent. It would appear that MM can vary in accordance with the parents' mood, this may indicate that MM would also likely be impacted by the context and social factors at the time, and as noted, the appropriate level of MM may vary depending on the situation or wider context; further research in this area would be useful. Because MM is considered unique to specific relationships, rather than a trait like construct, current parental mental health and stress may impact MM and, therefore, the quality of the parent-child relationship. It is then important to understand how MM relates to mental health in different contexts. In particular, MM may be responsive to intervention and could potentially be targeted to improve long-term outcomes for children (Colonnesi et al., 2013; Demers et al., 2010b; Meynen et al., 2022).

Research to explore the effectiveness of parenting strategies pre and post-intervention by comparing two recorded free play sessions highlighted that shifts in MM could occur. Research pre and post the 'Mindful with your baby/toddler' program included a recorded ten-minute free play session at home; the mothers play with their children with age-appropriate toys for five minutes and then without appropriate toys for the other five minutes. The researchers used recorded play to assess sensitivity, acceptance, and MM. The results indicated that maternal sensitivity, acceptance, MM, and dyadic synchronicity changes occurred post the group-based training. Mothers reported less parenting stress, were observed to show more acceptance and made less non-attuned comments than at pre-test, and the children showed higher levels of responsiveness (Zeegers et al., 2019). The researchers compared the MM of the mothers in the study with a non-clinical sample of Dutch mothers

living in the same urban area with similar socioeconomic backgrounds. They found that after the intervention, the mothers' mean levels of non-attuned MM decreased to levels comparable to the non-clinical sample (Zeegers et al., 2019).

The research to date indicates there is an interplay between mental health factors for the parents and that not all mental health struggles a parent may have will impact their MM or not in the same way. Parents with ASD and BPD showed reduced MM; this may indicate that if parents struggle with social communication as in ASD or interpersonal relationships as in BPD, this may hamper their ability to engage in MM with their children. It is noted that varied MM may be required for different contexts, and it may then be the requirement of flexibility and adapting to the context that hampers the MM of these parents, or it may be other factors entirely. At this time, research cannot conclude that parental mental health causes reduced MM or less accurate reflections of the child's mental state, but only that there is a complex interplay where MM is impacted in varied ways by parental mental health. These findings suggest that it would also likely be beneficial to explore the links between MM and various aspects of parental stress and mental health in multiple contexts.

MM, free play and other contexts

It has typically been considered that observation of mother-child interactions is best within the family's own home because behaviour is influenced by the social and physical setting within which the interaction takes place (Dowdney et al., 1984). Methodological issues with direct observation of parent-child interactions were explored by Gardner (2000); the review considered if observational findings are affected by the presence of the observer and if the type of task imposed and the location of the observation had an impact. Gardner concluded that the presence of an observer did not typically distort the nature of the

interaction but suggested that some interactions in structured or artificial settings are not necessarily representative of normal everyday interactions. This particularly refers to more structured or atypical tasks that dyads might be asked to engage in, compared with more naturalistic interactions (e.g., free play). Branger et al. (2019) examined maternal and paternal sensitivity with 109 families with four-month-old infants across four different observational settings; they used a routine caregiver session, a free play episode, the baseline and reunion of the Still Face Paradigm (SFP). They concluded that overall parental sensitivity was higher in more naturalistic contexts.

MM comments are assessed by recording verbatim the comments parents make to their infants during free play. However, in real-world parent-child interactions, MM is unlikely to be restricted to the free play context, most likely occurring throughout the day in a range of parent-child interactions across different contexts. Despite this, we know very little about how MM might present in other parenting interactions. Large differences in the expression of sensitive behaviour were found across different contexts: laboratory, home, observation during feeding, play, task or strange situation (Zeegers et al., 2017). In addition, Farrow and Blissett (2014) assessed maternal sensitivity during free play and feeding; they found that the mothers who provided more mind-related descriptors when asked to describe their infant were rated as being more sensitive in both the feeding and free play contexts, with small to moderate effect sizes. Understanding how MM presents across different parenting contexts will inform future parenting and MM interventions.

A small number of studies have examined parent MM in contexts other than free play. To explore MM and maternal touch, Crucianelli et al. (2019) used a video-recorded 10-minute mother-infant book reading session; they noted that the brief book reading sessions did not have the same sensitivity in predicting other maternal behaviours and recommended that future research explore the reliability in other contexts and across varied durations.

Specifically, they found that non-attuned MM comments were associated with touch behaviours that discouraged affective tactile responses from the infant, but appropriate MM comments did not necessarily predict more emotionally contingent tactile behaviour. This research highlights potential differences across different contexts in the expression and function of MM. As noted in research by Herrera et al. (2004) and Malphurs et al. (1996), mothers with post-natal depression use touch that would be rated as negative and restrictive. Spitoni et al. (2020) note that tactile deficiencies are frequent in psychiatric populations, and they reported that affective difficulties in adults with disorganised attachment reflect the alteration in the perception of affective touch. This research suggests that MM during a book-reading interaction did not necessarily correlate with other maternal behaviours as one might expect MM would, suggesting a need for further research examining MM outside of the free play context.

Planalp et al. (2019) also examined MM in a novel way: mothers, fathers and their infants participated in a SFP at three infant ages and then a one-off Strange Situation (as a measure of attachment security). All sessions were then recorded and coded for MM. In the SFP, the infant is placed in a highchair in a bare room with no toys and only a mirror behind the infant. The SFP procedure included five two-minute episodes following each other, the initial interaction where the mother plays with the infant, the first still-face, then the first reunion again the mother plays with the infant, the second still-face and the second reunion where again the mother plays with the infant. In this novel MM context (i.e., Still Face rather than free play), Planalp et al. found generally expected associations between MM, sensitivity and attachment. Specifically, they found that parents who were less sensitive also made fewer MM comments in the SFP context and that this was associated with insecure-avoidant infant attachment classification. In addition, parents used more non-attuned MM comments when infants had a higher expressed negative affect. This research suggests that, for the SFP

context at least, MM comments outside of the free play context can be meaningfully associated with attachment and parental sensitivity.

McMahon and Newey (2018) also examined MM in relation to the SFP. However, they measured emotional availability during the SFP and examined associations with MM during both free play and reunions following separations in the SSP. It is important to note that MM was coded after the SFP and SSP, both stressful and activating parent-infant contexts. Participants were 76 mothers and their seven-month-olds. Similar to Planalap et al. (2019), McMahon and Newey found that associations between MM measured during a more stressful context generally mirrored those found between MM and correlates in studies using the free play context. Specifically, they found that non-attuned MM comments were moderate to strong indicators of suboptimal emotional availability and more extreme infant affective responses in the SFP. Overall, these studies provide support for the importance of MM across both free play and more demanding parent-infant interaction contexts. In addition, much of the existing MM research is limited by low frequencies of non-attuned comments that cannot be analysed. A more demanding interactive context such as those described here may provide a unique opportunity to examine parents' use of non-attuned MM comments. This study, although small, starts to provide insight into the significance of non-attuned comments as indicators of the quality of the parent-child relationship (McMahon & Newey, 2018).

MM has also been considered in educational settings beyond the home-based caregiving context. Ornaghi et al. (2020) conducted research with teachers using a five-minute interview, from which MM was assessed. The teachers also completed two self-report questionnaires assessing their use of emotion-coaching versus emotions-dismissing socialisation styles and their beliefs about emotions. Ornaghi et al. found that greater MM and belief in discussing emotions with children and instructing them on emotional regulation were associated with higher levels of coaching style behaviours. Further, engaging in

emotional denial, lower MM and believing children should be protected from their emotions were associated with higher levels of dismissing style behaviour (Ornaghi et al., 2020).

The current study coded MM in free play and teaching task sessions. We know of no existing research that has examined MM during a teaching task. However, parental teaching may be an insightful context for examining MM. To learn more about socialisation of sons and daughters, Morrongiello and Dawber (1999) explored the communication of mothers and fathers in both a free play and teaching task. Parents were asked to teach the child a playground behaviour that posed some threat to safety (i.e., going down a firehouse pole). The results highlighted that both the mothers and fathers reacted differently to the sons and daughters and in a similar way. For example, they provided more directives and pressure to sons than daughters. This pattern of findings was consistent with findings from the free play task: with both mothers and fathers reacting differently to sons and daughters. This finding suggests some consistency in parent interaction style in free play and teaching contexts.

McElwain and Volling (1999) studied how marital conflict and depressed mood impacted the intrusive behaviours of mothers and fathers with their infants with the use of timed free play and an open-ended teaching task session. Their results showed differences between the mothers and fathers across the tasks. In the teaching task, the mother's appraisal of marital conflict mediated the impact of her depressed mood on her intrusive behaviours. However, in the free play task, both mothers' and fathers' depressed mood was directly related to less intrusive behaviours. The result highlighted the importance of context in better understanding how parents are impacted by depressed mood and marital conflict. Interestingly, these findings also suggest that the teaching task is more challenging and interactive and may be more likely to reflect individual differences in emotionally based behaviours than free play.

The current study

MM would appear to be a key construct in explaining the intergenerational transmission gap of attachment. Gaps in the current literature include: (1) limited understanding of the relationship between MM and parent mental health; and (2) limited consideration of parental MM outside of the free play context.

This study aims to understand if there is an association between observed MM during infancy and parental mental health and well-being. We predicted that higher parental symptoms of depression, anxiety, stress and difficulties in emotional regulation would be associated with fewer appropriate and greater non-attuned MM comments. We also predicted that higher parental reflective functioning would be associated with greater appropriate and fewer non-attuned MM comments.

The second aim of this study was to examine MM comments across free play and a more demanding teaching task context. Moving beyond the free play context to more demanding parenting interactions could allow for greater frequencies of non-attuned MM comments. This particular aspect of MM, the non-attuned comments, is thought to be closely related to differences in parental mental health, but it can rarely be examined due to low frequencies in typical samples and free play contexts. Therefore, we anticipated that this more demanding context might enable a better examination of non-attuned MM comments and that the pattern of associations between MM and parental mental health would be similar in the teaching task as those found in the free play context.

