

**A Cross-cultural Comparison of Parental
Mentalisation in the UK and South Korea**

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Abstract

This thesis investigated (a) cultural differences in parental mentalisation between the United Kingdom (UK) and South Korea, and (b) how parental mentalisation and culture related to empathy and parent-focused variables (parenting style, intrusiveness, parenting stress, and maternal mental health) to explore potential predictors of parental mentalisation across cultures. Study 1 was a validation study of a Korean version of the Parenting Reflective Functioning Questionnaire (PRFQ; Luyten, Mayes, et al., 2017) involving Korean parents ($N=163$) with children aged up to 5 years old. The original three-factor structure (*Pre-mentalising modes*, *Certainty about mental states*, *Interest and curiosity in mental states*) was not a good fit to the data, and the *Pre-mentalising modes* subscale showed low reliability. Study 2 investigated cultural differences in maternal mind-mindedness (appropriate and non-attuned mind-related comments) and PRFQ between British and Korean mothers ($n_{UK}=63$; $n_{SK}=66$) and infants (UK: Mean age=6.14 months, $SD=1.55$, SK: Mean age=7.49 months, $SD=1.15$). There were no cultural differences in overall appropriate or non-attuned comments, but British mothers made more comments on preferences and desires, whereas Korean mothers commented more on cognitive, emotional, and physical states. Korean mothers scored more highly on the *Pre-mentalising modes* and *Certainty about mental states* subscales of the PRFQ compared to their British counterparts. Study 3 investigated how culture, empathy, parenting style, intrusiveness, parenting stress, mental health, and infant temperament predicted parental mentalisation in the Study 2 participants. No independent predictors of appropriate mind-related comments were identified, but parenting stress and mental health predicted non-attuned comments. Self-reported parenting style predicted all three PRFQ subscales, with culture predicting *Certainty about metal states*. Mind-mindedness and PRFQ were unrelated. The three studies are discussed with reference to cultural similarities and differences in parental ethnotheories, maternal factors that relate to parental mentalisation, and distinctions between the two constructs of parental mentalisation.

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Preface

This thesis aimed to explore potential factors that could help to explain individual differences in parental mentalisation, focusing on two factors—culture and empathy—that have rarely been investigated in the extant literature on maternal mind-mindedness and parental reflective functioning (PRF). Since the current literature on parental mentalisation is predominantly based on samples of Western countries, little is known about the extent to which parents' different cultural backgrounds (or parental ethnotheories) influence parental mentalisation. Moreover, despite the fact that there has been extensive research on parental mentalisation over the last two decades, it is still unclear why some caregivers show better mentalising towards their children compared with others. By investigating two different cultural groups (i.e., British and South Korean mothers), this thesis allows for an exploration of parental mentalisation in mothers with different cultural belief systems. Also, the exploration of the relations between parental mentalisation and mothers' dispositional empathy, quality of parenting, maternal psychological well-being, and infant temperament, allows us to find predictors of maternal mind-mindedness and PRF across cultures, that could explain different levels of parental mentalising in mothers. Lastly, the thesis explored the extent to which these different operationalisations of parental mentalisation are related to each other. The thesis thus expands the current knowledge on parental mentalisation and sheds light on (a) the impact of parents' cultural context on parental mentalisation, (b) the role of maternal factors as predictors of individual differences in parental mentalisation, and (c) the differences between various constructs of parental mentalisation.

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Declaration

I declare that this thesis is a presentation of original work, and I am the sole author. This work has not previously been presented for an award at this, or any other University. All sources are acknowledged as References.

Selected aspects of the research described in the thesis have been published and presented elsewhere.

Publications

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Chapter 1

General Introduction

Typical adults have the ability to understand their own and others' states of mind, such as thoughts, feelings, intentions, and desires, and employ this comprehension to interpret and predict their own and others' behaviour (Fonagy, Target, Steele, & Steele, 1998; Twemlow, Fonagy, & Sacco, 2005). This ability, which is referred to as mentalisation (Fonagy & Alison, 2013), has been applied to the parenting context, with a number of different constructs falling under the overarching concept of parental mentalisation (Fonagy & Target, 1998; Fonagy et al., 1998; Meins, 1997; Sharp & Fonagy, 2008).

Parental mentalisation, referring to parents' capacity to appreciate their child as an individual person with their own mental states (Pajulo et al., 2018; Sharp & Fonagy, 2008), has received increasing research attention over the past two decades. In particular, caregiver *mind-mindedness* and *parental reflective functioning* (PRF) are the two operationalised concepts of parental mentalisation that have been most actively studied to date and are the focus of this thesis. Mind-mindedness is defined as the parent's proclivity to treat their infant as an individual with a mind of their own (Meins, 1997; Meins, Fernyhough, Fradley, & Tuckey, 2001), while PRF refers to a parent's ability to reflect and hold their infant's mental states in their own mind (Slade, 2005). Although the two constructs are operationalised in different ways, there is one common premise: parents' tendency to represent their children as psychological agents (Sharp & Fonagy, 2008).

Studies have amply demonstrated that parental mentalisation is significantly associated with the quality of early parent-child relationships (e.g., attachment, parenting behaviour), and children's own mentalising abilities, such as theory of mind (ToM) performance (e.g., Kelly, Slade, & Grienberger, 2005; Laranjo, Bernier & Meins, 2008; Lundy, 2013; Meins et al., 2002, 2003; Meins, Fishburn, Centifanti, Larkin, & Fernyhough,

2019). However, surprisingly little is known about the predictors of parental mentalisation and what makes parents more or less likely to engage with their young children's thoughts and feelings. The overarching aim of this thesis is to identify potential factors that can help to explain individual differences in parental mentalisation.

1.1 Parental Mentalisation

Parental mentalisation indicates parental awareness and attunement to the child's mental states (Zeegers, Colonnesi, Stams, & Meins, 2017), and is an umbrella term encompassing a number of different constructs. In addition to mind-mindedness and PRF, parental mentalisation includes *parental insightfulness* (Oppenheim & Koren-Karie, 2002) and *parental embodied mentalizing* (PEM; Shai & Belsky, 2011). *Parental insightfulness* is assessed in terms of parents' ability to reflect on and discuss their own and their children's thoughts and feelings while observing video recordings of themselves interacting with the child (Koren-Karie & Oppenheim, 2018). On the other hand, PEM focuses on parents' behaviour rather than speech and is defined in terms of parental behavioural attunement to their infant's inner states, as demonstrated through kinesthetic expressions; it is proposed to be an unconscious or procedural form of parental mentalisation (Choi-Kain & Gunderson, 2008). However, research on parental mentalisation has focused overwhelmingly on PRF and mind-mindedness.

1.2 Mind-Mindedness

Meins (1997) coined the term mind-mindedness to index a mother's tendency to treat her child as an individual with a mind of their own. The first measures of mind-mindedness focused on mothers' interview-based descriptions of their preschool-aged children (Meins et al., 1998) and mothers' proclivity to attribute meaning to their toddlers' early vocalizations (Meins, 1998; Meins & Fernyhough, 1999). Mind-mindedness was defined in terms of the mother's tendency (a) to focus on mental and emotional characteristics when describing their

child, or (b) to attribute systematic meaning to non-standard, seemingly nonsense vocalisations.

Subsequent research has developed the construct further to allow for mind-mindedness to be assessed from actual caregiver–child interaction in the first year of life. This observation-based assessment of mind-mindedness evolved from a rethinking of Ainsworth, Bell, and Stayton’s (1971, 1974) construct of maternal sensitivity. Ainsworth et al. (1971, 1974) emphasised mothers’ appropriate responsiveness to their infants’ cues as being at the core of sensitive responsiveness, characterising the sensitive mother as being able to “see things from the infant’s point of view” (p. 4). However, the global nature of the sensitivity coding scale and a lack of precision regarding what behaviours indicate maternal sensitivity led to researchers interpreting sensitivity in ways that did not involve appropriateness of response, and resulted in sensitivity often being indexed by the mere promptness of the caregiver’s response (Meins, 1999, Meins et al., 2001). Inspired by the emphasis on appropriateness, Meins et al. (2001) operationalised observation-based mind-mindedness in terms of the caregiver’s ability to ‘read’ the infant’s cues accurately.

The original observation-based measure of mind-mindedness focused on five separate verbal and behavioural indices via which parents could demonstrate mind-mindedness: responsiveness to infant’s direction of gaze, responsiveness to infant’s object-direction action, imitation, encouragement of autonomy, and appropriate comments on the infant’s internal state. However, the five indices were not intercorrelated and did not appear to form an internally reliable measure of mind-mindedness. Moreover, only one of the indices—mothers’ appropriate comments on their infant’s internal states—demonstrated predictive validity with regard to the child’s subsequent development (Meins et al., 2001, 2003). Mind-mindedness is thus now operationalised purely in terms of the caregiver’s use of these mind-related comments.

More recent research (e.g., Meins et al., 2012) has demonstrated how mind-mindedness captures two distinct dimensions of caregivers' talk about their infants' thoughts and feelings: (a) *appropriate mind-related comments* reflect a caregiver's tendency to comment accurately on their infants' internal states (e.g., stating the infant is interested in a toy car when the infant is reaching for it), and (b) *non-attuned mind-related comments* indicate a caregiver's misreading of their infant's internal states (e.g., stating the infant is bored with a toy car while the infant is actively playing with it). Mind-mindedness is characterised as scoring highly for appropriate mind-related comments and/or low for non-attuned mind-related comments.

1.2.1 Characteristics of Caregiver Mind-Mindedness

One prominent aspect of mind-mindedness is that it is a multidimensional construct. Unlike the dimensions established by Ainsworth et al. (1971, 1974) to characterise individual differences in maternal behaviour along different continua (e.g., sensitivity–insensitivity, acceptance–rejection), the two types of mind-related comments are unrelated to one another, and therefore do not appear to be opposite poles on a unidimensional scale (Arnott & Meins, 2007; Larkin, Oostenbroek, Lee, Hayward, & Meins, 2019; McMahon & Newey, 2018; Meins et al., 2003, 2012; Meins, Bureau, & Fernyhough, 2018). Moreover, appropriate mind-related comments are noticeably more frequent than non-attuned mind-related comments, but considerable variance is observed for both indices of mind-mindedness in community samples of mothers. For example, in Meins, Fernyhough, Arnott, Turner, and Leekam's (2011) socially diverse sample of 206 mother–infant dyads, the percentage of comments classified as appropriate mind-related comments ranged between 0 and 19%, and the range for non-attuned mind-related comments was between 0 and 9%. In Meins et al.'s (2003) sample of 52 mothers and infants who had a predominantly lower middle-class background, appropriate mind-related comments ranged between 0 and 28%, and non-attuned comments

ranged between 0 and 9%. Similar patterns of proportions were also observed at ages 7 and 19 months (McMahon, Camberis, Berry, & Gibson, 2016). It is notable that a substantial minority of caregivers never make a non-attuned mind-related comment (e.g., Larkin, Meins, & Leekam, 2019).

The two mind-mindedness indices present unique relations with maternal sensitivity and infant–caregiver attachment security. For example, non-attuned mind-related comments are not related to maternal sensitivity, whereas appropriate mind-related comments are positively correlated with maternal sensitivity (Meins et al., 2003, 2012; Shai & Meins, 2018). Regarding attachment, Meins et al. (2012) reported that appropriate mind-related comments predicted secure attachment, whereas non-attuned comments predicted insecure attachment. Non-attuned comments were also able to distinguish among the different types of insecure attachment; mothers of insecure-resistant infants used more non-attuned mind-related comments compared with mothers of insecure-avoidant infants. This suggests that the two distinct indices of maternal mind-mindedness may be informative in predicting variation in insecure attachment, as well as dichotomous (secure versus insecure) attachment.

The orthogonal nature of appropriate versus non-attuned mind-related comments is also in line with the finding that the two indices of mind-mindedness relate differently to children’s developmental trajectories. With regard to predicting children’s development, non-attuned mind-related comments appear to be more important than appropriate comments for predicting attachment security in infancy and the preschool years (Meins et al., 2012, 2018), but appropriate mind-related comments predict children’s later mentalising abilities (Kirk et al., 2015; Laranjo et al., 2010, 2014; Meins, Fernyhough, Arnott, Leekam, & de Rosnay, 2013), behavioural difficulties (Meins, Centifanti, Fernyhough, & Fishburn, 2013), and educational attainment at ages 7 and 10 (Meins, Fernyhough, & Centifanti, 2019).

In addition, maternal mind-mindedness has been reported to be relatively stable over time. For example, Meins et al. (2011) reported that scores for appropriate mind-related comments were positively correlated at 3 and 7 months, and the same positive correlation over time was also seen for non-attuned comments. Meins et al. (2003) also found that mothers' appropriate mind-related comments at 6 months were positively correlated with their mind-minded descriptions of their 4-year-olds, and McMahon et al. (2016) reported similar stability over a shorter period, between 7 and 19 months.

1.2.2 Potential Origins of Mind-Mindedness

Meins, Fernyhough, and Harris-Waller (2014) proposed that mind-mindedness is a quality of specific close relationships rather than a trait-like construct. This proposal developed from the results of a series of studies on adults' mind-minded descriptions of various targets. Meins et al. (2014) reported that individuals are more likely to be mind-minded in their descriptions of individuals with whom they have close personal relationships (e.g., children, partners) than when describing celebrities or works of art, and mind-mindedness in relation to significant others was unrelated to mind-mindedness in relation to celebrities and works of art. Hill and McMahon (2016) replicated these findings, reporting that individuals' comments about mental characteristics in describing famous people were significantly lower than those when describing a child or partner. Further, in the only study to investigate mothers' mind-mindedness in relation to more than one child, Illingworth, MacLean, and Wiggs (2016) reported that there was little concordance in mind-mindedness across siblings. More recently, Larkin et al. (2021) found that mind-mindedness was not related to adults' general tendency to interpret unknown individuals' behaviour in terms of their underlying mental states. Taken together, these findings thus suggest that mind-mindedness is not stable across individuals' representations of all people, as would be expected if mind-mindedness were a trait.

In line with the proposal that mind-mindedness is a quality of the relationship rather than the individual caregiver, there is no clear evidence that mind-mindedness is related to maternal characteristics such as socioeconomic status (SES) (Meins et al., 1998, 2011, 2012, 2018), age (Hill & McMahon, 2016; Illingworth et al., 2016), education (Arnott & Meins, 2008; Hughes, Devine, & Wang, 2018; McMahon & Meins, 2012; Meins et al., 2011), or psychological well-being in community samples (Fishburn et al., 2017; Meins et al., 2011). However, lower levels of mind-mindedness are associated with young motherhood (Demers, Bernier, Tarabulsy, & Provost, 2010; Larkin, Oostenbroek et al., 2019) and severe mental illness (Pawlby et al., 2010; Schacht et al., 2017).

Research by Arnott and Meins (2008) suggests that caregivers' antenatal representations of their children are related to postnatal mind-mindedness. Mothers' and fathers' ability to conjecture about what their unborn child would be like at age 6 months was related to levels of mind-mindedness during actual parent–infant interaction at 6 months postpartum. Mothers' antenatal conjectures were positively correlated with appropriate mind-related comments, whereas fathers' antenatal conjectures were positively correlated with both appropriate and non-attuned mind-related comments. These results suggest that mothers' tendency to think about the future qualities of their unborn child predict higher attunement to the infant's thoughts and feelings, whereas for fathers, the relation is with general engagement with their infants' internal states.

Similarly, McMahon et al. (2016) explored associations between the maternal-foetal relationship and maternal mind-mindedness in the first two years of life. When mothers reported engaging highly with their unborn child's behaviours and thoughts, they were more likely to make fewer non-attuned mind-related comments in the first year of life and more appropriate comments in the second year of life. The effect size in the study was somewhat low, but in line with Arnott and Meins' study, their findings suggest a potential role for

mothers' antenatal proclivity to represent their unborn child in predicting individual differences in mind-mindedness post-partum.

Alternatively, Meins et al. (2011) investigated the potential impact of mothers' recollections of their experience during pregnancy and birth (e.g., perception of pregnancy) on postpartum mind-mindedness. They found an interaction between perception of pregnancy and planned pregnancy. In mothers who perceived their pregnancy as easy, those who had planned the pregnancy scored more highly for appropriate mind-related comments compared with mothers who had not planned the pregnancy. On the other hand, positive emotion in recollecting their first contact with their infant was negatively correlated with mothers' non-attuned mind-related comments. Overall, although the findings cannot be used to infer causal relationships, they suggest that mothers' obstetric history with the infant is associated with mind-mindedness during actual mother–infant interaction.

Executive functioning was also investigated as a potential predictor of mind-mindedness. When Yatziv, Kessler, and Atzaba-Poria (2018) concurrently studied mothers and infants born full-term and preterm, they found a significant contribution of mothers' executive functioning towards predicting mind-mindedness at age 6 months during free-play: mothers' working memory skills were linked to greater use of appropriate mind-related comments when the mothers perceived that their infants had difficult temperaments, whereas mothers' inhibition skills were linked with fewer non-attuned mind-related comments specifically for full-term infants (i.e., less infant-driven stress compared with preterm infants). However, the study did not investigate other potential factors such as mothers' emotional regulation or parenting support, which might impact on mind-mindedness under stressful conditions, such as having a premature infant or infant with a difficult temperament. Therefore, although the study highlighted the possibility that executive functioning in conjunction with parenting stress or infant temperament might be related to the individual

differences in maternal mind-mindedness, it seems difficult to draw strong conclusions about links between mothers' executive functioning and maternal mind-mindedness.

Interestingly, Meins, Fernyhough, Johnson, and Lidstone (2006) argued that there was a 'competence–performance gap' with regard to the relation between mind-mindedness and individuals' underlying understanding of other minds: although people have a capacity to appreciate others' internal states (ToM), this is not sufficient for them to spontaneously invoke internal states when representing another person (mind-mindedness). This argument was based on the finding that children's performance on ToM tasks was unrelated to their mind-mindedness when describing a best friend. More recently, Barreto, Fearon, Osório, Meins, and Martins (2016) investigated the relation between ToM and mind-mindedness in parents of pre-schoolers, and found no association between mind-mindedness and underlying mentalising abilities in both mothers and fathers. The null findings for the relation between parents' mind-mindedness and their mentalising abilities were subsequently replicated by Devine and Hughes (2019). ToM abilities can thus be considered to be necessary but not sufficient for caregivers to demonstrate mind-mindedness, and the lack of association between mind-mindedness and caregiver ToM supports Meins et al.'s (2014) proposal that mind-mindedness is not trait-like, but a quality of close relationships.

Taken together, despite the fact that the construct of mind-mindedness was defined over twenty years ago, there is no definitive answer to the question of what makes a caregiver mind-minded. The main aim of this thesis was to further the investigation of individual differences in mind-mindedness and their correlates in order to shed light on the potential origins of mind-mindedness.

1.3 Parental Reflective Functioning

The importance of parental mentalisation, or mental representation in the context of attachment, was first noted by Main, Kaplan, and Cassidy (1985). They proposed that

individual differences in attachment could be explained by individual differences in mental representations or *internal working models* (Bowlby, 1980) of attachment. The development of the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985) provided researchers with a method for assessing individual differences in internal working models. The AAI is a semi-structured interview in which participants are asked to recall their early childhood relationships and experiences with attachment figures, with questions that focus explicitly on periods of separation, feelings of rejection, and experiences of loss or trauma. AAI transcripts are coded using a form of discourse analysis, with participants classified into four major categories: secure/autonomous (a coherent, open and believable account of attachment experiences is presented), dismissing (interviews are short, with an insistence on lack of recall and a tendency either to idealise or derogate attachment figures), preoccupied (interviews are long and the individual appears overwhelmed by early attachment experiences and presents as either angry or overly passive), and unresolved with respect to loss or trauma.

Main (1991) suggested that mothers' coherent and integrated representations of their early attachment experience would predict infant–mother secure attachment. Fonagy, Steele, and Steele (1991) were the first to test this proposal empirically, interviewing mothers using the AAI antenatally and assessing mother–infant attachment security at age 12 months.

Mothers' dichotomous antenatal AAI classifications (autonomous vs. dismissing/preoccupied) predicted dichotomous attachment security (secure vs. insecure), with autonomous mothers being significantly more likely to have secure attachment relationships with their infants.

Inspired by psychoanalytic work with people with borderline personality disorder, Fonagy became interested in the extent to which individuals' ability to understand attachment figures' motivations and intentions could explain the observed association between maternal AAI and infant–mother attachment. Fonagy (1989) first used the term mentalisation,

influenced by the Ecole Psychosomatique de Paris, in the context of studying borderline psychopathology, as he noticed that failure to understand mental states was linked to key characteristics of borderline personality disorder (Fonagy & Allison, 2013). In a re-analysis of the Fonagy et al. (1991) data, Fonagy, Steele, Steele, Moran, and Higgitt (1991) developed a new system for scoring AAI transcripts that focused on the individual's *reflective-self function*. Coding involved assigning one of the following scores: 1 (no reflective-self function), 3 (poor reflective-self function), 5 (generalised or inaccurate reflective-self function), 7 (accurate but incomplete reflective-self function), and 9 (complete reflective-self functioning). The re-analysis of the data showed that reflective-self function was highly positively correlated with AAI coherence and predicted secure infant–parent attachment.

The concept of reflective-self function has subsequently evolved into *reflective functioning* (RF), which Fonagy et al. (1998) defined as the individual's capacity to reflect on others' internal states in the context of their experiences with attachment figures. Fonagy et al. (1998) developed and adapted the earlier scheme in order to code RF from responses to the AAI, with individuals being assigned a score ranging from -1 to 9 to indicate their level of RF. RF was thus developed in the context of parents talking about their own experiences with attachment figures.

More recently, the concept of RF has been applied to parents' thinking about their own children's internal states and themselves in the parenting role. *Parental reflective functioning* (PRF) refers to a parent's capacity to represent their children's thoughts, feelings, and beliefs, and thus hold their children's mental experiences in mind (Slade, 2005). Slade (2005) adapted Fonagy et al.'s (1998) scheme to assess RF specifically in relation to the parent–child relationship from mothers' responses to the Parent Development Interview (PDI, Aber, Slade, Berger, Bresgi, & Kaplan, 1985). The PDI is a semi-structured clinical interview comprised of 45 questions, intended to assess parents' representations of their children,

themselves as parents, and their relationships with their children. Slade, Aber, Bresgi, Berger, and Kaplan (2004) revised the PDI to create a 40-item interview that can be used with parents with children aged from infancy to adolescence. The PDI-R covers the parent's view of their child and of their relationship with their child, their view of themselves as parents, their view of the emotional upheavals involved in parenting, and their notion of the ways they have changed as a parent over the course of their child's life.