The current research was conducted during the COVID pandemic, and remote data collection via Zoom was used for the sessions to ensure consistency and safety. There is some evidence to support the use of video conferencing and Zoom for the collection of valid parent-infant interaction data. Video conferencing was explored by Gray et al. (2020) as a

qualitative interview strategy concluding that it helps researchers keep costs down and gain access to larger and more diverse participant populations as well as providing the participants with a positive experience. Archibald et al. (2019) explored the feasibility of using Zoom to gather qualitative interview data within a health context. Although the sample was small, results indicated that despite technical difficulties for some, most described the interview experience as highly satisfactory and generally rated Zoom above alternative interview methods such as face-to-face, telephone and other videoconferencing services, platforms and products. Interestingly this research was conducted prior to the COVID pandemic.

Considering the COVID pandemic, Boland et al. (2021) explored the use of Zoom and Skype for qualitative group research. They identified the advantages of videoconferencing applications as being cost-effective and able to reach disparate populations, concluding it is a viable alternative to face-to-face research. They did, however, note that to enhance data quality and the participants' experience, consideration should be given to technical issues, planning, privacy and rapport, as well as the equality of access.

Further, Segal and Moulson (2021) researched parent-infant interaction tasks via Zoom to continue their longitudinal studies in the COVID context. They concluded it was a feasible option with several advantages; it required fewer researchers, had a shorter duration than laboratory-based testing and had ease of recording. The infants were already at home and in a familiar environment, so less time was required for them to become acquainted with the testing environment. Challenges were also noted in that not all parts of their study were amenable to remote testing; the reliance on Zoom limited the viewpoint to a single recording and one angle (which may be advantageous in some settings but not in others). If a consistent play item is required, this then involves additional complexity to reliably get this to each participant or adapt to the lack of consistency. Security and participant privacy were also special considerations they reported needed to be kept in mind.

Conducting research during COVID, Shin et al. (2021) explored the advantages of remote data collection with mother-infant dyads. They noted that the quality of data obtained via online was comparable to that obtained in laboratory settings. They did note that researchers would sometimes need to direct participants back towards camera angles if they looked away and that some participants needed additional support and instruction to use technology. They also noted the importance of using the HIPAA-compliant version of the Zoom platform to ensure participant privacy.

Overall, research indicates that the use of Zoom is an acceptable option for capturing nuanced parent-infant interaction data that can be reliably coded. Conducting the research in the participants' homes via Zoom may also ensure a beneficial naturalistic setting for parents of infants.

Chapter 2 Methodology

Introduction

This study explores how parental mental health is associated with observed MM during infancy and if MM comments differ across free play and teaching tasks. Further, the study explores if parental mental health indicators are differentially associated with appropriate and non-attuned MM comments in teaching tasks compared with free play tasks. Data for this study was drawn from a broader set of data gathered across Australia and New Zealand study: the Parental Wellbeing Study.

Ethics

Prior to the recruitment of participants in New Zealand, ethical approval for the study was gained from the University of Waikato Human Research Ethics Committee (HREC Health) (Appendix A – Ethics approval) for research with humans (2020#82). In addition, data was gathered in Australia, and ethical approval for data collection in Australia through the University of Wollongong HREC was gained (2020/047).

Method

Participants

Participants were recruited through advertisements via Facebook on groups focused on parenting, daycare centres, community pages and grapevine pages. Participants were recruited in both Australia and New Zealand. The basic advert remained the same with a few

iterations to keep it fresh and to encourage new participants (Appendix B –Research advertisement).

The advert highlighted our desire to recruit parents and their six- to eighteen-month-old infants to voluntarily participate in our study focusing on parental wellbeing and attachment. The participant information sheet (Appendix C – Participant information sheet) and a consent form (Appendix D – Consent form) were sent to all that responded with interest in participating. Once participants provided consent, sessions were booked, and the participants were asked to complete an online survey, parent interview and a parent-child play session. This study only used data from the online survey and the parent-child play session.

The voluntary nature of this research was highlighted in the consent form and when participants were contacted. Exclusion criteria for parents were not being fluent in English and not being a primary caregiver for the infant. Exclusion criteria for infants were a significant developmental or health issue that would impact the capacity to participate in the play interaction. Several participants in this study spoke other languages, including Te Reo Māori, German, Afrikaans and Spanish. In some instances, the parents spoke during the free play or teaching tasks in other languages other than English, and translations were done where possible.

The final sample comprised 62 dyads, 31 from Australia and 31 from New Zealand. The sample was primarily mothers ($n = 56$), with 32 sons and 30 daughters. Parent ages ranged between 23 and 45 years ($M = 32.26$, $SD = 4.39$). Most participants were Australian or New Zealand European, with one Latin American dyad, one American dyad, two European dyads, two English dyads, three South African dyads and five Māori dyads.

Online survey

The online survey aimed to measure different aspects of health and wellbeing and obtain demographic information. The online survey included a participant information sheet (Appendix C – Participant information sheet) and informed consent (Appendix D - Consent form). Demographic information was collected, some of which was not used in this study, such as COVID-related information. Measures used from the online survey in the current analyses are described below.

Depression Anxiety Stress Scale-21 (DASS-21; Lovibond & Lovibond, 1995; see Appendix F – Depression, anxiety and stress scale (DASS-21)). The DASS is a 21-item scale with three self-report sub-scales designed to measure the emotional states of depression, anxiety, and stress over the previous week. Seven items are included per scale, and items are scored on a four-point scale of relevance. The measure is reported to have good internal consistency with Cronbach alpha's ranging from (α .82-.93) for the three scales (Henry & Crawford, 2005).

Difficulties with Emotion Regulation (DERS; Gratz & Roemer, 2004) (see Appendix G – Difficulties in emotion regulation scale (DERS)). The DERS is a 36-item self-report measure of emotional awareness and regulation difficulties. Items are rated from 1 to 5, with higher scores indicating greater emotion regulation difficulties. DERS assesses six facets of emotional regulation: non-acceptance of emotional responses, difficulties in engaging in goal-directed behaviour, impulse control difficulties, lack of emotional awareness, limited access to emotional regulation strategies, and lack of emotional clarity. DERS is reported to have high internal consistency (α =.93) and Cronbach alpha coefficients of .80 for each subscale (Gratz & Roemer, 2004). For this study, the total DERS score was considered.

The Parental Reflective Functioning Questionnaire (PRFQ; Luyten, Mayes, Sadler, Fonagy, Nicholls, Crowley & Slade, 2009). The PRFQ has a full scale of 39 items which was administered; of this 18 questions for a shortened version were used for this study (see

Appendix H – Parental reflective functioning questionnaire (PRFQ)). This 18-item self-report measure is rated on a 7-point Likert-type scale that assesses parental curiosity regarding their child’s mental state (Luyten, Nijssens, et al., 2017). It contains three subscales: pre-mentalising, certainty about mental states and interest and curiosity. It is reported to have good internal consistency across the subscales, ranging from $\alpha = .70$ to $.82$ (Luyten, Mayes, et al., 2017). Cronbach’s alpha values for the current sample subscales were: pre-mentalising ($\alpha = .64$), certainty about mental states ($\alpha = .81$) and interest and curiosity ($\alpha = .73$).

Parent-child play sessions

The parent-child play sessions were recorded via Zoom, including ten minutes of free play between the parent and infant, followed by ten minutes of the parent teaching the infant a task from a list provided (Appendix E – Teaching task list). Researchers only added instructions where toys were very noisy and interfered with the recording or if the parent or infant could not be seen or heard. During the recording of both sessions, the researchers’ video was switched off, and the sound was muted to reduce observer impact.

The recorded sessions were transcribed verbatim into individual comments or idea units. Only comments made by the parent to the infant were then coded as MM if they were mind-related comments. Mind-related comments are defined in the MM manual as “any comment that (a) uses an explicit internal state term to comment on what the infant may be thinking, experiencing or feeling; or (b) ‘puts words into the infant’s mouth’ with the caregiver talking on the infant’s behalf.” (Meins & Fernyhough, 2015, p. 5).

MM was coded as per the Meins and Fernyhough (2015) coding manual. Comments in both the free play and teaching tasks were coded into one of four categories: (1) Positive attuned MM comments, where the comment is positively valenced and matches the infant’s mental state; (2) Appropriate negative MM comments, where the comment is negative in

nature and matching the infant's mental state; and (3) Positive and negative non-attuned MM comments, where the comments were positive or negative, but non-attuned or in contradiction to the infant's state. Although this was the initial coding, it is noted in the results that non-attuned positive and negative comments were grouped together for analysis due to low frequencies. To establish inter-rater reliability, two researchers coded 14 play sessions separately and then compared results. This made up 22.6 % of all the data coded. Interrater reliability for coding MM comments as appropriate (positive or negative) and non-attuned (where positive or negative non-attuned comments were combined) was $\kappa = 0.7$, representing the substantial agreement between coders (Cohen, 2016; McHugh, 2012). All disagreements in coding were reviewed and discussed until a consensus was reached. The average percentage of inter-rater reliability was 88.17%, with a range of 60% -100%.

Data analysis

All data analysis was conducted using IBM SPSS v.26. There was a single case outlier in the teaching task; the transcript was checked, identified as an accurate outlier, and corrected (Kutner et al., 2004). Following this, skewness and kurtosis values fell within ± 2 , considered acceptable (George & Mallery, 2016). Bivariate correlation analyses were conducted to examine associations between continuous variables and independent samples t-tests for dichotomous variables to examine the differences across free play and the teaching task contexts. One-way ANOVAs were calculated for variables with more than two categories. Multi-variable linear regression analyses were used to test unique associations (after controlling for covariates) of parent mental health variables with MM variables across both free play and teaching tasks.

Chapter 3 Results

Descriptive and Preliminary analyses

A power analysis was performed for sample size estimation. With an $\alpha = 0.05$ and power = 0.80, the projected sample size needed with a small to medium effect size (using Cohen's [1988] criteria) was approximately $N = 34$ to $N = 64$ (*G*Power* 3.1). Sixty-five online surveys, sixty-three free play sessions and sixty-four teaching task sessions were completed. In the New Zealand data, one respondent completed the online survey but then did not participate in any further portions of the research, which meant that online survey data was excluded. One set of parent-child free play and teaching tasks from both the Australian and New Zealand data were excluded as either one or both could not be sufficiently transcribed as too much of the interaction was not in English. The final sample consisted of 62 dyads, 31 from Australia and 31 from New Zealand.

Household income distributions for the sample are shown in Table 1. Three parents did not indicate their household income status. The majority of the respondents (43.5%) had a household income of between \$80 000 and \$120 000 annually.

All MM variables were divided by the total individual comments or 'idea units' in order to control for parental verbosity. Square root transformation was conducted for the non-attuned MM comments for both the free play and teaching tasks. In addition, in the teaching task, there was a single case outlier; the transcript was checked, identified as an accurate outlier, and corrected (Kutner et al., 2004). Following this, skewness and kurtosis values fell within ± 2 , considered acceptable (George & Mallery, 2016).

Table 1.*Exploration of the household income status of the sample*

	n	%
<i>Household income</i>		
<\$80,000 annually (up to \$1538 weekly)	12	19.4%
\$80 000 - \$120 000 annually (\$1139 to \$2307 weekly)	27	43.5%
>\$120 000 annually (\$2307 and above weekly)	20	32.3%

Key differences in MM and mental health variables were examined as a function of the two cohorts: Australia and New Zealand. New Zealand parents ($M = 0.10$) used proportionately more appropriate positive MM comments during free play compared with Australian parents ($M = 0.07$), $t = -2.03$, $p = 0.05$. In contrast, Australian parents used proportionately more appropriate positive MM comments ($M = 0.16$) during the teaching task compared with New Zealand parents ($M = 0.09$), $t = 3.214$, $p = 0.002$.

Independent sample t-tests were conducted to examine differences in key MM and mental health variables as a function of child and parent gender. There were no significant differences based on child gender. There was a significant difference for MM appropriate positive comments during free play, $t = -2.43$, $p = 0.04$, with mothers using them proportionately more ($M = 0.09$) compared with fathers ($M = 0.06$). A one-way ANOVA was

conducted to examine differences in key MM and mental health variables as a function of the three household income groups as explored in Table 1. No significant differences were found.

Table 2 explores the correlations found between parental age, child age and sibling numbers. A weak negative correlation ($r = -0.31$) was noted between parental age and appropriate negative MM comments in the teaching task. In addition, a weak negative correlation ($r = -0.34$) between parental age and anxiety symptoms was noted from the DASS scores (Akoglu, 2018).

Table 3 explored the descriptive statistics for the DASS, PRFQ and DERS; it provides the range, mean and SD of the participants' scores on these items.

Table 4 provides the descriptive statistics for the parents' MM comments across both the free play and teaching tasks.

Inferential statistics

Paired sample t-tests were calculated to examine whether there were significant differences in parents' use of MM comments across the free play and teaching tasks (see Table 4). While parents spoke more overall in the free play task ($t = 4.31, p < 0.001$), they made significantly more appropriate positive ($t = -3.05, p = 0.003$) and negative ($t = -3.67, p < 0.001$) comments in the teaching task compared with the free play task.

Table 2.*Correlations related to parental age, child age and sibling numbers*

	Parent age		Child age		Number of	
	(years)		(months)		siblings	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
<i>Free play task</i>						
MM appropriate positive	0.02	0.88	0.05	0.68	0.15	0.26
MM appropriate negative	-0.10	0.43	0.17	0.18	0.05	0.73
MM non-attuned	0.07	0.60	0.03	0.85	0.03	0.82
<i>Teaching task</i>						
MM appropriate positive	0.12	0.34	0.15	0.25	-0.02	0.90
MM appropriate negative	-0.31	0.02	-0.10	0.45	0.06	0.63
MM non-attuned	-0.17	0.19	0.08	0.52	-0.13	0.31
<i>DASS scores</i>						
Depression symptoms	-0.10	0.42	0.17	0.18	-0.01	0.93
Stress symptoms	-0.18	0.17	0.03	0.84	0.18	0.17
Anxiety symptoms	-0.34	0.01	-0.12	0.35	0.01	0.93
<i>PRFQ</i>						
Pre-mentalising	-0.14	0.29	-0.03	0.81	0.000	1
Certainty about mental states	-0.12	0.35	-0.05	0.68	-0.04	0.77
Interest and curiosity	-0.10	0.45	-0.10	0.46	-0.02	0.90
<i>DEERS total</i>	-0.02	0.87	0.02	0.86	0.17	0.19

Note: values in bold indicate a significant correlation at $p < .05$.

Table 3.*Descriptive statistics DASS, PRFQ and DERS*

	<i>Range</i>	<i>Mean</i>	<i>SD</i>
<i>DASS</i>			
Depression	0 - 13	3.34	3.42
Anxiety	0 - 10	1.74	2.32
Stress	0 - 16	6.65	3.59
<i>PRFQ</i>			
Pre-mentalising mode	1 – 4.33	1.63	0.59
Certainty about mental states	2 – 5.83	3.69	0.98
Interest and curiosity in mental states	4.17 - 7	6.32	0.58
<i>DERS</i>	47 - 122	87.79	13.34

Table 4.

Descriptive statistics for parent MM across both free play and teaching tasks

	Free play			Teaching task			Paired sample t-test	
	Mean	SD	Range	Mean	SD	Range	t	p
Appropriate positive MM	0.09	0.06	0 - 0.24	0.12	0.09	0 - 0.40	-3.05	0.003
Appropriate negative MM	0.01	0.01	0 - 0.05	0.02	0.02	0 - 0.08	-3.67	<0.001
Non-attuned MM	0.09	0.08	0 - 0.27	0.10	0.10	0 - 0.39	-0.35	0.727
Total turns	128.26	59.48	27 - 256	90.48	44.11	19 - 255	4.31	<0.001

Note. MM = mind-mindedness; non-attuned MM is a combination of both positive and negative comments; all variables are proportions (MM comments divided by idea units)

Correlation analyses

An exploration of the DASS sub-scales and their correlations with MM is shown in Table 5. A weak positive correlation was noted between appropriate negative MM comments and parental stress symptoms of the DASS in the free play task ($r = 0.34$). In the teaching task, a weak positive correlation was noted between appropriate negative MM comments and parental stress ($r = 0.31$) and parental anxiety ($r = 0.37$) symptoms of the DASS. MM non-attuned comments in the teaching task had a weak negative correlation with DASS stress symptoms ($r = -0.35$).

The correlation between the PRFQ subscales of pre-mentalising modes, certainty about mental state and interest and curiosity in mental state is explored in Table 6. A weak positive correlation was noted between negative MM comments and non-attuned MM comments and pre-mentalising modes in the teaching task ($r = 0.29$ and $r = 0.25$, respectively).

Correlations between DERS and MM comments are shown in Table 7. A positive correlation was noted between appropriate negative MM comments in the teaching task and the DERS total; this was, however, noted to be weak ($r = 0.27$). Higher scores on the DERS indicate more difficulty in emotion regulation. There was a weak negative correlation between non-attuned MM comments and the DERS total scores in the teaching task ($r = -0.31$).

Table 5.*Correlations between DASS-21 subscales and MM*

	Depression		Stress		Anxiety	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
<i>Free play task</i>						
MM appropriate positive	-0.12	0.35	-0.02	0.87	-0.21	0.10
MM appropriate negative	0.16	0.21	0.34	0.01	0.19	0.14
MM non-attuned	0.47	0.72	-0.15	0.26	0.01	0.94
<i>Teaching task</i>						
MM appropriate positive	-0.14	0.28	-0.12	0.36	-0.22	0.09
MM appropriate negative	0.18	0.17	0.31	0.01	0.37	0.003
MM non-attuned	-0.24	0.06	-0.35	0.01	-0.18	0.16

Note: *r* in bold indicates a significant correlation.

Table 6.*Correlations between PRFQ subscales and MM*

	Pre-mentalising modes		Certainty about mental state		Interest and curiosity in mental states	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
<i>Free play task</i>						
MM appropriate positive	0.03	0.80	-0.15	0.25	-0.06	0.65
MM appropriate negative	0.07	0.61	-0.13	0.30	-0.03	0.79
MM non-attuned	0.23	0.07	-0.07	0.59	-0.23	0.07
<i>Teaching task</i>						
MM appropriate positive	-0.11	0.39	-0.06	0.62	0.06	0.63
MM appropriate negative	0.29	0.02	-0.20	0.13	0.04	0.79
MM non-attuned	0.25	0.05	-0.05	0.68	-0.25	0.05

Note: *r* in bold indicates a significant correlation.

Table 7.*Correlations between DERS and MM*

	DERS Total	
	<i>r</i>	<i>p</i>
<i>Free play task</i>		
MM appropriate positive	-0.01	0.93
MM appropriate negative	-0.01	0.93
MM non-attuned	-0.21	0.10
<i>Teaching task</i>		
MM appropriate positive	-0.18	0.17
MM appropriate negative	0.27	0.04
MM non-attuned	-0.31	0.01

Note: *r* in bold indicates a significant correlation.

Regression analyses

Three stepwise linear regression models were created to test unique predictors of parent MM comments. All Durbin-Watson values were close to two, and there were no outliers identified in the regression plots. Parental mental health and covariates were entered in each model in a stepwise fashion. Independent variables were selected based on significant univariate analyses; models are shown in Table 8. For the first regression model, parent MM appropriate negative comments during free play were regressed onto parent stress symptoms. Parents with higher stress symptom scores on the DASS made more negative appropriate

MM comments during free play, with stress explaining 11.7% of the variance in MM appropriate negative comments. For the second model (appropriate negative MM comments in the teaching task), parent anxiety and stress symptoms, PRFQ pre-mentalising and DERS total scores were entered. Only parent anxiety symptoms were a unique predictor, explaining 12.1% of the variance in appropriate negative MM comments during the teaching task. For the final model (non-attuned MM comments in the teaching task), stress symptoms, PRFQ pre-mentalising and DERS were entered. Stress and PRFQ pre-mentalising were retained, together explaining 23.2% of the variance in non-attuned MM comments during the teaching task.

Table 8.

Stepwise linear regression analyses.

	<i>B</i>	<i>SE B</i>	<i>β</i>	<i>t</i>	<i>p</i>
<i>Free play: MM appropriate negative</i>					
Stress	0.001	0.000	0.343	2.825	0.006
<i>Teaching task: MM appropriate negative</i>					
Anxiety	0.003	0.001	0.368	3.070	0.003
<i>Teaching task: MM non-attuned</i>					
Stress	-0.012	0.003	-0.419	-3.592	< 0.001
PRFQ: pre-mentalising	0.058	0.020	0.340	2.915	0.005

Conclusion

Several correlations were noted as well as differences and similarities in the amount and type of MM comments. Parental stress, anxiety, pre-mentalising modes and their emotional regulation appeared to have an impact on MM comments they made with their children. Differences in MM comments across the two samples were also noted as well as differences across the MM comments made in free play and the teaching task. The discussion will explore these in further detail to glean more information about their meaning.