PRF is assessed in terms of the extent to which parents consistently and coherently describe their reflection upon their own and their children's internal mental experiences in the context of parent-child relationships (Slade, Bernbach, Grienberger, Levy, & Locker, 2005). The PDI/PDI-R is coded for PRF using the same 11-point scale as used to assess RF from the AAI. The scale ranges from bizarre/inappropriate (-1) to high/exceptional (+9) PRF. Low or absent PRF is identified where parents mention little about the child's internal states (e.g., "he's cute"; "she's pushes me around"), while high PRF is scored when the parent describes the interplay between his/her own mental state and that of the child, understanding the ambiguity of emotion, and admitting to emotions common to parenting, namely guilt and/or anger. For example, recognition of the transactional processes in which a parent's mental state may influence their child's mental state and vice versa would indicate high reflective functioning (e.g., "Sometimes she'll want to do something and I won't let her because it's dangerous, so she'll get angry. I may try to pick her up and she obviously doesn't want to be picked up because she's in the middle of being angry and I interrupted her. In those moments it's me who has the need to pick her up and make her feel better, so I'll put her back down", Slade et al., p. 28).

A measure of parental mentalisation has also been developed for the Working Model of the Child Interview (WMCI; Larrieu, Stevens, & Zeanah, 2014). The WMCI is a 1-hour semi-structured interview that assesses caregivers' mental representation of their children

aged up to 5 years. The original scoring system has three categories describing the characteristics of caregivers' representations (i.e., balanced, disengaged, and distorted), but for measuring PRF, the PDI coding system (scale of -1 to 9) was applied to the WMCI (Schechter et al., 2005). On the other hand, Rosenblum, McDonough, Sameroff, and Muzik (2008) modified the RF scale (Fonagy et al., 1998) for use with the WMCI, focusing on mentalisation regarding parenting experience, interpretation of children's behaviours, and attribution regarding children's mental states. The resulting 'reflexivity' scale has five points, and high scores are assigned in accordance with the level of acknowledging and tolerating complex feelings about the parenting role, acknowledging the influence of psychological processes on their own or their child's behaviours, and the intensity of involvement in reflective reasoning. It should be noted that this reflexivity scale has not been validated against Slade et al.'s (2005) coding system and so cannot be assumed to be equivalent to PRF.

Given that these measures of PRF were developed for use with interviews, obtaining PRF data in this way is time-consuming and labour-intensive. Moreover, in order to provide valid data on PRF from interview transcripts, coders must complete intensive and costly training courses. To address these disadvantages, a self-report questionnaire was developed to assess PRF. The parental reflective functioning questionnaire (PRFQ; Luyten, Mayes, Nijssens, & Fonagy, 2017) is an 18-item, brief, multidimensional self-report measure. It has three subscales: (a) *Pre-mentalising modes*, for measuring parents' non-mentalising stance, (b) *Certainty about mental states*, for measuring parents' understanding of the opacity of mental states, and (c) *Interest and curiosity in mental states*, for assessing parents' genuine interest in their children's inner states. A recent study provided preliminary evidence of the validity and reliability of the three subscales using factor analysis (Luyten, Mayes et al., 2017).

1.3.1 Multidimensionality of PRF

Although the PRF interview measures (i.e., the PDI, WMCI) yield a single score as they treat PRF as a unitary construct, given that the interview measures actually analyse a substantial range of mentalising skills (e.g., representing a child's subjective experiences as well as a parent's ongoing mental states, comprehending the opaque nature of mental states), PRF appears to be a complex and multidimensional construct (Luyten, Nijssens, Fonagy, & Mayes, 2017).

Indeed, Suchman, DeCoste, Leigh, and Borelli (2010) found two robust dimensions of PRF from the PDI through factor analyses: a *self-focused* mentalisation, referring to mentalising about one's own mental states and its influence on parent-child interactions, and a *child-focused* mentalisation, referring to mentalising about the child's mental states and its influence on parent-child interactions. The two subfactors were replicated in other studies using the PDI with toddlers and school-aged children aged between 8 and 12 years old, that corroborated the notion of PRF's multidimensionality (Borelli, St. John, Cho, & Suchman, 2016; Smaling, Huijbregts, Van der Heijden, Van Goozen, & Swaab, 2016; Suchman, Decoste, McMahon, Rounsaville, & Mayes, 2011). However, Borelli et al. (2016) found that the PDI items which remained in the factor structure were varied for the school-aged children, suggesting a potential limitation of using the sub-factors of the PDI.

Luyten and colleagues approached the multidimensionality of PRF differently. Luyten, Nijssens et al. (2017) postulated that caregivers who had impaired mentalising skills due to their unresolved insecure attachment histories or traumatic experiences, typically tend to show failure of mentalising towards their children in three ways, which often overlap or occur concurrently (Ensink & Mayes 2010; Leckman, Feldman, Swain, & Mayes, 2007; Sadler, Slade, & Mayes, 2006; Suchman et al., 2011). First is *a lack of interest and curiosity* in their children's mental states. When the caregivers who have insecure attachment histories

face their children's distressed expressions such as crying or tantrums, these might provoke the caregivers' unresolved past experiences, which in turn increase the likelihood that they will be overwhelmed and distance themselves in order not to get involved in their infants' mental states (Fonagy & Alison, 2013; Fonagy, Gergely, Jurist, & Target, 2002).

Second is a *lack of comprehension of the opaque nature of mental states*. Caregivers who do not recognise the opacity of mental states are likely to be highly certain about their children's mental states or, conversely, the limited understanding of opacity leads them to feel that their children's mind is totally opaque or blank (e.g., "My child is too young to feel or think anything", Luyten, Nijssens et al., 2017, p. 176). The two extreme poles of this understanding of mind could result in a lack of interest and curiosity in their children's inner experiences. The last one is *distorted and malevolent interpretation* of their infants' mental states. In this case, the caregiver would interpret the child's discomfort reactions as behaviour with the malicious purpose to disturb or interrupt. These distorted interpretations are likely to co-occur with high levels of certainty on the child's mental states and low interest in what is genuinely happening in the child's mind.

In accordance with their theoretical notion of multidimensionality, Luyten, Mayes et al. (2017) found three meaningful factors for the PRFQ through both exploratory and confirmatory factor analyses: a) *Pre-mentalising modes*, b) *Certainty about mental states*, and c) *Interest and curiosity in mental states*. A high score on *Pre-mentalising modes* indicates caregivers' propensity to engage in maladaptive mentalising on the infants' underlying mental states, while a high score on *Interest and curiosity in mental states* implies caregivers' genuine interest and curiosity in the infant's subjective mental experiences. A high score on *Certainty about mental states* indicates overlooking of the opaque nature of mind, which is likely to lead to intrusive and inappropriate mentalising. However, an extremely low score on this subscale could also mean little comprehension of the nature of mind and confused states

of mentalising about their children. That said, given that most items in the subscale of *Certainty about mental state* contain strong expressions of being certain about their children's inner states such as 'always know' or 'can completely read', a low score on the subscale could be considered to indicate high PRF (e.g., Borelli, Lai et al., 2020).

In empirical research, the subscales of the PRFQ have been found to relate differentially to aspects of the quality of parent–child relationships (e.g., Luyten, Mayes et al., 2017; Rostad & Whitaker, 2016), parents' psychological functioning (e.g., parental emotion regulation; Rutherford, Booth, Luyten, Bridgett, & Mayes, 2015; Rutherford, Goldberg, Luyten, Bridgett, & Mayes, 2013), and children's social emotional development (e.g., Gordo, Martinez-Pampliega, Elejalde, & Luyten, 2020; Nijssens, Vliegen, & Luyten, 2020). Rostad and Whitaker (2016), for instance, reported that only parents' *Pre-mentalising modes* related to self-reported parenting satisfaction (with a negative correlation), while all three subscales were associated with self-reported parent–child involvement: parents with high scores for *Pre-mentalising modes* reported being less likely to engage with their children, but parents with high scores for *Certainty about mental states* and *Interest and curiosity in mental states* subscales reported being more involved in parent–child relationships.

More recently, Borelli, Lai et al. (2020) found that when children aged under 21-months became distressed by a difficult task (i.e., toy removal task) in the laboratory, those who had mothers with low *Certainty about mental states* scores (i.e., high awareness of the opaque nature of their children's minds) were more likely to turn toward their mothers to cope with their distress. Moreover, in the same distressed situation, children who had mothers with high *Certainty about mental states* scores presented with more aggressive behaviours. These findings suggest that different dimensions of PRF may have different relations with parent–child interaction and children's development of emotional regulation.

1.3.2 Potential precursors of PRF

Despite the fact that Fonagy et al. (2002) contended that mentalisation is rooted in the context of early attachment relationships, they admitted the potential influence of particular social and cultural contexts on the development of mentalisation. The social–evolutionary communicative model (Luyten, Cambell, Allison, & Fonagy, 2020) acknowledges the role of a broad range of factors in shaping parental mentalisation via their impact on the quality of parent–child relationships and the development of children within particular socio-cultural contexts. However, akin to *maternal mind-mindedness*, few studies have revealed potential predictors of PRF, and there is as yet no study exploring how cultural context relates to PRF.

Alternatively, Rutherford et al. (2018) reported that mothers' working memory and task-shifting abilities were positively related to mothers' *Interest and curiosity in mental states*. Similarly, Yatziv, Kessler, and Atzaba-Poria (2020) also found positive correlations between mothers' general executive functioning skill and PRF, but only when mothers had full-term children (i.e., low-stress context compared to preterm birth), when mothers perceived their children as more difficult, or when mothers reported higher coparenting dissatisfaction. These findings indicate the potential role of the parent's cognitive abilities in conjunction with parenting stress and infant temperament in predicting certain aspects of PRF. In addition, Schultheis, Mayes, and Rutherford (2019) found that mothers' emotional suppression was positively associated with the *Pre-mentalising modes* subscale, whereas emotional awareness was positively associated with *Interest and curiosity in mental states*, suggesting that mothers' emotional regulative capacity may underlie individual differences in PRF. However, although these studies suggest that mothers' executive functioning or emotional regulation abilities might be associated with individual differences in PRF, as the studies assessed PRF concurrently with these other variables, it is not possible to draw conclusions about directions of cause and effect.

1.3.3 Correlates of PRF

Representing others' internal states requires intentional effort and the ability to take others' perspectives (Epley, Keysar, Van Boven, & Gilovich, 2004; Lin, Keysar, & Epley, 2010)—capacities that are arguably most challenging in early infancy, when infants have little agency and are unable to speak (Suchman et al., 2010). Crumbley (2009) reported a robust positive correlation ($r = .53$) between caregivers' RF in the context of their own attachment experiences as assessed using the AAI and PRF with reference to their children as assessed using the PDI. The fact that the correlation is not perfect highlights the fact that different capacities are necessary for demonstrating RF in relation to attachment figures versus one's own child. This is in line with the assertion of Luyten, Nijssens et al. (2017) that mentalising is a “dynamic, developmental, and bidirectional capacity” (Luyten, Nijssens et al., 2017, p. 177).

Findings from studies that focused on parents' affect regulation also highlight the distinction between general functioning and functioning specifically in the parent–child relationship. These studies assessed PRF using the self-report PRFQ, rather than from interviews. Schultheis et al. (2019) reported that mothers' self-reported awareness of and ability to regulate emotions were negatively related to scores on the *Pre-mentalising modes* subscale of the PRFQ. Rutherford and her colleagues (Rutherford et al., 2013, 2015) also found associations between PRF and mothers' responses to infant distress in an experimental paradigm. Mothers' PRFQ scores were related to tolerance of infant distress, but not to general distress tolerance. However, the data across these two experimental studies are somewhat difficult to interpret because different subscales of the PRFQ related to tolerance of infant distress in each study. Rutherford et al. (2013) reported that scores on the *Interest and curiosity in mental states* subscale were positively correlated with tolerance, whereas

Rutherford et al. (2015) found a negative correlation between *Pre-mentalising modes* scores and tolerance.