Chapter 4 Discussion

Parental MM has key implications for the developing parent-infant attachment relationship, so research to understand parental variables associated with MM is important. This study focused on exploring MM comments made by parents with their 6-18-month-old infants and associations with parent mental health indicators: depression, anxiety, stress, difficulties with emotion regulation, and RF. In addition, to better understand parent MM across more naturalistic and potentially challenging or demanding contexts, we wanted to explore the association between observed MM during infancy and parental mental health in both the traditional free play context as well as during a teaching task interaction. We predicted that higher parental symptoms of depression, anxiety, stress and difficulties in emotional regulation would be associated with fewer appropriate and greater non-attuned MM comments. Concerning the different interaction contexts, we predicted that the pattern of associations with parental mental health and free play MM comments would be similar in the teaching task context, indicating that MM occurs across multiple contexts in infants' lives. We also expected that the more demanding nature of the teaching task would enable the identification of an association between parental mental health symptoms and non-attuned MM comments, which typically occur at frequencies too low for statistical analysis in free play among community samples. A number of associations were found between parental mental health indicators and MM. Parental stress was significantly associated with appropriate negative MM comments in the free play context, and anxiety symptoms were significantly associated with appropriate negative MM comments in the teaching task. Parent stress and pre-mentalising were significantly associated with non-attuned MM comments in the teaching task, with higher pre-mentalising (a marker of difficulties with parent mentalising) associated with more non-attuned MM comments and greater stress associated

with fewer non-attuned MM comments. The findings will be discussed in detail; please note that for ease of interpretation, our second aim (related to the examination of MM across the two contexts: free play and teaching task) is discussed first. Furthermore, it is important to consider this study and its results in light of its context, as the COVID pandemic was at play during the Australian and New Zealand data collection stages. Although it is outside of the scope of this study to explore the impact of COVID in-depth, and as such, COVID is only briefly explored, the reader is urged to keep in mind that COVID-related practical matters or psychological impacts may have impacted the data obtained.

MM across the teaching task and free play

In this research, we reviewed MM across both the traditional free play context and a more demanding parental teaching task. Parenting occurs across multiple contexts, so it was important to examine MM beyond the free play situation. In addition, a more demanding context, such as a teaching task, may better allow for the coding of appropriate versus non-attuned MM comments, with the latter infrequently occurring in community samples during free play. The data from this study showed that parents tended to speak more overall in the free play task but made proportionately more appropriate positive and negative MM comments in the teaching task. Counter to our predictions; the teaching task did not elicit higher proportions of non-attuned MM comments.

The limited research to date suggests that more structured or demanding tasks may be more likely to elicit differences in parenting behaviours associated with parent mental health difficulties. Ginsburg et al. (2006) had mothers with anxiety and mothers without engage in both a structured and an unstructured interaction task with their 5 year old children. They found higher levels of parenting behaviours of overcontrol, anxiety, and criticism in the

structured task. We expected that this may have parallels to our findings with parental MM during infancy. In our sample, parents spoke significantly less in the teaching task compared to the free play; however, they made significantly more appropriate MM comments in the teaching task, and this difference was found for both positive and negative appropriate MM comments. This difference of less overall talk but more appropriate MM talk in the teaching task may reflect an increased focus on the infant and the task at hand as a result of the session being structured to reach a goal of teaching the child a particular task. Specifically, the greater appropriate comments may reflect the parent ‘tuning in’ to attempts to direct the child more and acknowledge the child’s experience. A more in-depth discussion of associations between parental reflective capacity and MM is found later in the discussion.

Our findings represent the first examination of MM within a parent-infant teaching task and suggest this as a useful context for examining MM. Further research is required to explore how differences in MM across varied contexts might be associated with child socioemotional, behavioural and cognitive outcomes. Specifically, it will be important to consider whether MM comments in the teaching context are associated with child outcomes (e.g., theory of mind (Arnott & Meins, 2007; Centifanti et al., 2016), emotion understanding (Meins, 2013a; Meins et al., 2013)) in a similar way to MM in the free play context.

There may be an overall benefit to more MM comments in general, yet, there may be more situational-specific nuances where MM comments in a particular context may be more helpful for specific developmental outcomes. As noted by Hobby et al. (2022), there are times when either higher or lower MM may be more appropriate. In structured or objective achievement-focused tasks, such as a teaching task, fewer but more focused and appropriate comments may be more useful. That is, when there is a specific goal in mind when interacting with an infant, it may be more relevant to focus comments on the task, reducing the overall verbosity. The increase of appropriate comments may reflect a strength-based

parenting approach of encouraging the infant and reflecting on how the infant relates to the task. Future research would be useful to explore the parental MM across various tasks and the relevance of higher or lower MM and verbosity. For example, it may be useful to explore teaching tasks that are appropriate for the infant versus those the infant will not be able to complete. For the current teaching task, parents were asked to choose a task (from a list) which their child could not yet do, but which they expected they could achieve soon. Choosing a task more developmentally 'out of scope' may further highlight differences in use of appropriate MM comments to support children's learning. In this way, appropriate MM comments can potentially be viewed as parental scaffolding, a Vygotskian concept that describes parents as a more informed partner, supporting their child to learn through the provision of developmentally appropriate support (Aldrich et al., 2021). It may also be helpful to interview the parents alongside the coded material to obtain their thoughts about the interaction and their intentions.

MM and parental depression, anxiety and stress in free play and the teaching task

Research (McMahon & Bernier, 2017; Pawlby et al., 2010) has highlighted an association between greater depressive symptoms and fewer MM comments in free play contexts. However, contrary to predictions, this study found no association between parental depression symptoms and MM. Whilst inconsistent with some research this is consistent with Walker et al. (2012), where depression was found to be unrelated to MM in either the community or clinical samples they studied, highlighting the complexity of these constructs and interactions. The difference in findings may relate to sample differences. While both Pawlby et al. and Walker et al. compared clinical and community samples, Pawlby et al. examined mothers of infants with severe mental health problems from an inpatient unit,

whereas Walker et al. examined parents of 3-5 year old children, where the clinical status was based on the child referral to a community mental health service. Further research is needed to examine MM within samples of parents with severe or chronic mental health difficulties. Understanding how parent mental health relates to MM for 'high risk' parents can then inform interventions for these populations (Judd et al., 2018; Schacht et al., 2017)

We found no significant findings related to parent anxiety and MM in the free play sessions, but there was an association within the teaching task. In the teaching task, greater parental anxiety symptoms were associated with greater appropriate negative MM comments. Our measure of parental anxiety may reflect some underlying parental traits, such as conscientiousness (Fan, 2020; Widiger & Costa Jr, 2002). Alternatively, this association may reflect emerging differences in parenting styles. Research has shown that authoritative parenting styles, which can include demandingness and responsiveness, positively influence children and adolescents' life domains of education and psychological wellbeing (Bibi et al., 2013; Nyarko, 2011). It may be that the greater appropriate negative MM comments reflect a more conscientious parenting style among parents who also have higher anxiety symptoms. Further research measuring parental personality and conscientiousness alongside MM and mental health could help understand these relationships.

Our findings reflect the inconsistent research results to date regarding anxiety and MM. Fishburn et al. (2017) found inconsistent results across their three samples of adoptive, foster and child protection notifications, with either no association or a modestly significant association with MM and anxiety. Using samples of school-age children and young adults, Pequet and Warnell (2021) found that where social anxiety levels were higher, MM towards close social partners was also higher. Further research regarding how MM and anxiety are associated would be beneficial. It would be helpful to explore the differences in anxiety and MM across different samples and within different populations (clinical and non-clinical

samples). It may also be helpful to gain a more in-depth measure of parental anxiety: particularly the chronicity of anxiety over time, as research shows persistent parental anxiety is associated with poorer outcomes for children (Fellow-Smith, 2005; Wallrath et al., 2020; Zelkowitz et al., 2009).

Our findings indicated that greater parental stress symptoms were associated with more appropriate negative MM comments in the free play task. In contrast, prior research indicated a negative association between parental stress and MM, with greater stress associated with fewer MM comments. Interestingly, however, greater stress scores were associated with greater appropriate negative MM comments. It may be that stress is linked with a more negative focus or bias (Chang & Overall, 2022; Hemenover, 2001). As this is a non-clinical sample experiencing COVID impacts, our measure of stress may be reflecting parent mental health status among a group of parents who might not otherwise have experienced such difficulties. Hill and McMahon (2016) noted that MM is linked to a broader capacity for self-awareness. It may be that stress increases the parents' self-awareness and also increases their negative focus hence an increase in appropriate yet negative MM comments. Further research is needed to understand whether parent stress is associated with a negative attention bias in other contexts or whether this is specific to the parent-infant relationship. Our measurement of stress may also be impacted by data collection occurring during the COVID pandemic. Adams et al. (2021) reported that parental stress increased over COVID and subsequently did not return to the pre-COVID levels post COVID. This highlights the complexity of COVID related stress. Br et al. (2020) found similar results noting that 37% of their sample of parents felt more stressed after the lockdown and 8% needed counselling or therapy. As noted by Chen et al. (2022), to stop the spread of COVID significant lifestyle changes occurred, in this context parents with less support reported higher parental stress and lower psychological wellbeing. They highlighted that parenting

stress was the strongest predictor of parental psychological distress. This is true in general but likely exaggerated in the COVID context, further research to clarify this would be useful.

Greater parental stress was associated with fewer non-attuned MM comments in the teaching task of this study. One could speculate that in a teaching task, greater parental stress may be associated with greater focus on the infant and task at hand, which is why we see fewer non-attuned comments with more appropriate yet negative MM comments in the free play context. These findings however are in contrast to prior research showing higher parental stress is associated with lower MM (Camisasca et al., 2017; Walker et al., 2012). This prior research, however, generally focused on free play sessions; this may indicate, as Hobby et al. (2022) noted, that different MM levels may be more appropriate in different contexts. In addition, differences in findings may also be explained by sample differences in stress levels. According to the Yerkes-Dodson law of optimal arousal, performance increases with arousal or stress up to moderate levels, and then performance tends to decline at higher levels of stress (Yerkes & Dodson, 1908). The Yerkes-Dodson law has been found to apply to parenting and family contexts (Lisitsa et al., 2021). The prior research showing negative associations between stress and MM were with clinical samples: Walker et al. (2012) had a combined clinical and community sample and Camisasca et al. (2017) examined mothers experiencing post-traumatic stress symptoms following childbirth. It may be that these parents were experiencing higher levels of stress, and therefore ‘declining performance’ in the form of lower MM during parenting interactions. Although our sample was recruited during COVID, our mean DASS stress score fell within the ‘normal’ range. This may mean that the parents in our sample were experiencing mild to ‘optimal’ stress levels, thus enhancing ‘performance’ in the form of fewer non-attuned MM comments.

Parental RF and MM in free play and the teaching task

RF allows us to see ourselves and others as intentional agents; we develop this capacity based on how well our caregivers reflect on our experiences. RF is considered key to adequate caregiving and forming a secure attachment. In this study, there were no significant associations between parental RF and MM in the free play task; this finding is in line with the literature highlighting parallels between MM and mentalising, while also emphasising that they are distinct constructs (Sharp & Fonagy, 2008). The results from the teaching task however indicated that greater parental pre-mentalising modes were uniquely associated with more non-attuned MM comments. This indicated that parents who were still developing a capacity to hold the child's mental state in mind made more non-attuned MM comments. Research has noted that mentalising and MM have many parallels but differ in their operationalization; MM is a relational quality focusing on the evaluation of the parent-child interactions and reflects aspects of the parent-child attachment relationship; mentalising is a cognitive-behavioural competence indicating metacognitive representations that parents hold about their relationship with their child (Barreto et al., 2015; Laranjo et al., 2014; Sharp & Fonagy, 2008). Parent mentalising describes a parent's capacity to understand their own and the mental state of their child (Camoirano, 2017; Yatziv et al., 2018); it is noted that a child starts off pre-reflective and develops full RF based on the caregiver's mentalising capabilities (Fonagy et al., 1998). In pre-mentalising or non-mentalising modes of thought, there is an impairment in the parents' ability to attain a clear view of the child's inner world. As such, the association with non-attuned MM comments makes theoretical sense. It is important to note that we included the teaching task because non-attuned comments are rare (and therefore difficult to examine statistically) in free play contexts. Although we did not see a statistical difference in the frequency of non-attuned comments across the free play and teaching task

contexts, the current findings do provide some evidence that the teaching task may be an especially salient context within which to examine non-attuned MM and its correlates.

Arnott and Meins (2007) and Rosenblum et al. (2008) also found associations between RF and MM. The association with pre-mentalising modes and increased appropriate yet negative MM comments may indicate the possibility of a staged development of MM; this would require further exploration. It may be that RF and MM are distinct constructs showing no association in the free play, and only a association in the teaching task reflects the impact of parental motives or intent on their ability to be reflective of their child. In free play, parents may not have a goal in mind and may be less driven to get their child to complete a task. As such they may be more able to appreciate the individual psychological agent of the child and accurately perceive the child's intentionality. In the teaching task, the parent may be increasingly focused on completing a task and as such less able to be reflective of the child's intentions. For parents without more advanced RF capacity, the task demands may therefore interfere with the parent's ability to be MM. Further studies to understand the interactions between RF and MM across different tasks may be helpful to gain further insights in this area.

Parental difficulties with emotion regulation and MM in free play and the teaching task

Parental difficulties with emotion regulation were not uniquely associated with any of the MM variables in regression analyses for the free play. Correlation analyses indicated a possible association with greater DERS scores and greater negative appropriate and fewer non-attuned MM comments in the teaching task only. However, DERS scores were no longer significant in the regression analyses once other mental health measures were included. The current findings do suggest a pattern of parental negative affect (anxiety, stress or emotional

dysregulation) associated with greater negative appropriate MM comments. This may reflect that parents who are themselves experiencing more negative emotional states, may in turn focus more on the negative mental states of their child during interactions. This may become transactional over time, whereby their children may also develop a negative bias, meaning a likely increase in parents' negative comments being attuned (Platt et al., 2022; Sfarlea et al., 2019; Waters et al., 2015). It would be interesting to understand the specific dyadic interactions over time through longitudinal research: it may be that parents experiencing mental health symptoms increase the negative affect they model to their children, and this may lead to more negative mental states in the child, which the parent then further attunes to. Future research would also need to explore the impact of negative MM comments on the infant and their later development, even if those comments are appropriate. Consider a parent with greater stress and anxiety with an information processing bias who makes ongoing negative MM comments; whilst they may be appropriate, the potential impacts on the child's perception of their own behaviour remain unknown. Affrunti and Ginsburg (2012) highlight that a child receives a signal from parents with higher levels of overcontrol and parental anxiety that their environment is threatening, which in turn increases their threat appraisal of ambiguous situations and increases their anxiety. A similar mechanism may occur when parents have more appropriate but negative MM comments. It is important to note that a greater proportion of appropriate negative MM comments does not indicate an absence of positive mental state comments. It may be helpful to consider both overall frequencies and proportions in further research examining associations with child outcomes. Finally, as highlighted above, this study used a non-clinical sample, and as such, they may not display the level of emotional dysregulation as seen with mothers who have BPD where their MM appeared to be compromised (McMahon & Bernier, 2017; Schacht et al., 2013).

MM and demographics

The current findings indicated that mothers used more appropriate positive comments proportionally than the fathers in this study. However, this sample included only a very small proportion of fathers ($n = 6$), and as such further research, including more fathers, would be needed to draw any significant conclusions in this regard. Interestingly, New Zealand parents used proportionally more appropriate positive MM comments in free play than the Australian parents, but the Australian parents used proportionally more appropriate positive MM comments during the teaching task than the New Zealand parents. It is important to note that there were dyads from other cultural backgrounds within each cohort, with some Australian parents currently living in New Zealand and vice versa. However, these preliminary findings may provide some insight into culturally informed parenting behaviours or reflect underlying contextual-specific parenting values and beliefs. Only a handful of studies have specifically examined cross-cultural differences in MM, and most have compared Western European with Asian parents. Dai et al. (2020) explored differences in MM of urban Australian and urban mainland Chinese mothers and their toddlers and concluded that when adjusting for the total number of comments, the Australian mothers made more appropriate mind-related comments and less non-attuned comments than their Chinese counterparts. They noted the findings were consistent with others relating to cultural differences in various parenting and verbal discourse elements. They concluded that their results might be attributed to the cultural and linguistic differences in relation to the focus on the mind. After studying the speech patterns of Japanese and British mothers when talking about their 3- to 6-year-old children, Fujita and Hughes (2021) also highlighted cultural variations in MM. Hughes et al. (2018), in a study with 241 parent-child dyads from Hong Kong and the United Kingdom, concluded that within both cultures, MM was correlated with the theory of mind and cultural differences in the preschoolers' theory of mind were accounted for by MM. It is important to consider also

that while parent MM tends to be associated with child theory of mind and mental state use in Western samples, parental attunement to their child's state of mind may be reflected, and should therefore be measured, in others ways in other cultures (Neha, 2018).

A weak negative correlation was found between appropriate negative MM comments and parental age in the teaching task. This finding is consistent with previous research, which indicated higher MM in older mothers compared to younger mothers (Camberis et al., 2016; Demers et al., 2010a). It could be speculated that as parents age, they may utilize less negative commentary to encourage learning with their children. This may be a result of parental maturation. Camberis et al. (2016) concluded that older mothers had psychological maturity, which meant more adaptive parenting cognitions, which contributes to increased sensitivity and MM. Alternatively, these findings may reflect different parental preferences based on their generation and the type of parenting they were exposed to in their childhood. Specifically, it may be linked to the popularity of a growth mindset (Dweck, 2016) or a variety of other mechanisms. Further research is needed to examine potential associations between parenting values and MM.

A number of other socio-demographic factors not measured here may also relate to MM. For example, multiple parent and infant factors have been associated with parent-child attachment and the parent-infant relationship. Parental factors include education level, job, type of residence, psychosocial support, marital relationship, psychological disorders, single parenting, number of children and family size, number of pregnancies, risk levels in the pregnancy and if it was planned or unplanned, attachment to the foetus during pregnancy, the process of delivery and soon after, effective communication, and life stress among others. Infant factors include if the infant has any health problems or prematurity, infant gender, infant temperament, the birth of siblings, stressful life events such as the loss of a parent, environmental and genetic influences (Darvishvand et al., 2018; Gervai, 2009). Further

research to clarify the impact of these constructs on MM and the interplay between these and MM as part of the development of attachment security would be useful.

Strengths and limitations

Strengths of this research include multiple measures of parent mental health, the novel examination of MM within a teaching task the recruitment of parents across two countries, and the inclusion of both mothers and fathers and the comprehensive coding of both valence and attunement of MM comments. It is important to note that the majority of studies combine positive and negative MM comments (McMahon & Bernier, 2017). The current findings showed associations with parent mental health for appropriate *negative* MM comments only. The current findings also showed different patterns for appropriate and non-attuned MM comments. This highlights the importance of coding valence and attunement of MM and considering how these might be differentially associated with child developmental outcomes.

This study was conducted over an extended period and across two countries which managed COVID differently, meaning a varied impact from COVID. To understand more about how this may have impacted this study, we explored data related to the psychometrics used. Crawford et al. (2011) conducted research pre-COVID to determine norms for a general Australian adult sample across several scales, including the DASS-21. These norms are compared with the data from this study. The current sample scores are slightly higher than the norms presented by Crawford et al. for depression (current study $M = 3.34$, range = 0-37 and $SD = 3.42$; norms $M = 2.57$, range = 0-20 and $SD = 3.86$), and for the stress sub-scale (current study $M = 6.65$, range = 0-16, and $SD = 3.59$; norms $M = 3.99$, range = 0-21, and $SD = 4.24$). However, the scores for anxiety were very similar (current study $M = 1.74$, range = 0-10 and $SD = 2.32$; norms $M = 1.74$, range = 0-17, and $SD = 2.78$).