Research using the PDI has indicated that PRF is associated with parenting behaviour and parent–child relationships. Slade, Grienenberger, Bernbach, Levy, and Locker (2005) found that reflective functioning *in relation to the infant* (i.e., PRF), rather than RF in relation to attachment figures, was positively related to infant–mother attachment security. This link between maternal PRF and infant–mother attachment security has been replicated in other studies (Madigan, Hawkins, Plamondon, Moran, & Benoit, 2015; Luyten, Mayes et al., 2017). Kelly et al. (2005) reported that mothers with low PRF were more likely to show disruptive maternal affective communication as measured by the Atypical Maternal Behaviour Instrument for Assessment and Classification (AMBIANCE; Bronfman, Parsons, & Lyons-Ruth, 1999), which in turn predicted infant–mother insecure attachment. Although these authors concluded that the relation between PRF and infant–mother attachment was mediated by maternal behaviour, AMBIANCE scores and attachment security were assessed from the same observation (the strange situation procedure), rather than in a separate mother–infant interaction. The attachment security and maternal behaviour data are thus not independent. Stacks et al. (2014) reported that mothers’ PRF scores were positively associated with maternal sensitivity and negatively associated with parenting negativity during free-play and a clean-up task in the laboratory. In conjunction with Kelly et al.’s (2005) findings, Stacks et al. reported that maternal sensitivity and parenting negativity mediated the relation between PRF and infant–mother attachment security.

Research has explored relations between PRF as assessed from an interview and infants’ emotion regulation. For instance, using the still-face paradigm, Heron-Delaney et al. (2016) found that preterm infants whose mothers scored high for postnatal PRF showed significantly higher levels of self-soothing behaviours during the most stressful episode than

infants whose mothers had low levels of postnatal PRF. This suggests that infants' ability to regulate their negative emotion might be in accord with their mothers' PRF levels. Wong, Stacks, Rosenblum, and Muzik (2017) further argued that parents' PRF plays a role in the development of toddlers' behaviour problems, reporting that only toddlers of parents who had high levels of PRF showed non-significant relations between their difficult temperament at 7 months and behavioural problem at 18 months. When mothers demonstrated medium or low levels of PRF, their infants' difficult temperament was positively related to behavioural problems later in development.

Studies using the self-report questionnaire for PRF are congruent with the previous findings that PRF relates to young children's socio-emotional development. In particular, the subscale of *Pre-mentalising modes*, referring to parents' non-mentalising stance, has consistently shown significant relations with more emotional and behavioural problems in toddlerhood, regardless of parents' gender (Gordo et al., 2020; Nijssens et al., 2020). However, research has not yet investigated whether parents' PRF measured by interview or the PRFQ relates to children's mentalising abilities (e.g., ToM).

1.4 Relations Between Mind-Mindedness and PRF

Mind-mindedness and PRF are differently operationalised concepts, although they share the conceptual focus on considering one's child as a psychological agent. The differences between the two concepts can be linked to their respective theoretical orientations (Schacht, 2016). PRF stems from a concept of adult reflective functioning that originated from adults' retrospective narratives on their attachment history (Fonagy et al., 1998). Mind-mindedness, in contrast, stems from laboratory observations of the way parents expressed recognition of their children's mental states with mind-related language (Meins et al., 2001). Thus, mind-mindedness seems to be less concerned with adults' mental representations of others' internal states, and more focused on how such representations of the child's thoughts

and feelings are used during actual parent–child interaction. Similarly, although the “describe your child” is measured by interview, it also assesses mind-mindedness in terms of caregivers’ spontaneous utterance of mind-related words relating to the child. Mind-mindedness is thus a construct at the interface between representation and behaviour (Arnott & Meins, 2007; Meins, 2013; Meins et al., 2012).

These differences are reflected in the way the two constructs are measured. Mind-mindedness has an ‘online’ assessment that measures accurate interpretations of infants’ internal states during actual caregiver–infant interaction, while PRF is measured from parents’ retrospective interviews or questionnaires. Furthermore, mind-mindedness is measured by counting caregivers’ actual behavioural responses (i.e., mind-related comments) towards their infant, whereas PRF focuses on the degree to which parents link their child’s behaviours to mental states, and the coherence with which they describe these links (Zeegers et al., 2017). Therefore, PRF and maternal mind-mindedness are considered to tap into different areas of parental mentalisation.

Surprisingly, only three published studies have investigated the link between observation-based mind-mindedness and PRF. First, Rosenblum et al. (2008) found a positive correlation between PRF as assessed using the WMCI and appropriate mind-related comments. However, they did not report on non-attuned mind-related comments, so the relation between this index of mind-mindedness and PRF is unknown. Moreover, this study used a non-validated scheme to code for ‘reflexivity’ rather than using the validated PRF coding system. The two recent studies that investigated relations between maternal mind-mindedness and PRF used both indices of maternal mind-mindedness and assessed PRF using the short version of the PDI or the PRFQ. Unlike Rosenblum et al.’s study, Dollberg (2021) found no significant associations between PRF assessed by the Parent Development Interview-Revised-Short Form (PDI-R2-S; Slade et al., 2003) and either appropriate or non-

attuned mind-related comments when their infants aged 3 months. The other study conducted by Krink & Ramsauer (2021) also presented no links between PRF using the PRFQ and observed maternal mind-mindedness at 3- to 10-months in mothers with clinically diagnosed postpartum depression. Although there is still no information on the relations between observed maternal mind-mindedness and multidimensional PRF with non-clinical samples, their recent findings support the argument that PRF and maternal mind-mindedness indicate distinct constructs of parental mentalisation.

Given that there is little exploration of how parents' understanding of mental processes can affect their mentalising behaviours with their children in real life, exploring the relation between mind-mindedness and PRF has the potential to shed light on this important link, as well as contributing to our understanding of the precursors of parental mentalisation. As discussed above, PRF and mind-mindedness are defined and operationalised very differently—it does not necessarily follow that the ability to reflect on one's infant's internal states in the context of an interview or questionnaire will relate to how accurate one is in interpreting the infant's internal states during actual interaction. Other factors that will be investigated as potential predictors of parental mentalisation in this thesis will be described with the study aims in the following section.

1.5 Questions Addressed in this Thesis

The overarching aim of this thesis is to explore factors that may help to explain why some caregivers are more inclined than others to show better mentalising towards their infants, focusing on factors not previously investigated in the literature. Relations between mind-mindedness and PRF were investigated to establish the extent to which these different aspects of parental mentalisation relate to one another. PRF was assessed using the PRFQ to explore how the theorised sub-components of PRF are associated with mind-mindedness. The

research reported in this thesis is thus the first to investigate the relation between mind-mindedness and PRF using validated assessments of both constructs.

1.5.1 Contextual Factors Relating to Parental Mentalisation

The first main aim of this thesis is to explore parental mentalisation in two different cultures: South Korea (hereafter: Korea) and the UK. Cultural difference is a significant area to examine, as although parental mentalising is considered to be determined by and implanted within a broader sociocultural context (Luyten et al., 2020; McMahon et al., 2016), little is known about mind-mindedness and PRF across the world. The cross-cultural component of this research also makes it possible to investigate whether any observed relations between mind-mindedness, PRF, and other variables that will be studied in the thesis hold cross-culturally.

There has been surprisingly little research on cultural differences in parental mentalisation. No study has yet investigated whether PRF as assessed from interviews or the PRFQ varies across cultures. Mind-mindedness in European countries such as Germany, France, and Italy, has been reported to be in line with levels of mind-mindedness in UK samples (McMahon & Bernier, 2017). However, only three studies have investigated differences in mind-mindedness between Western and Eastern cultures. Hughes et al. (2018), for instance, assessed mind-mindedness cross-culturally using the describe-your-child measure with parents of 4-year-olds. They reported that parents from Hong Kong were less likely than their British counterparts to describe their children in mind-minded ways. Nevertheless, in both the British and Hong Kong families, mind-mindedness was positively associated with children's ToM performance. This suggests that, although mind-mindedness may differ across cultures, mind-mindedness itself and its relations with children's mentalising development may be universal.

More recently, Fujita and Hughes (2020) assessed Japanese and British mothers' mind-mindedness from semi-structured 5-minute interviews, in which they were asked to describe their children and relationships with their children, who were aged 3 to 6 years. Japanese mothers were more likely to make statements referring to their own expectations of their children and themselves rather than their children, and less likely than their British counterparts to describe their children in mind-minded ways.

Only one study has investigated cultural differences in observation-based mind-mindedness during infancy. Dai, McMahon, and Lim (2019) examined Australian and Chinese mothers' mind-mindedness during interactions with their children aged approximately 19 months. During 15-minute free-play interactions, Australian mothers showed a higher proportion of appropriate mind-related comments and a lower proportion of non-attuned mind-related comments compared to their Chinese counterparts.

Taken together, the previous studies on cultural differences in parental mentalisation revealed that Asian mothers (i.e., Chinese, Hong Kong Chinese, and Japanese) were less likely to be mind-minded when they interacted with and described their children. This cross-cultural variation in mind-mindedness may be explained in terms of parents' cultural belief systems or parental ethnotheories. Parental ethnotheories involve parents' understanding of the nature of children, their development, the meaning of being a parent, and socialising goals shared by members of their cultural group (Harkness & Super, 1996). Thus, considering that East Asia is a Collectivist culture influenced by Confucianism, in which hierarchy and conformity are emphasised in order to establish harmonious and interdependent families (Becker, 1986; Park & Kim, 2006), the lower levels of mind-mindedness observed in Chinese and Japanese mothers could be indicative of their ethnotheories that focus less on their children's individuality and autonomy. In contrast, given that Western society is categorised as Individualistic, emphasising individuality and

autonomy (Markus & Kitayama, 1991; Kağıtçıbaşı, 2007), Western mothers' higher levels of mind-mindedness compared with East Asian mothers could reflect their focus on their cultural tendency to encourage their children to become individual mental agents.

Consequently, it seems that the cultural context and its influence on parenting behaviour is likely to result in cultural differences in parental mentalisation.

1.5.1.1 South Korean Culture

China, Korea, and Japan are geographical neighbours, sharing Confucian heritage that was transmitted from ancient China. As the countries influenced each other over a long history, they developed similar but distinctive cultures from their common cultural heritage (Shwalb, Nakazawa, Yamamoto, & Hyun, 2010). For instance, while Chinese parenting focuses on *guanjiao* (the full term of *guan*), which indicates parental monitoring, training, and teaching a structure for children's behaviours (Lau & Cheng, 1987; Chao, 1994; Wang, & Supple, 2010), Korean parenting emphasises *hyo*, which is filial piety, focusing on mutual responsibilities and interdependence in parent–child relationships (Chung, Chung, Kim, & Park, 2007; Ryu, 2007). Within the focus on *hyo*, Korean parental devotion manifests as maternal physical contact (Kim, Kwak, Sung, & Sim, 2003), serious conversation to provide maternal instruction to correct the children's social behaviours (*ga-reu-chim*), and behavioural demonstration (*mo-bum*) (Kim, 2006). On the other hand, Japanese mothers focus less on verbal communication with their children compared with European American mothers (Fernald & Morikawa, 1993; Holloway, 2017). Japanese parenting is characterised by the concept of *mimamoru* (watching over from a distance) which allows children to explore in order to learn independently rather than via direct instruction (Holloway, 2017).