Krink et al. (2018) conducted research with the PRFQ-18 prior to COVID, they were conducting research with mothers who had post-natal depression, so it is a clinical sample. This was then compared with the research done by Goudarzi et al. (2022) in what would have likely been COVID or post-COVID times; their study explored the psychometric properties of the PRFQ-18 for Iranian mothers. The results from these two studies were compared with the descriptive statistics of this study, and the data across all three studies are comparable. Pre-mentalising mode scores for this study $M = 1.63$, $SD = 0.59$; Krink et al (2018) $M = 1.80$, $SD = 0.73$; and Goudarzi et al. (2022) $M = 2.63$, $SD = 1.32$. Certainty about mental states scores for this study $M = 3.69$, $SD = 0.98$; Krink et al (2018) $M = 3.39$, $SD = 1.22$ and Goudarzi et al. (2022) $M = 4.60$, $SD = 1.02$. Interest and curiosity in mental state scores for this study $M = 6.32$, $SD = 0.58$; Krink et al (2018) $M = 5.87$, $SD = 0.84$; and Goudarzi et al. (2022) $M = 5.94$, $SD = 0.73$.

Gratz and Roemer (2004) provided data for undergraduate student men's and women's scores as part of the development and validation of the DERS. Costa et al. (2017) conducted research with parents of typically developing (TD) children and those with Autistic Spectrum Disorder (ASD) and examined parent DERS scores. Again, these studies occurred before COVID. . DERS scores for the current sample were higher than those previously reported (this study $M = 87.79$, $SD = 13.34$; Gratz and Roemer (2004) women $M = 77.99$, $SD = 20.72$, men $M = 80.66$, $SD = 18.79$; Costa et al (2017) TD parents $M = 72.39$, $SD = 15.42$ ASD parent $M = 82.59$. $SD = 21.89$).

As no outliers were found for parent mental health measures, the higher scores for depression and stress symptoms and difficulties with emotion regulation are likely to reflect greater symptoms for the sample as a whole. This may reflect the global pandemic's far-reaching impacts. Despite this, it is felt this data is relevant as the likelihood of a return to

pre-COVID states is unlikely to occur for some time due to the widespread socio-economic impacts.

COVID potentially reflects a chronic and acute stressor, especially for parents of young children. It may be that we do not reach a pre-COVID state for some time, but rather elevated parent emotional difficulties become a 'new normal' post the pandemic. Wu and Xu (2020) noted an increase in child maltreatment due to COVID. Piquero et al. (2021) and Kourti et al. (2021) reported domestic violence increased with the COVID pandemic. Spinelli et al. (2020) noted the impact of quarantine on the children was mediated by the parents' individual and dyadic stress. Parents were at higher risk of experiencing distress, which could impact their parenting abilities, which may be the reason for the children having more pronounced psychological difficulties. Brown et al. (2020) reported that higher COVID-related stressors and high anxiety and depression symptoms were associated with higher perceived stress by the parents. When there was increased parental support and perceived control, this was associated with lower perceived stress by the parents and reduced child abuse potential. Adams et al. (2021) highlighted that their research showed parents' stress had increased substantially during COVID and had not returned to pre-COVID levels; the common stressors that impacted parenting were changes in children's routines, worry about COVID and online school demands. Mahoney et al. (2021) noted a significant increase in access to digital mental health services across New Zealand and Australia. The raised DERS and DASS scores appear to reflect the additional stress that COVID has placed on the participants. The PRFQ results across this study and two comparisons showed more similarities. This may be because RF is considered a more stable trait (Sharp & Fonagy, 2008). Further research would be useful to explore specific COVID stressors and challenges by parents and how this might relate to MM.

Dollberg et al. (2021) explored COVID impacts on Israeli mothers and their preschool children. Compared to the pre-COVID groups, the mothers in the COVID group had higher anxiety and perceived their children to have higher externalizing and internalizing behaviours. They found that when mothers had higher MM, this weakened the indirect effects of anxiety from COVID on the children's externalizing behaviours. These findings indicate the importance of ongoing research and the mediating role MM may play in parent-child interactions in this post-COVID world.

This study collected all data via Zoom, and all research was conducted online from the participants' homes. As described earlier, this may be a strength, allowing parents to engage more naturally with their infants in their home context (Archibald et al., 2019; Segal & Moulson, 2021). Although Branger et al.'s (2019) study related to sensitivity, it is considered relevant as MM and sensitivity are highly related; they found that parental sensitivity was higher in a more naturalistic context. Occasionally, however, conducting research via Zoom in the family home can be problematic. For example, other family members or siblings may have been a distraction.

Not all potential covariates were able to be considered. The small sample size limits the capacity to consider all covariates in multivariable models. In particular, it would be important for future studies on MM to consider differences across only children and children with siblings. Younger children may have the opportunity to see their parent engage in MM with older siblings as well and may benefit from observing this kind of mind-related talk about others. In research regarding the development of the theory of mind, McAlister and Peterson (2007) noted that children benefit from access to child-aged siblings to play and converse with. Ruffman et al. (1998) reported a linear increase in mentalising abilities with the number of older siblings. On the other hand, the increased demand from more children may change the parents' capacity for MM or the consistency of parental MM. Meins and

Fernyhough (1999) noted that additional family members are likely only helpful in these settings if they can be MM. Illingworth et al. (2016) found strong evidence of the stability of maternal representational MM across two children and a partner or friend; they also reported stability of interactional MM across two children. This may mean that a more MM parent will produce more MM children, and as such, increased exposure to a mother and siblings who are MM may be beneficial to the younger sibling or may balance out the increased parenting demand of multiple children and therefore maintain MM across the siblings. Regardless, further research is needed to understand the impact of MM within relationships beyond the parent-child, and particularly mother-child, relationship.

Future research and implications

The findings of this study suggest some associations between specific aspects of parental mental health and MM, in particular more negative MM comments and more non-attuned MM comments. Much of the existing research has grouped positive and negatively valences MM comments together and has rarely examined non-attuned comments statistically (McMahon & Bernier, 2017). The current findings point to the importance of coding these more nuanced aspects of MM.

The direction of causality between parent mental health and MM remains unknown and longitudinal research is needed to explore this. Similarly, the current findings do not explain potential mechanisms that might underlie an association between parent mental health and MM. For parents with PTSD, hyperarousal symptoms in particular were associated with MM, and for parents with depression, hostility and intrusiveness were associated with MM (Camisasca et al., 2017; Lok & McMahon, 2006). Understanding the specific mechanisms that underlie this association is important because these can then be targeted in

future interventions with clinical populations. MM appears to be present before childbirth and relatively stable (Arnott & Meins, 2007, 2008). As such, it may also be important to understand how parental mental health is associated with antenatal MM, and to support parents at risk of mental health difficulties with MM informed interventions during pregnancy. This would likely have benefits for the developing parent-infant relationship (Larkin et al., 2019). In addition, if greater MM also reduces parent stress (McMahon & Meins, 2012), this type of preventative approach may also support maternal mental health during the vulnerable postnatal period.

Further research on MM-based interventions may also be beneficial given the parenting challenges experienced through COVID. While the added complexity of the stress associated with the COVID pandemic may make this data less likely to be able to be generalised to a broader population, it may also be that the increased distress the pandemic has created may make this study more relevant to general clinical populations.

This study explored MM in the teaching task and noted the differences in MM across the free play and teaching tasks; it would be useful for further research to explore MM across multiple contexts. In addition, it would be useful to review if a changed coding strategy is needed for clinical populations or even all populations to reflect the impact of non-verbal communication on the attachment relationship and MM. The standard MM coding scheme may not fully capture the tone and subtle non-verbal cues in the interactions between the parent-infant dyads, particularly for parents with mental health difficulties. Feniger-Schaal et al. (2018) noted through their study with the use of a mirror game, that non-verbal expression is a source of valuable information about interpersonal interactions and the results of their study pointed to a connection between mirror game behaviours and two independent measures of attachment. Secure attachment was associated with richer use of body parts, movement and displayed more shared affect compared with insecure attachment. Lyons-Ruth

et al. (1998) explored implicit relational knowing, referencing the interactional processes between the infant and primary caregiver, which produces in the infant procedural, non-verbal knowledge on how to interact with intimate others; this occurs prior to the availability of language. Pally (2001) noted that matching non-verbal cues were associated with parent-infant attachment. Deepika (2015) highlighted the importance of non-verbal communication and its regulatory functioning in relationships, noting that it sometimes replaces verbal communication. Further, there are specific cultural and gender-specific differences in non-verbal communication. If there is a conflict between verbal and non-verbal communication, Deepika (2015) reported the individual relies on the non-verbal communication. Shai and Meins (2018) explored the two forms of parental mentalising, MM and parental embodied mentalising (PEM). They noted that PEM was positively correlated with appropriate MM comments but was unrelated to the non-attuned MM comments. They found increased attachment security with higher PEM over and above the impact of MM, and they concluded that both verbal and non-verbal expressions of parental mentalising had independent contributions to attachment security. Future research including a focus on both the verbal and non-verbal representation of MM would be useful as there may be similar findings.

Research has shown that an infant will adapt to maintain the security of the attachment to the parent (Hughes & Baylin, 2012). It would be helpful to explore if MM is a mechanism that adjusts the infant's way of being to fit into the parental mindset through a process of modelling and learning and, as such, is a causal factor of attachment transmission. Exploring whether a parent who had an anxious attachment (as an example) with their parent is more likely to feel comfortable with this attachment style and, through MM comments, recreate that same interaction by creating a bias in the infant would be useful. Suppose a parent is pointing out all the appropriate positive comments. In that case, this is likely to have a very different long-term impact compared to a parent pointing out all the appropriate

negative comments as, through attention and reinforcement, different behaviours may occur to gain the type of attention on offer. Future research in this area will be required to gather more information.

It would be useful for future research to explore the impacts of more appropriate negative versus positive MM comments on the infant and the parent-infant relationship. Whilst appropriate comments signal greater attunement with the child's mental state one would need to consider the impact of more positive versus negative comments. It may be that where there is more balance between positive and negative appropriate comments, we see better outcomes. It may be that better outcomes are found where there are more appropriate positive MM comments than appropriate negative or visa versa, or it may be that specific situations require different levels of positive versus negative comments and that overall, a balance is created across the various contexts. There is some indication from parent-child interaction research beyond the MM context that awareness of children's negative emotional states may be especially important. For example, Laible (2011) found that parent in-depth discussion of negative emotional events was more strongly associated with attachment security than discussion of positive emotions, and that discussion of negative but not positive emotions was associated across time with children's socioemotional development. Further research is needed to understand MM in relation to children's negative and positive experiences across different contexts and associations with children's socio-emotional and cognitive development.

Conclusion

MM represents an intriguing reconceptualization of sensitivity and appears to be the potential mechanism through which attachment develops (Meins, 1998). MM and associated

constructs are complex and have an equally complex and dynamic interplay with other constructs. It appears the context, environment, and type of tasks engaged in impact parental MM. Further, parents' mental wellbeing impacts their parenting, MM and their infant; the specific nature of this impact is again complex.

MM appears to offer key information about parent-child interaction and may be a key element in filling the transmission gap. Although not directly measuring attachment or child outcomes, the current findings point to the importance of measuring both positive and negative valence and appropriate and non-attuned nature of MM, across different contexts. Understanding these nuanced aspects of MM alongside independent measures of parent attachment state of mind and parent-infant attachment may help to further our understanding of attachment transmission.

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Appendix

Appendix A – Ethics approval

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Kia ora Amy

HREC(Health)2020#82 : Parental wellbeing and parent-infant attachment

Thank you for your detailed response to the Committee's feedback and to its request for further information. Thank you too for meeting with me to assist me to better understand the project and the various roles and responsibilities within it. I am now able to provide ethical approval for this research but would offer the following in response to your letter of 26 March:

1. Your proposal brought to the fore the extent to which students at the masters level need to apply for and obtain separate ethical approval when their research is embedded in a larger project. It caused me to follow this up and while recent practice seems to be that this is required, HREC does not appear to have a firm policy on this. This means we need to consider this as a Committee but it would be unreasonable to have delayed the commencement of your study until this occurred. As noted in my email communication of 17 March, this approval is predicated on the understanding that the thesis/dissertation will give a clear explanation of the ethics process relevant to that aspect of the study.
2. I accept your explanation for why a Maori interpreter has not been included at this point but if this role is filled, it would be appropriate to inform the Committee of the person's name and confirmation that they have signed a confidentiality agreement.
3. Thank you for the additional information around Cloudstor. I am satisfied that it is an appropriate option for the storage of data.

Please contact the committee by email (humanethics@waikato.ac.nz) if you wish to make changes to your project as it unfolds, quoting your application number with your future correspondence. Any minor changes or additions to the approved research activities can be handled outside the monthly application cycle.

We wish you all the best with your research.

Kind regards

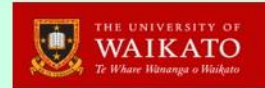
Roger

Emeritus Professor Roger Moltzen MNZM
Chairperson
University of Waikato Human Research Ethics Committee

Appendix B –Research advertisement



UNIVERSITY
OF WOLLONGONG
AUSTRALIA



Parental Wellbeing and Attachment Study

Calling parents of infants!

We are currently recruiting **parents and 6-18 month old infants**. We would love to hear from YOU all about what parenting an infant is like at the moment.

This research will help us understand how parent-infant interactions are related to parents' own experiences growing up, and their mental health and wellbeing.

We would love to hear from Mums and/or Dads.

If you are interested in participating in this study, or would like any more information, please contact:

New Zealand parents:

Kerry ks457@students.waikato.ac.nz

Or Amy amy.bird@waikato.ac.nz

Ethics approval: HREC(Health) 2020#82

Appendix C – Participant information sheet

Te Kura Whatu Oho Mauri-School of Psychology 07 837 9288
 Te Wānanga o NgāKete-Division of Arts, Law, www.waikato.ac.nz
 Psychology and Social Sciences
 The University of Waikato
 Private Bag 3105
 Hamilton, New Zealand, 3240



PARTICIPANT INFORMATION SHEET PARENTAL WELLBEING AND ATTACHMENT STUDY

PURPOSE OF THE RESEARCH

This is an invitation to participate in the Parental Wellbeing and Attachment study conducted by researchers at the University of Waikato (Aotearoa, New Zealand) and the University of Wollongong (Australia). Research questions include:

1. *How does parental wellbeing relate to the early parent-child relationship?*
2. *How do parents' experiences of being parented influence relationships with their own children?*
3. *How can parent-children's interactions during play (i.e., verbal and non-verbal) promote healthy social, behavioural and cognitive development?*

WHAT WILL YOU BE ASKED TO DO?

The study involves an online survey (approximately 30 minutes) and two online video interviews (via Zoom). You can complete the online survey at a time that is convenient to you, and we will also schedule the online interview at a time that is convenient for you.

The online interview has two components: one is an interview with you (without your child present; about 60 minutes), and the other is a play session between you and your child (about 20 minutes). Depending on what works best for you and your family, you may choose to schedule your interview and the play session one after the other, or on two different days. Your involvement in all aspects of the study is voluntary and you may withdraw your participation at any time.

While this research is designed as one project, we will ask you for consent to each of the separate components, and you could agree to participate in the online survey and then choose not to take part in the online interviews. You are also free to withdraw your consent at any time. The specific things you are being asked to consider as part of this aspect of the study are:

1. **Participate in an online survey to examine experiences of parenting and psychological wellbeing (approximately 30 minutes)**

These questionnaires have been selected to measure different aspects of health and well-being. They are derived from well-developed, established research studies around the world. The survey includes questions about sensitive areas including parenting skills and psychological health. Your responses to these questions are hugely helpful, and provide important insight into your experiences as a parent of your child.

2. **Participate in an interview with a trained researcher about your own experiences of being parented while growing up (about 60 minutes).**

This semi-structured interview will take place online, over Zoom, an online video calling system. With your permission, this interview will be recorded. We understand that many adults may have had challenging experiences during their own childhood. We encourage you to only share information that you feel comfortable with. If you would prefer to not answer some questions that is absolutely fine. Questions ask about your relationships with each of your parents and other close persons growing up, as well as your relationship with your child now and into the future.

3. Participate in a video recorded free play session with your child (20 minutes)

This will occur in your own home, but we would like to record this interaction live via a secure Zoom link. We will ask you to play with your child for about 10 minutes using any age-appropriate toys you have in the house. This might include stacking toys, shape sorters, a musical toy, or pots and pans! You and your child do not have to play with all the toys, and either you or your child can stop the session at any time. The researcher will not interrupt you during this play session.

Following this task, we will ask you to choose a task (from a list) that your child cannot yet do (e.g., complete a three piece puzzle; roll a ball back and forward). We will ask you to 'teach' your child how to engage in this activity. This will take approximately 10 minutes.

This session will be video recorded and you are able to ask to stop the session at any point. Video recording is necessary in this aspect of the study to ensure your child's responses are noted (e.g., smiling, attention, play). Every parent will have their own way of playing and interacting with their child, there is no 'right' or 'wrong' way, so we would ask you to just play and interact as you usually would.

POSSIBLE RISKS AND INCONVENIENCES

Your participation will take up to 30 minutes for the online survey, and around 80 minutes for the online recorded Zoom sessions. You may find some of the interview questions during the Zoom session about your own experiences growing up distressing. Please let us know if that is the case. Not all questions need to be answered. If you do not feel comfortable answering any questions, you may decline to do so. If you become distressed at any stage during or after completing the interview or the survey, please let us know. We would also encourage you to speak to your health care professional or contact one of the counselling services listed below under "Further Information".

You can take your time in considering whether you would like to participate in this aspect of the study and can consult with other members of your family and ask any questions of the researchers before making this decision.

PERMISSION TO CONTACT YOU TO PARTICIPATE IN THE FUTURE

If you choose to participate in this project you can also choose to be contacted about further research conducted by the University of Waikato. This is completely optional. Even if you say yes to this further contact now, you would be free to say no if we did contact you in the future.

STORAGE AND CONFIDENTIALITY OF YOUR INFORMATION

All information collected will be treated completely confidentially and will be used for health research only for the duration of the study. To further ensure security and confidentiality, all information will be stored, analysed and reported with your identifying details removed. You will be identified by a unique participant code rather than your actual name. Nothing that identifies individual participants will be published. You and your child will be visible in the video recordings, but these will be stored and accessed securely only by members of the Parental Wellbeing and Attachment study research team.

All data and video recordings will be kept in appropriate and secure facilities at the University of Waikato for a minimum of five years following completion of the study. If further study follow-ups occur, your data will be stored until 5 years after completion of the final phase of the study. The Principal Investigator of this study will act as a guardian of the data to ensure all privacy and confidentiality legislation is followed. Only researchers involved in this study, approved by a Human Research Ethics Committee, will have access to the data.

Any information that is obtained in connection with this study and that can be identified with you will remain confidential. In the rare instance that there is a potentially serious concern for your health or

safety or the health and safety of someone else, we might need to contact a health provider or other authority. We would always try and talk to you first about this, but in an emergency, might need to contact them directly.

ACCESS TO YOUR INFORMATION AND RESULTS

No individual results will be provided to you. However, the results from you and other participants may provide valuable information on the health of the community and advance scientific discoveries. We will produce a brief summary of findings, which we will send to you.

PUBLICATION OF RESULTS

Findings from the study will be published in student theses, research reports, and journal articles. Confidentiality is assured and you and your family will not be identified in any reports or presentations connected with the study. Reports outlining the group findings will be made available to participants. These will be based on data reflecting the overall study population and will not contain information about individuals.

WITHDRAWAL FROM THE STUDY

Your involvement in the study is voluntary and you may withdraw your participation at any time up until one month after the end of your participation, or decline to answer any questions. If you withdraw from this study, your data will be destroyed. Choosing not to participate in the study will not affect your relationship with the University of Waikato, or your current or future health provision.

FUNDING AND BENEFITS OF THE STUDY

The research is aimed at improving future health and well-being of families and is not designed to benefit the individual in the short-term. However, the study may provide important information concerning well-being, and how parents can have positive interactions with their toddlers. Participants and the wider community may benefit directly from improved health guidelines and policy resulting from scientific discoveries made by this study.

ETHICS REVIEW AND COMPLAINTS

This research project has been approved by the Human Research Ethics Committee (Health) of the University of Waikato under HREC(Health)2020#82 . Any questions about the ethical conduct of this research can be addressed to the Ethics Committee on humanethics@waikato.ac.nz, University of Waikato, Te Whare Wananga o Waikato, Private Bag 3105, Hamilton 3240.