These differences between Korean culture and other East Asian cultures are important in establishing how parental mentalisation may vary across cultures. First, family cohesion—with an emphasis on age veneration, conformity, and filial piety—is the most important

factor in the Korean family system (Choi, Kim, Kim, & Park, 2013; Sovet & Metz, 2014). Therefore, building close relationships with their children and assimilating their children into their family system are socially desirable goals for Korean parents (Jin, Jacobvitz, Hazen, & Jung, 2012; Park & Kim, 2006). “Oneness”—strong emotional relatedness between mother and infant—is a unique feature of mother–child relationships in Korea, and pursuing oneness or interdependency with a child is implicitly and explicitly manifested in Korean parenting customs. For example, it is common practice in Korea to sleep with children until they are around 6 to 7 years old (Choi et al., 2013), and Korean women’s individual identities (e.g., occupation) become weaker once they are mothers, as their children’s characteristics and achievements replace their own identities. It is common for Korean mothers to be called ‘[child’s name’s] mother’ instead of their own names at socialising situations involving their children. Empirically, Jin et al. (2012) also found that Korean mothers focused more on pursuing proximity to their child compared with US mothers during the strange situation procedure to assess attachment security, although Korean children did not seem to get distressed any more than their US counterparts.

Oneness is also manifested in Korean mothers’ tendency to see their babies as extensions of themselves and to expect their babies to fulfil their own life goals when they grow up (Kim & Choi, 1994; Kim, Park, Kwon, & Koo, 2005). This vicarious gratification is another prominent factor of Korean motherhood (Jin et al., 2012). In these contexts, it is not surprising that Korean mothers pursue more physical and psychological proximity to their children compared with mothers in Western cultures.

Moreover, Korean parenting traditionally allows parental control and corporal punishment, such as hitting with a stick on the calf or palm and making children raise and hold their arms up for certain amounts of time, in order to discipline their children, emphasising strong family ties and interdependency within the family hierarchy (Choi et al.,

2013; Park & Kim, 2006). Indeed, due to Korean parents' strict and controlling discipline, Korean parenting style has often been identified as authoritarian, which consists of low warmth and high control. However, this may be an oversimplification of the Korean parenting style, which may be better characterised as a combination of two seemingly incompatible parenting styles: authoritarian and authoritative. When Choi et al. (2013) compared their own Korean parenting measures to various Western parenting measures with Korean American families, they found that Korean traditional parental virtue and enculturation of family values were positively associated with parental warmth and acceptance, while the use of Korean traditional discipline was associated with authoritarian style, rejection, and negative discipline. Thus, the Korean parenting style seems to be a unique mixture of authoritarian and authoritative styles, which should be understood within the cultural context, not through the lens of ideal Western parenting practices.

One aim of this thesis was to investigate parental mentalisation in the context of Korean family culture in order to explore how differences in cultural background might shape mothers' ability to reflect on their infants' internal states and to treat their infants as individuals with minds of their own. Considering the strong emotional connectedness that is culturally expected of Korean mothers and infants, cultural differences between Korean and British mothers' parental mentalisation were expected. With regard to mind-mindedness, the cultural emphasis on emotional connectedness may mean that Korean mothers will produce more appropriate mind-related comments compared with British mothers. However, as this cultural expectation for mothers and infants to be 'at one' may escalate the risk of mothers' projection of their own thoughts and feelings on to their infants, it may also result in Korean mothers being more likely than their British counterparts to make non-attuned mind-related comments. In terms of PRF, oneness could be argued to make mothers more certain of their ability to read their children's internal states, which may consequently compromise their

genuine interest in their infants' mental world. We therefore expected cultural differences between Korean and British mothers with regard to the PRF scales of Certainty about mental states and Interest and curiosity in mental states.

1.5.2 Mothers' Empathy and Parental Mentalisation

Another aim of this thesis was to investigate whether parental mentalisation (i.e., mind-mindedness and PRF) is related to mothers' dispositional empathy. Luyten et al. (2020) argued that, as mentalising does not merely encompass the capacity to recognise others' inner states but also the capacity to be aware of their own mental states and regulate their emotions, mentalisation is deemed to be an umbrella term for mind-related concepts including empathy, perspective-taking ability, and mindfulness. In particular, given that empathy refers to the capacity to understand and vicariously feel others' mental states (Dvash, & Shamay-Tsoory, 2014), theoretically, parental mentalisation referring to abilities to comprehend their own and others' mental states and empathy overlap. Positive relations between mentalising and empathy have also empirically been shown at the neural level. For instance, Schnell, Bluschke, Konradt, and Walter (2011) reported that the brain network associated with cognitive empathy involved areas which were previously characterised as the mentalising network for referencing one's own internal affective states (e.g., superior temporal sulcus, temporal poles).

Indeed, Ainsworth (1969) mentioned empathy as one of the main components in the mother's ability to appropriately interpret her infant's communications, implying mothers' empathy could be critical for appropriate parental mentalising. Surprisingly, research investigating the associations between parental mentalisation and empathy is scarce. No study has yet investigated how empathy relates to caregiver mind-mindedness, and only one article has explored the relation between empathy and PRF. Borelli, Stern et al. (2020) reported on two studies involving mothers and school-aged children. In the first study,

mothers watched their 10-year-olds perform a stressful task, after which they were interviewed about their own and their children's thoughts and feelings during the task. These interviews were coded for empathy and PRF. The second study interviewed mothers of 7- to 12-year-olds using the PDI-R and coded their responses for empathy and PRF. In both studies, empathy and PRF were robustly positively correlated.

However, as this study used the same interview transcripts to assess both empathy and PRF, there are concerns over shared method variance influencing the results. Moreover, empathy was assessed only in a global manner. There is a wealth of literature highlighting the multidimensional nature of empathy, which is proposed to consist of two components: cognitive empathy and affective empathy (Baron-Cohen & Wheelwright, 2004; Blair, 2005; Lawrence, Shaw, Baker, Baron-Cohen, & David, 2004; Reniers, Corcoran, Drake, Shryane, & Völlm, 2011; Spinella, 2005). Cognitive empathy is the capacity to represent others' mental states (expressed in thoughts, intentions, beliefs, etc.) and understand the world from their perspective (Baron-Cohen & Wheelwright, 2004; Blair, 2005; Spinella, 2005), while affective empathy is the ability to vicariously feel other people's emotional states (Baron-Cohen & Wheelwright, 2004; Reniers et al., 2011). An aim of this thesis was thus to investigate the extent to which both aspects of empathy relate to parental mentalisation.

In summary, this thesis involves a cross-cultural investigation of the inter-relations between mind-mindedness, PRF, and empathy. Moreover, parenting style, maternal intrusiveness, maternal psychological well-being, and infant temperament were also investigated to control for the potential influence of these variables on the quality of mother-infant interactions across cultures. The cross-cultural design also allowed for cultural differences in these areas to be investigated, providing unique data on Korean families. This approach enabled all empirical aspects of the thesis to address its overarching aim: to shed light on the potential origins of parental mentalisation.

Chapter 2¹

Study 1: Translation and Preliminary Validation of a Korean Version of the Parental Reflective Functioning Questionnaire

2.1 Introduction

Parental reflective functioning (PRF) refers to a parent's capacity to represent their child's thoughts, feelings, and beliefs, and thus hold their child's mental experiences in mind (Slade, 2005). If parents can represent their child's subjective experiences without overwhelming or shutting down their own affective experiences, their child will have more opportunity to explore the subjective world through the parents' internal state representations (Luyten, Nijssens, Fonagy, & Mayes, 2017; Sharp & Fonagy, 2008; Slade, 2005). Such opportunities are assumed to allow children to understand their own and others' minds, and to encourage them to obtain broad self-knowledge, which is crucial in affect regulation (Slade, 2005). The present study provides a preliminary validation of a questionnaire measure of PRF in a sample of Korean parents.

PRF was originally assessed from responses to semi-structured interviews, such as the Parent Development Interview (PDI; Slade, Aber, Bresgi, Berger, & Kaplan, 2004; Aber, Slade, Berger, Bresgi, & Kaplan, 1985) or the Working Model of the Child Interview (WMCI; Zeanah, Stevens, & Larrieu, 2014). A number of studies reported that PRF was related to the intergenerational transmission of attachment and the quality of parenting behaviors. Slade, Grienenberger, Bernbach, Levy, and Locker (2005) found significant relations between maternal attachment measured by the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1996), PRF measured by the PDI, and infant-mother attachment

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measured by the strange situation procedure (Ainsworth, Blehar, Waters, & Wall, 1978). This study found that mothers with secure/autonomous AAI classifications were likely to show higher levels of PRF, and highly reflective mothers were more likely to have securely attached infants compared with mothers who had low levels of PRF. Although these findings remain to be replicated, this small-scale study provides preliminary evidence that maternal reflective functioning may mediate the relation between adult and infant attachment.

Using the same sample, Kelly, Slade, and Grienenberger (2005) found that maternal disruptive affective communication (Bronfman, Parsons, & Lyons-Ruth, 1999) during the strange situation procedure (e.g., silence in response to the infant's crying, redirecting the distressed infant to toys rather than offering physical comfort) was strongly correlated with low levels of PRF. This study suggests that low levels of PRF are related to problems in responding to infant emotions in a situation designed to activate the infant's attachment behaviors.

Stacks et al. (2014) also reported significant associations between parenting behaviors and PRF. This study found that highly reflective mothers showed higher parenting sensitivity and lower parenting negativity (e.g., negativity/hostility, over-controlling/intrusiveness). The authors also found that parenting sensitivity mediated the link between PRF and infant–mother attachment security, after controlling for maternal risk factors such as postpartum depression and post-traumatic stress disorder. Although replication is once again required, these findings suggest that mothers' successful representation of their infants' mental states seems to be associated with secure infant–mother attachment and higher maternal emotional availability.

However, there are drawbacks to interview-based assessments of PRF. In addition to labor-intensive transcription, substantial training is required to code PRF from these interviews. To address these limitations, the parenting reflective functioning questionnaire

(PRFQ, Luyten, Mayes, Nijssens, & Fonagy, 2017) was developed to enable researchers to assess PRF in an easy-to-administer self-report format. The PRFQ consists of 18 items on a seven-point Likert scale, and can be completed by parents with children aged up to 5 years. It has three subscales (i.e., *Pre-mentalizing modes*, *Certainty about mental states*, and *Interest and curiosity in mental states*), and each subscale has six items. With the subscales, the PRFQ offers broad information about PRF, including reasons for failures in PRF (the PRFQ items and scoring are available at: www.ucl.ac.uk/psychoanalysis/research/parental-reflective-functioning-questionnaire-prfq).

Luyten, Nijssens et al. (2017) proposed that there were three ways in which parents generally failed to enter their children's internal subjective world. Firstly, parents could interpret their children's behaviors with reference to distorted and malevolent attributions (e.g., "When my child is fussy, he or she does that just to annoy me"). Secondly, parents could have problems dealing with the opacity of mental states, being either overly confident about interpreting their children's mental states or showing little awareness of the existence of their children's mental states. Finally, they could show limited genuine interest and curiosity in their children's mental states, and thus a lack of understanding of what occurs in their children's subjective world. According to Luyten, Nijssens et al. (2017), these three failures to appreciate the child's mental world often occur together. The three subscales of the PRFQ—*Pre-mentalizing modes*, *Certainty about mental states*, and *Interest and curiosity in mental states*—reflect this theoretical background. It is important to note that higher scores on each of scales do not always reflect higher PRF. For example, a high level of *Certainty about mental states* (e.g., "I can completely read my child's mind") does not necessarily mean a high level of PRF because high scores indicate a lack of awareness of the opacity of mental states.

Although few studies have used the PRFQ, the findings from these studies are broadly in line with those of studies which assessed PRF using semi-structured interviews. For example, Rostad and Whitaker (2016) investigated associations between PRFQ, the quality of parenting, and parent–child relationships by measuring parental involvement, parent satisfaction, and parental support. These researchers found that high scores for *Pre-mentalizing modes* of PRF showed the most consistent relations with non-optimal parenting, such as low parental satisfaction, parental rejection, and low allowance of autonomy, whereas the *Interest and curiosity in mental states* subscale was positively associated with positive parenting experiences, such as parental support and parental satisfaction. Although all measurements were self-report questionnaires, and there were no observational data on the interaction between parents and children, the study provides preliminary evidence on the associations between the facets of parental reflective functioning as assessed by the PRFQ and the perceived quality of parenting. Therefore, further work utilizing the PRFQ is important to validate its use and to explore its relation to other aspects of parenting.

Currently, little is known about the extent to which socio-cultural context influences PRF. It is likely that cultural factors could affect parents' child-rearing beliefs, parenting styles, and behavior. The present study chose to investigate PRF in the context of South Korean culture. South Korea is a collectivistic society based on Confucian values, in which parents are expected to be aware of and fulfil their children's requirements from birth, and where children are expected to show filial piety to their parents. This emphasizes a sense of “oneness” (일체감)—strong emotional relatedness between mother and infant—in parent–child relationships, rather than parents treating their children and themselves as individuals (Jin, Jacobvitz, Hazen, & Jung, 2012; Kim & Choi, 1994; Kim, Park, Kwon, & Koo, 2005). Lieber, Fung, and Leung (2006) reported that Hong Kong and Taiwanese parents, who also live in a Confucian collectivistic culture, believe that “shame” is an important emotion for

fostering children's social sensitivity. This should be understood in the context of collectivistic society, where displaying appropriate behavior and expressions in social settings is a component of moral evaluation. These different approaches to rearing children in these cultures could potentially affect both PRF itself and its associations with parental variables (e.g., parenting style), as some of the concepts described in the PRF literature (e.g., the opacity of mental states; limitations on insight) may be viewed quite differently in a collectivistic society.

Although previous research has not attempted to translate the PRFQ directly into Korean, Shin and colleagues (Shin, 2016; Shin, Lee, & Yoo, 2015) developed their own measure of Korean parents' reflections on parenting their young children. Shin et al. (2015) interviewed 13 experts and practitioners working in the area of developmental psychology in Korea to devise the questionnaire items, and administered the resulting 20-item questionnaire to a large sample of Korean parents. In reporting on the questionnaire's structure, the authors defined three factors: (a) understanding of children (e.g., "I understand my child's play or behavior"), (b) understanding of parent's role (e.g., "Thinking about my behavior toward my child, I can realize my unknown anxiety"), and (c) behavior recognition (e.g., "I cannot suppress my anger when my child grumbles"). Shin (2016) validated the new questionnaire against published measures of adult mentalisation (e.g., Korean self-relation scale, Hwang, 2011; Korean difficulties emotional regulation scale, Cho, 2007). Shin reported that all three factors were positively related to self-relation scores, implying greater reflection on parenting was associated with better self-awareness. Scores on the understanding of children and behavior recognition factors were related to parents reporting fewer emotion regulation difficulties.

There are a number of notable differences between this Korean questionnaire and the PRFQ. The Korean questionnaire did not include items probing parents' comprehension of

the nature of their children's mental states (i.e., the parent's stance on the opacity or transparency of mental states), or parents' potential misinterpretations of their children's behaviors. Rather, items on the questionnaire focused on parents' level of awareness of their own feelings and thoughts in different parenting contexts. Furthermore, the questionnaires against which this new measure was validated did not focus on parenting or the parent-child relationship, but on parental mentalisation. As Luyten, Nijssens et al. (2017) pointed out, adult reflective functioning is not identical to parental reflective functioning, and thus the question of how responses on this Korean questionnaire relate to parenting behaviors or the parent-child relationship remains unanswered.

The main aim of the present study was to translate the PRFQ into Korean and explore the factor structure in the Korean version of the PRFQ (K-PRFQ) using both confirmatory factor analysis (CFA), and exploratory factor analysis (EFA). In addition to exploring whether the three-factor structure held for the K-PRFQ, the present study investigated the reliability of the K-PRFQ and elements of convergent validity, through studying associations between the K-PRFQ and self-reported parenting style and parenting stress. Slade (2005) argued that mentalisation integrates cognitive and affective ways of knowing. This is akin to empathy in terms of understanding and fully experiencing others' emotions. A preliminary study of the PRFQ reported a significant correlation between *Pre-mentalizing modes* and symptomatic distress (Luyten, Mayes et al., 2017). Measures of empathy and mental health were therefore also included in the present study.

Given that there are different approaches to parenting in collectivistic versus individualistic cultures, we explored whether the original three-factor structure held for the K-PRFQ. In terms of convergent validity, based on previous findings using the PRFQ, we hypothesized that (a) the *Pre-mentalizing modes* subscale of the K-PRFQ would relate to reported adverse parenting style (e.g., rejection), (b) the *Interest and curiosity in mental*

states subscale would relate to positive parenting style (e.g., autonomy support), but (c) no specific relations were expected with respect to the subscale of *Certainty about mental states*. As a further test of convergent validity, relations between K-PRFQ responses and self-reported parenting stress, empathy, and mental health were explored.

2.2 Method

2.2.1 Participants and Procedures

Participants were 234 parents who were recruited via parenting websites in Korea between October 2018 and February 2019 and completed the measures online. Participants were excluded from analyses for the following reasons: 75 parents consented to take part but did not answer any of items on the questionnaires, 55 parents reported their children were over 6 years old, and 8 parents did not provide their children's ages, leaving a sample of 96 with children 0 to 5 years of age ($M = 2.56$ years, $SD = 1.46$). Additionally, 67 respondents with children aged under 12 months ($M = 7.56$ months, $SD = .10$, range = 4.23-10.63 months) were recruited for a face-to-face research study and completed the K-PRFQ in the developmental laboratory. Thus, a complete data set for the factor analysis was available for 163 (8 fathers) Korean parents. The majority of the parents were 30 to 39 years (77.9%), with ages ranging between 20 and 49 years, and educated to degree level or above (88.3%). The distribution of education level was equivalent to the general education level of Koreans aged 25 to 34 (OECD, 2018). The procedure was approved by the relevant University ethics committee.

2.2.2 Materials and Method

Participants who completed the measures online were provided with information on the study via Korean parenting websites. Once they agreed to participate, they followed a link to access the study information, consent form, and the Korean version of the PRFQ (K-PRFQ). The subsample of 67 Korean parents (all mothers) who attended the session in the

developmental laboratory completed other questionnaires in addition to the K-PRFQ, administered in the order described below. The subsample also completed additional testing procedures to assess parent–child interaction (not reported here).

2.2.2.1 Korean Parents as Social Context Questionnaire (K-PSCQ; Jeong & Shin, 2011). The Parents as Social Context Questionnaire (PSCQ; Skinner, Johnson, & Snyder, 2005) assesses the self-reported quality of multiple aspects of parenting style. The present study used the adapted Korean version of the PSCQ (Egeli, Rogers, Rinaldi, & Cui, 2015; Jeong & Shin, 2011). Overall, the questionnaire comprises 30 items, for which respondents are asked to evaluate the extent to which they agree with a given statement about parenting on a 4-point Likert scale ranging from 1 (Not at all true) to 4 (Very true). The K-PSCQ contains six subscales: (a) warmth (e.g., “I set aside time to talk to my child about what is important to him/her”); (b) rejection (e.g., “At times, the demands that my child makes feel like a burden”); (c) structure (e.g., “I expect my child to follow our family rules”); (d) chaos (e.g., “When my child gets in trouble, my reaction is not very predictable”); (e) autonomy support (e.g., “I trust my child”); and (f) coercion (e.g., “My child fights me at every turn”). Each subscale’s score ranges between 5 and 20, and higher scores on each subscale indicate greater levels of the corresponding parenting in that area. Internal reliabilities were as follows: warmth $\alpha = .78$, rejection $\alpha = .67$, structure $\alpha = .69$, chaos $\alpha = .60$, autonomy support $\alpha = .63$, and coercion $\alpha = .78$.

2.2.2.2 Korean Questionnaire of Cognitive and Affective Empathy (K-QCAE; Kang, 2013). The K-QCAE is a translated Korean version of the Questionnaire of Cognitive and Affective Empathy (QCAE; Reniers, Corcoran, & Drake, 2011). It has 31 items based on a 4-point Likert scale (1: Strongly disagree to 4: Strongly agree). The questionnaire consists of two subscales: cognitive empathy and affective empathy. Cognitive empathy measures the extent to which participants are able to construct a working model of the emotional states of

others, combining (a) perspective taking (e.g., “I can pick up quickly if someone says one thing but means another”) and (b) online simulation (e.g., “Before I do something I try to consider how my friend will react to it”). Affective empathy indexes the ability to be sensitive to and vicariously experience another person’s feelings, and consists of (a) emotion contagion (e.g., “I am inclined to get nervous when others around me seem to be nervous”), (b) proximity responsivity (e.g., “I often get emotionally involved with my friends’ problems”), and (c) peripheral responsivity (e.g., “I usually stay emotionally detached when watching a film”). Total scores for the cognitive empathy and affective empathy subscales were used. Internal reliability for cognitive empathy was $\alpha = .87$, and for affective empathy was $\alpha = .73$ with the current sample.

2.2.2.3 Korean Parenting Stress Index-Short Form (K-PSI-SF; Lee, Chung, Park, & Kim, 2008). The K-PSI-SF is a translated Korean version of the Parenting Stress Index-Short Form (Abidin, 1990). It consists of 36 items based on a 5-point Likert scale (1: strongly disagree to 5: strongly agree) that measures the level of parenting stress. The measurement consists of three subscales: parental distress (PD), parent–child dysfunctional interaction (P-CDI), and difficult child (DC). PD focuses on the distress of functioning in the parental role, while P-CDI focuses on the gap between a parent’s expectation of the child and the real parent-child interaction. DC assesses perceptions of child characteristics, including whether the child is easy to manage from the caregiver’s point of view. Each subscale’s score ranges from 12 to 60, and the items were scored such that a low raw score indicates a low level of stress related to parenting. The total score of the three subscales indicates the overall level of parenting stress, and it ranges from 36 to 180. This measure had high internal reliability with the current sample (PD $\alpha = .81$, P-CDI $\alpha = .73$, DC $\alpha = .83$, Total score $\alpha = .88$). This study used the total score of parenting stress.

2.2.2.4 Korean Hospital Anxiety and Depression Scale (K-HADS; Oh, Min, & Park, 1999). The K-HADS is a 14-item self-report questionnaire to measure anxiety and depressive symptoms. Items have a 4-point Likert scale ranging from 0 to 3. Each of the two subscales has a range between 0 and 21, and the total score range is 0 to 42. A higher score indicates a greater level of anxiety/depressive symptoms. This measure is known to have a good reliability and validity internationally, including the Korean version (Bjelland, Dahl, Haug, & Neckelmann, 2002; Kang et al., 2016). The total score of the measure was used; reliability for the current sample was $\alpha = .87$.

2.2.2.5 Korean Version of the PRFQ (K-PRFQ). Permission to translate the PRFQ was obtained from one of the authors (Patrick Luyten). The translation of the PRFQ closely followed the guidelines of a case report of valid questionnaire translation (Su & Parham, 2002). To achieve equivalence between the Korean version of the PRFQ and the original version of PRFQ, four bilingual translators (who understood both languages, as well as cultural considerations) and two monolingual reviewers were involved in the translation process. Initially, two Korean–English bilingual speakers translated the PRFQ into Korean. They were native speakers of Korean and had completed postgraduate study in developmental psychology. All comments and suggestions about the cultural translation of the PRFQ were discussed via email and phone. After a consensus was reached for the initial translated version of the PRFQ, another two Korean–English bilingual speakers translated it into English from Korean (i.e., back-translation). The back-translators were native speakers of Korean who were not experts in developmental psychology, and thus it was assumed that their level of understanding of the questionnaire was similar to Korean mothers. When they finished their back-translations separately, difficult items for translation were discussed and a consensus reached on one version of the back-translated questionnaire.