Further information

Further details of the study can be obtained from:

- Kerry Sparrow, ks457@students.waikato.ac.nz
- Dr Amy Bird, +647 837 9226 or email: amy.bird@waikato.ac.nz

If you have any concerns about your child or would like support for yourself or your child at any time, please talk to your GP or contact one of the following services

Parenting Helpline: 0800 568 856
 Lifeline: 0800 543 354
 Depression and Anxiety Helpline: 0800 111 757

Thank you for taking the time to consider this study. If you wish to take part, please read and complete the consent form.

Appendix D – Consent form

Te Kura Whatu Oho Mauri-School of Psychology 07 837 9288
 Te Wānanga o NgāKele-Division of Arts, Law, www.waikato.ac.nz
 Psychology and Social Sciences
 The University of Waikato
 Private Bag 3105
 Hamilton, New Zealand, 3240



CONSENT FORM

Research Project: Parental wellbeing and parent-infant attachment

Please complete the following checklist. Tick (✓) the appropriate box for each point.	YES	NO
1. I have read the Participant Information Sheet (or it has been read to me) and I understand it.		
2. I have been given sufficient time to consider whether or not to participate in this study		
3. I am satisfied with the answers I have been given regarding the study and I have a copy of this consent form and information sheet		
4. I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without penalty		
5. I have the right to decline to participate in any part of the research activity		
6. I know whom to contact if I have any questions about the study in general.		
7. I understand that the information supplied by me could be used in future academic publications.		
8. I understand that my participation in this study is confidential and that no material, which could identify me personally, will be used in any reports on this study.		
9. I wish to receive a summary of the findings		
10. I agree to participate in an online survey about my own wellbeing (about 30 minutes)		
11. I agree to take part in an interview about my own experiences of being parented (about 60 minutes). I understand that this interview will be recorded via Zoom		
12. I agree to participate with my child in a semi-structured play session in my own home (20 minutes). I understand that this play session will be recorded via Zoom		
13. I am willing to be contacted for any future research related to parenting through the University of Waikato conducted by Dr Amy Bird		

Declaration by participant:

I agree to participate in this research project and I understand that I may withdraw at any time. If I have any concerns about this project, I may contact Kerry Sparrow on ks457@students.waikato.ac.nz or Amy Bird on amy.bird@waikato.ac.nz or +647 837 9226 postal address, University of Waikato, Te Whare Wananga o Waikato, Private Bag 3105, Hamilton 3240.

Participant's name (Please print): _____

Signature: _____

Date: _____

Declaration by member of research team:

I have given a verbal explanation of the research project to the participant, and have answered the participant's questions about it. I believe that the participant understands the study and has given informed consent to participate.

Researcher's name (Please print): _____

Signature: _____

Date: _____

Appendix E - Teaching task list

Teaching Activities



Below is a list of activities for children aged from birth to three years of age. Please read through the list below session and choose the first activity your child **cannot yet** do. We would not expect your child to be able to do all or even most of these activities. The goal of choosing one of these activities is to find something that you can teach your child during our session. Please do not begin teaching your child before the session. Thank you 😊

1. Child can hold a rattle
2. Child can follow a rattle with his/her eyes
3. Child can imitate parent poking out their tongue
4. Child can reach for a rattle
5. Child can transfer a block from one hand to another
6. Child can squeak a toy
7. Child can pick up a food object such as a biscuit and eat it.
8. Child can scribble on a piece of paper
9. Child can pull a vehicle by a string
10. Child can find the vehicle hidden by a piece of cloth
11. Child can play pat-a-cake
12. Child can stack blocks on top of each other
13. Child can pretend to drink from a cup
14. Using a picture book child can point to a body part (hand, foot, eyes, nose) when asked
15. Child can take the lid off a small container
16. Child can imitate a line on a paper using a crayon
17. Child can string beads
18. Child can put together a 3-piece puzzle
19. Child can button a button
20. Child can pull a zipper up and down
21. Child can balance on one foot
22. Using a picture book, child can find a piece of clothing such as shirt, pants, socks, dress etc
23. Child can sort blocks of colour
24. Child can make sets of blocks by number (1's, 2's, 3's)
25. Child can draw a shape (circle, line, square) using a crayon.
26. Child can make a letter of the alphabet using a crayon
27. Child can cut a pre-drawn shape (square or circle) using safety scissors
28. Child can print his/her first name using a crayon
29. Child can hop on one foot

Appendix F – Depression, anxiety and stress scale (DASS-21)

DASS21		Name:					Date:
<p>Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.</p> <p>The rating scale is as follows:</p> <p>0 Did not apply to me at all 1 Applied to me to some degree, or some of the time 2 Applied to me to a considerable degree or a good part of time 3 Applied to me very much or most of the time</p>							
1 (s)	I found it hard to wind down	0	1	2	3		
2 (a)	I was aware of dryness of my mouth	0	1	2	3		
3 (d)	I couldn't seem to experience any positive feeling at all	0	1	2	3		
4 (a)	I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3		
5 (d)	I found it difficult to work up the initiative to do things	0	1	2	3		
6 (s)	I tended to over-react to situations	0	1	2	3		
7 (a)	I experienced trembling (e.g. in the hands)	0	1	2	3		
8 (s)	I felt that I was using a lot of nervous energy	0	1	2	3		
9 (a)	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3		
10 (d)	I felt that I had nothing to look forward to	0	1	2	3		
11 (s)	I found myself getting agitated	0	1	2	3		
12 (s)	I found it difficult to relax	0	1	2	3		
13 (d)	I felt down-hearted and blue	0	1	2	3		
14 (s)	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3		
15 (a)	I felt I was close to panic	0	1	2	3		
16 (d)	I was unable to become enthusiastic about anything	0	1	2	3		
17 (d)	I felt I wasn't worth much as a person	0	1	2	3		
18 (s)	I felt that I was rather touchy	0	1	2	3		
19 (a)	I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)	0	1	2	3		
20 (a)	I felt scared without any good reason	0	1	2	3		
21 (d)	I felt that life was meaningless	0	1	2	3		

Appendix G – Difficulties in emotion regulation scale (DERS)

Difficulties in Emotion Regulation Scale (DERS)

Please indicate how often the following statements apply to you by writing the appropriate number from the scale below on the line beside each item.

1-----	2-----	3-----	4-----	-----5
almost never (0-10%)	sometimes (11-35%)	about half the time (36-65%)	most of the time (66-90%)	almost always (91-100%)
_____	1) I am clear about my feelings.			
_____	2) I pay attention to how I feel.			
_____	3) I experience my emotions as overwhelming and out of control.			
_____	4) I have no idea how I am feeling.			
_____	5) I have difficulty making sense out of my feelings.			
_____	6) I am attentive to my feelings.			
_____	7) I know exactly how I am feeling.			
_____	8) I care about what I am feeling.			
_____	9) I am confused about how I feel.			
_____	10) When I'm upset, I acknowledge my emotions.			
_____	11) When I'm upset, I become angry with myself for feeling that way.			
_____	12) When I'm upset, I become embarrassed for feeling that way.			
_____	13) When I'm upset, I have difficulty getting work done.			
_____	14) When I'm upset, I become out of control.			
_____	15) When I'm upset, I believe that I will remain that way for a long time.			
_____	16) When I'm upset, I believe that I will end up feeling very depressed.			
_____	17) When I'm upset, I believe that my feelings are valid and important.			
_____	18) When I'm upset, I have difficulty focusing on other things.			
_____	19) When I'm upset, I feel out of control.			
_____	20) When I'm upset, I can still get things done.			
_____	21) When I'm upset, I feel ashamed at myself for feeling that way.			
_____	22) When I'm upset, I know that I can find a way to eventually feel better.			
_____	23) When I'm upset, I feel like I am weak.			
_____	24) When I'm upset, I feel like I can remain in control of my behaviors.			
_____	25) When I'm upset, I feel guilty for feeling that way.			
_____	26) When I'm upset, I have difficulty concentrating.			
_____	27) When I'm upset, I have difficulty controlling my behaviors.			
_____	28) When I'm upset, I believe there is nothing I can do to make myself feel better.			
_____	29) When I'm upset, I become irritated at myself for feeling that way.			
_____	30) When I'm upset, I start to feel very bad about myself.			
_____	31) When I'm upset, I believe that wallowing in it is all I can do.			
_____	32) When I'm upset, I lose control over my behavior.			
_____	33) When I'm upset, I have difficulty thinking about anything else.			
_____	34) When I'm upset I take time to figure out what I'm really feeling.			
_____	35) When I'm upset, it takes me a long time to feel better.			
_____	36) When I'm upset, my emotions feel overwhelming.			

Appendix H – Parental reflective functioning questionnaire (PRFQ)

The Parental Reflective Functioning Questionnaire

Patrick Luyten^{a,b,c}, Linda C. Mayes^b, Liesbet Nijssens^a & Peter Fonagy^c

^a Faculty of Psychology and Educational Sciences, University of Leuven, Belgium

^b Yale Child Study Center, Yale University, New Haven, CT, USA

^c Research Department of Clinical, Educational and Health Psychology, University College London, UK

Please cite as:

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Belgium
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PRFQ

Listed below are a number of statements concerning you and your child. Read each item and decide whether you agree or disagree and to what extent.

Use the following rating scale, with 7 if you strongly agree; and 1 if you strongly disagree. The midpoint, if you are neutral or undecided, is 4.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
-------------------	---	---	---	---	---	---	---	----------------

1. ___ The only time I'm certain my child loves me is when he or she is smiling at me.
2. ___ I always know what my child wants.
3. ___ I like to think about the reasons behind the way my child behaves and feels.
4. ___ My child cries around strangers to embarrass me.
5. ___ I can completely read my child's mind.
6. ___ I wonder a lot about what my child is thinking and feeling.
7. ___ I find it hard to actively participate in make believe play with my child.
8. ___ I can always predict what my child will do.
9. ___ I am often curious to find out how my child feels.
10. ___ My child sometimes gets sick to keep me from doing what I want to do.
11. ___ I can sometimes misunderstand the reactions of my child.
12. ___ I try to see situations through the eyes of my child.
13. ___ When my child is fussy he or she does that just to annoy me.
14. ___ I always know why I do what I do to my child.
15. ___ I try to understand the reasons why my child misbehaves.
16. ___ Often, my child's behavior is too confusing to bother figuring out.
17. ___ I always know why my child acts the way he or she does.
18. ___ I believe there is no point in trying to guess what my child feels.