A monolingual reviewer who spoke English as a native language and was experienced in developmental psychology reviewed the back-translated version and found subtle differences in words that may have inferred different meanings to respondents of the questionnaire, and thus minor modifications were made to the Korean translated version. Lastly, the Korean version of the PRFQ was administered online to a pilot sample of four Korean mothers, who had at least one child aged 5 years or under. This step aimed to refine the questionnaire by gaining opinions from the target population. The suggestions from the mothers were considered when making the final revision. Participants rated each of the 18 items in the K-PRFQ using the 7-point scale.

2.3 Results

2.3.1 Descriptive Statistics

Descriptive statistics for all variables are shown in Table 2.1. Kolmogorov-Smirnov tests indicated non-normal distribution for the following variables: K-PSCQ warmth, K-PSCQ chaos, K-PSCQ autonomy support, K-PSCQ coercion, K-QCAE cognitive empathy, K-PRFQ *Certainty about mental states*, K-PRFQ *Interest and curiosity in mental states*. Non-parametric correlations (i.e., Spearman's rho) are therefore reported for analyses involving these variables.

2.3.2 Confirmatory Factor Analysis for K-PRFQ

Confirmatory factor analysis (CFA) was used to test whether the same three-factor model reported for the PRFQ (Luyten, Mayes et al., 2017) also fitted the K-PRFQ data. The following criteria of fit indices were used: the model chi-square (χ^2), the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the non-normed fit index (NNFI). Given the small sample size of the current study and non-normality of most of the variables, the Satorra-Bentler scaled chi-square (SB χ^2) statistic (Satorra, & Bentler, 1990, 1991) was calculated (Hu & Bentler, 1999). A model in which the χ^2 value is not significant,

RMSEA $< .08$, CFI $\geq .90$, and NNFI $\geq .95$ is considered to be a good-fit (Parry, 2017). CFA was conducted using AMOS 25.0 (IBM Corporation, NY). The SB χ^2 statistic was conducted using STATA 15.1 (Stata Corporation, Texas).

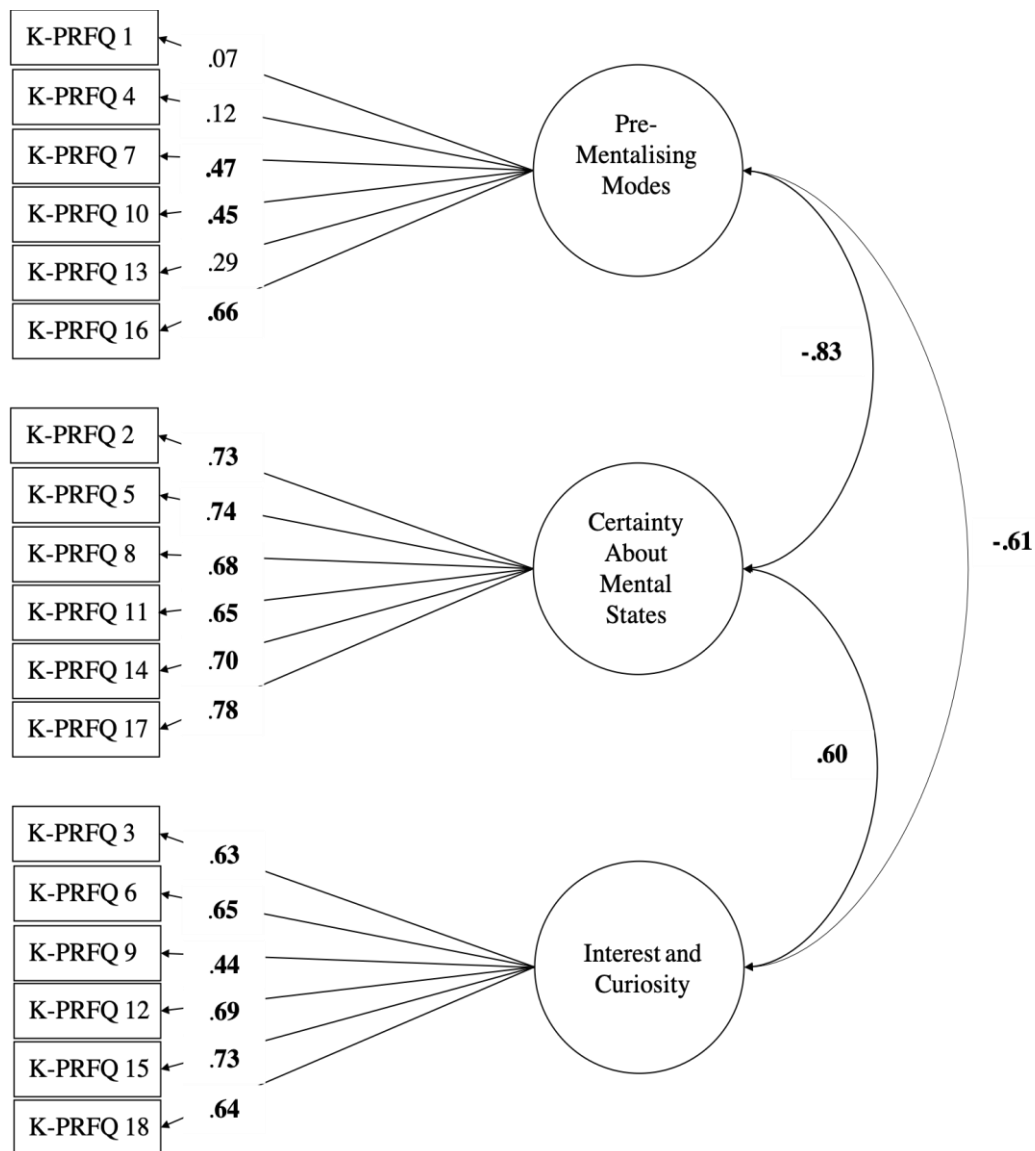
Table 2.1: Descriptive Statistics for All Variables

| | M (SD) | Range |
|---|---------------|----------|
| K-PRFQ (N=163) | | |
| Pre-mentalizing modes | 2.27 (.80) | 1 – 5.33 |
| Certainty about mental state | 4.69 (1.05) | 1.67 – 7 |
| Interest and curiosity in mental states | 5.98 (.77) | 2.83 – 7 |
| K-QCAE (n= 67) | | |
| Cognitive empathy | 56.85 (6.41) | 41-74 |
| Affective empathy | 34.36 (4.49) | 24-42 |
| K-PSCQ (n= 67) | | |
| Warmth | 17.16 (2.42) | 11-20 |
| Rejection | 9.79 (2.92) | 5-18 |
| Structure | 15.36 (2.46) | 10-20 |
| Chaos | 8.55 (2.41) | 5-13 |
| Autonomy support | 17.27 (2.03) | 13-20 |
| Coercion | 8.33 (2.58) | 5-14 |
| K-PSI-SF (n= 67) | 74.84 (17.46) | 36-113 |
| K-HADS (n= 67) | 13.58 (4.76) | 6-24 |

Note: K-PRFQ, Korean Parental Reflective Functioning Questionnaire; K-QCAE, Korean Questionnaire of Cognitive and Affective Empathy; K-PSCQ, Korean Parents as Social Context Questionnaire; K-PSI-SF, Parental Stress Index-Short Form; K-HADS, Korean Hospital Anxiety and Depression Scale.

The three-factor solution appeared not to be a good fit: $\chi^2 = 359.94$, $df = 132$, $p < .001$; RMSEA = .10 (90% confidence interval [CI] [.09, .12]); CFI = .77; NNFI = .74. Although modification was conducted to improve goodness of fit as the modification indices suggested, fitness of the model was not substantially improved; $\chi^2 = 292.21$, $df = 125$, $p < .001$; RMSEA = .10 (CI [.08, .10]); CFI = .83; NNFI = .80. The SB χ^2 statistic also showed that the three-factor structure was not a good fit for the K-PRFQ: SB $\chi^2 = 302.24$, $df = 132$, $p < .001$; SB_RMSEA = .09; SB_CFI = .79; SB_NNFI = .76, suggesting the modified model fit the data best in the current sample. Figure 2.1 presents the modified model. As shown in Figure 2.1, three items loaded non-significantly ($p < .001$) onto the latent *Pre-mentalizing modes* factor (item 1, $\beta = .07$, $p = .473$; item 4, $\beta = .12$, $p = .189$; item 13, $\beta = .25$, $p = .002$). Removing these three items did not improve the fit of the model. Apart from these items, all items were substantially and significantly loaded onto their respective factors.

Estimate internal reliabilities (Cronbach's alpha) of the original three subscales were .45, .86, .79 for the subscales of *Pre-mentalizing modes*, *Certainty about mental states*, and *Interest and curiosity in mental states*. In line with the CFA results, the internal reliability of *Certainty about mental states* and *Interest and curiosity in mental states* was in accordance with the validation study of the PRFQ, while the internal reliability of *Pre-mentalizing modes* was lower than on the original PRFQ (*Pre-mentalizing modes*, .70; *Certainty about mental states*, .82; *Interest and curiosity in mental states*, .75; Luyten, Mayes et al, 2017).



Note. Residuals and correlations between residuals are omitted for clarity of presentation. Rectangles indicate measured variables and circles presents latent constructs. Bold estimates are statistically significant.

Figure 2.1: Standardised loading in the CFA for the three factor model of the PRFQ

2.3.3 Exploratory Factor Analysis

Given the results of the CFA, follow-up exploratory factor analysis (EFA) was used to explore the data further. According to Schmitt (2011), EFA can be used to (a) explore poorly fitting CFA models, (b) explore factor structures without strong hypotheses, and (c) confirm a factor structure based on strong hypotheses when the independent cluster assumption of CFA is unrealistic. EFA was conducted with principal axis factoring with promax rotations. Principal factor analysis is often used when the goal of analysis is to detect structure (Muca, Puka, Bani, & Shahu, 2013). To identify the number of factors, the following criteria were used: (a) the number of components with an eigenvalue > 1 , (b) the scree test, and (c) the interpretability of the factor solution. The main loading of an item on a factor had to be greater than 0.3 (Field, 2013). The result of the Kaiser-Meyer-Olkin measure of sampling adequacy, $KMO = .84$, and Bartlett's test of sphericity, approximate $\chi^2(153) = 1105.77, p < .001$, verified EFA was appropriate for the current study's sample. Five eigenvalues were greater than 1 (5.64, 2.23, 1.49, 1.25, and 1.06), and scree tests indicated three prominent factors.

Given these results, the pattern matrices for three, four, and five factors were considered, and the five-factor solution provided the most similar factor structure to the PRFQ (Luyten, Mayes et al., 2017). In the five-factor solution, the first factor consisted of all six items intended to assess *Certainty about mental states*, and the second factor consisted of five items intended to assess *Interest and curiosity in mental states*. The third factor consisted of three items intended to assess *Pre-mentalizing modes*. The fourth factor consisted of two items; one item intended in the original PRFQ to measure *Pre-mentalizing modes* and the other item intended to measure *Interest and curiosity in mental states*. Lastly, one item intended to measure *Pre-mentalizing modes* loaded to the fifth factor. Only one item intended to assess *Pre-mentalizing modes* (i.e., "I find it hard to actively participate in make believe

Table 2.2: Pattern matrix: Exploratory Factor Analysis of the Korean Parental Reflective Functioning Questionnaire

| 17 Item (N=163) | Rotated Factor Loading | | | | |
|---|----------------------------------|--|--------------------------|------|------|
| | 1; Certainty about mental states | 2; Interest and curiosity in mental states | 3; Pre-mentalizing modes | 4 | 5 |
| I always know what my child wants. | .87 | | | | |
| I can completely read my child's mind | .84 | | | | |
| I can always predict what my child will do | .77 | | | | |
| I always know why my child acts the way he or she does | .68 | | | | |
| I always know why I do what I do to my child | .60 | | | | |
| I can sometimes misunderstand the reactions of my child ^a | .55 | | -.32 | | |
| I wonder a lot about what my child is thinking and feeling | | .76 | | | |
| I am often curious to find out how my child feels. | | .73 | | | |
| I try to understand the reasons why my child misbehaves. | | .59 | | | |
| I like to think about the reasons behind the way my child behaves and feels. | | .54 | | | |
| I try to see situations through the eyes of my child. | | .48 | | | .41 |
| My child sometimes gets sick to keep me from doing what I want to do. | | | .94 | -.36 | |
| Often, my child's behaviour is too confusing to bother figuring out. | -.39 | | .47 | | |
| When my child is fussy he or she does that just to annoy me | | | .42 | .31 | |
| The only time I'm certain my child loves me is when he or she is smiling at me. | | | -.33 | .83 | |
| I believe there is no point in trying to guess what my child feels ^a | | | | -.42 | |
| My child cries around strangers to embarrass me | | | | | .56 |
| Eigenvalues | 5.64 | 2.23 | 1.49 | 1.25 | 1.06 |
| % of variance | 31.35 | 12.41 | 8.25 | 6.96 | 5.91 |

Note. This table shows pattern coefficients.

^a Indicates items to be reversed scored when summing subscales.

play with my child”) did not load onto any factors. Overall, six items cross-loaded on two factors, and four of them were intended to assess *Pre-mentalizing modes*. In conclusion, the five-factor solution seemed to provide the three factors that were akin to the original subscales of the PRFQ (i.e., *Pre-mentalizing modes*, *Certainty about mental states*, and *Interest and curiosity in mental states*), with additional factors that mainly consisted of the items intended to assess the *Pre-mentalizing modes* subscale (see Table 2.2).

Estimated internal reliabilities (Cronbach’s alpha) were .86, .77, .51 for the first (*Certainty about mental state*), second (*Interest and Curiosity in mental states*), and third factors (*Pre-mentalizing modes*). The fourth factor was .22, and the fifth factor’s internal reliability was not analyzed because of the limited item numbers.

2.3.4 Relations Between Korean Parental Reflective Functioning and Parenting Styles

As items intended to assess *Pre-mentalizing modes* in the K-PRFQ were separated into several factors in the factor analysis, and the internal reliability of that subscale was low in this sample, the subscale of *Pre-mentalizing modes* in the K-PRFQ was excluded from the correlation analyses. Given the high internal reliability of the original subscales of *Certainty about mental states* and *Interest and curiosity in mental states*, we used the items for the original subscales to explore relations with maternal variables.

As shown in Table 2.3, the *Certainty about mental states* subscale was positively correlated with warmth and structure, and negatively correlated with rejection, chaos and coercion. Considering oneself certain about the mental states of one’s infant was thus associated with reporting optimum parenting styles. Similarly, the *Interest and curiosity in mental states* subscale was related to greater warmth, autonomy-supportive parenting style, and less chaotic parenting styles. Interest in one’s infant’s mental states was therefore associated with reporting optimum parenting styles.

Table 2.3: Correlations among the K-PRFQ subscales and Parenting Style (n= 67)

| | K-PSCQ: Warmth | K-PSCQ: Rejection | K-PSCQ: Structure | K-PSCQ: Chaos | K-PSCQ: Autonomy support | K-PSCQ: Coercion |
|-----|-------------------|----------------------|----------------------|------------------|--------------------------------|---------------------|
| CMS | .64** | -.31* | .24* | -.42* | .21 | -.28* |
| IC | .46** | -.13 | .10 | -.28* | .29* | -.13 |

* $p < .005$ (two-tailed), ** $p < .001$ (two-tailed)

Note: CMS, Certainty about mental states in the Korean Parenting Reflective Functioning Questionnaire; IC, Interest and curiosity in mental states in the Korean Parenting Reflective Functioning; K-PSCQ, Korean Parents as Social Context Questionnaire.

2.3.5 Relations Between Korean Parental Reflective Functioning and Empathy

Cognitive empathy was positively correlated with *Certainty about mental states*, $rs(65) = .52, p < .001$, and *Interest and curiosity in mental states*, $rs(65) = .44, p < .001$. Affective empathy was positively correlated with *Interest and curiosity in mental states*, $rs(65) = .24, p = .048$, but was unrelated to *Certainty about mental states*, $rs(65) = .12, p = .344$.

2.3.6 Relations Between Korean Parental Reflective Functioning and Parenting Stress

The *Certainty about mental states* subscale was associated with less reported parenting stress, $rs(65) = -.46, p < .001$. The *Interest and curiosity in mental states* subscale was not related to reported parenting stress, $rs(65) = -.19, p = .118$.

2.3.7 Relations Between Korean Parental Reflective Functioning and Mental Health

Reported depressive/anxious symptoms were negatively correlated with *Certainty about mental states*, $rs(65) = -.27, p = .027$, but unrelated to *Interest and curiosity in mental states*, $rs(65) = -.01, p = .938$.

2.4 Discussion

The aim of the present study was to explore the factor structure of a Korean translation of the Parental Reflective Functioning Questionnaire (K-PRFQ) and to provide preliminary evidence on its reliability and validity. Our findings indicated that the structure of the K-PRFQ was different from the original PRFQ. Results obtained using the confirmatory and exploratory factor analyses showed that the three-factor solution from the original PRFQ was not appropriate for the K-PRFQ. With the exploratory factor analysis, a five-factor solution gave the most similar subscales to the PRFQ (i.e., *Pre-mentalizing modes*, *Certainty about mental states*, and *Interest and curiosity in mental states*). The subscales of *Certainty about mental states* and *Interest and curiosity in mental states* had good internal reliabilities, but the *Pre-mentalizing modes* subscale had poor internal reliability, and consisted of three items, two of which indicated parents' malicious attributions towards their children ("My child sometimes gets sick to keep me from doing what I want to do"; "When my child is fussy, s/he does that just to annoy me").

The two additional factors were not easily interpretable or theoretically consistent, but largely included items from the *Pre-mentalizing modes* subscale. The fourth factor consisted of two items intended to assess a lack of ability to enter the children's subjective experience (e.g., "The only time that I'm certain my child loves me is when s/he is smiling at me", "I believe there is no point in trying to guess what my child feels"). The latter item was intended in the original PRFQ to assess *Interest and curiosity in mental states*, but this two-item fourth

factor in the K-PRFQ appears to assess parents' uncertainty about their children's mental states. The poor internal reliability of items intended to assess *Pre-mentalizing modes* had also been observed in Shin and colleagues' (Shin, 2016; Shin et al., 2015) previous research on PRF in Korean parents. Considering that both the previous Korean research and the present preliminary K-PRFQ validation study found low reliability in the items about *Pre-mentalizing modes*, it appears that PRF in Korean parents may be subtly different from in Western parents in relation to this aspect of parental mentalisation. Future research should explore how to assess parents' inability or unwillingness to consider the child's thoughts and feelings in a manner appropriate for collectivistic cultures.

The fifth factor consisted of a single item: "My child cries around strangers to embarrass me". Interestingly, this is the only item in the PRFQ that involves a third party. Its failure to cohere with other items in the K-PRFQ may be indicative of collectivist cultures' sensitivity to others' emotions (Lau, Fung, Wang, & Kang, 2009). Considering that Korea is a collectivistic culture emphasizing relational sensitivity (i.e., caring about others' thoughts and feelings), the item may access parents' concerns about others' judgements on their parenting. Therefore, evaluating the situation of their children crying around strangers may reflect Korean parents' relational sensitivity in social situations, rather than their parental reflective functioning skills. As a result, the item may index a different trait from other items of the K-PRFQ, hence the finding that it loaded onto a fifth factor. Future cross-cultural research could generate additional items designed to access relational sensitivity in order to explore this possibility further.

Turning to convergent validity and the associations between the K-PRFQ and the other self-report measures that were investigated in a sub-sample of the participants, the subscales *Interest and curiosity in mental states* related to optimal self-reported parenting styles. It was positively associated with reported warmth and negatively related to reported

chaotic parenting style. The *Interest and curiosity in mental states* subscale was also associated with both cognitive and affective empathy. Cognitive empathy indicates the extent to which the individual is able to construct a working model of the emotional states of others, whereas affective empathy indexes the ability to be sensitive to and vicariously experience another person's feelings. The observed relations thus suggest that mothers' interest in their infants' internal states is associated with the tendency not merely to represent others' emotions at the cognitive level, but to be emotionally affected oneself by others' feelings. This is in line with Borelli et al.'s (2020) study that presented positive correlations between interview-based reflective functioning and empathy for mothers who had school-aged children. Although the measures in their study did not embrace multidimensional facets of PRF and empathy, the findings suggested that mothers' representations of their children's mental states might relate to their empathic skills in the context of parenting.

The second subscale *Certainty about mental states* was positively related to reported warmth and negatively related to reported chaotic parenting style. Furthermore, it was also negatively related to reported rejection and coercion in parenting style. This suggests that mothers who tend to report being certain about their infants' mental states seem to perceive themselves as being more likely to be warm, and less likely to be chaotic, rejective, and coercive toward their infants. With respect to relations with reported empathy, *Certainty about mental states* was positively associated with cognitive empathy; when Korean mothers reported themselves to have a strong capacity to understand others' emotional perspectives at a cognitive level, they were more likely to report high certainty about their infants' internal states. This suggests that Korean parents' tendency not to acknowledge the limits of their insight and understanding in relation to their children's minds may stem from a more general certainty about others' feelings and emotional reactions. It would be interesting for future research to investigate the pattern of scores on the *Certainty about mental states* cross-

culturally to establish whether Korean parents are more likely than their Western counterparts to score highly on this aspect of PRF.

Interest and curiosity in mental states is proposed to be the key aspect of PRF (Luyten, Mayes et al., 2017); it is therefore not surprising that scores on this subscale were related to more optimal reported parenting. However, it is interesting that scoring highly on being certain about one's infant's mental states also related to optimal reported parenting and lower reported parenting distress. The observed associations may be because mothers with high scores in the *Certainty about mental states* subscale tend to think that they can always read their infants' internal states, and are therefore likely to be confident about their parenting abilities, regardless of the accuracy of their representations. The fact that this subscale was also negatively correlated with reported parenting stress, indicating that certainty was associated with mothers reporting little difficulty in dealing with their infants, is in line with this proposal. As discussed previously, in Korean collectivistic society, mothers have a strong sense of oneness and emotional relatedness in parent-child relationships, feeling intrinsically attached to their children as extensions of themselves (Jin et al., 2012; Kim et al., 2005; Kim & Hoppe-Graff, 2001; Park & Kim, 2006). This parenting perspective is thought to promote family cohesion under the Confucian principle of filial piety (Kim et al., 2005; Park & Kim, 2006). In this cultural context, achieving oneness and emotional relatedness could involve a sense of knowing implicitly what children think, feel, and need. Therefore, the sense of being certain about their children's mental states may be highly valued and expected of a mother, and thus socially desirable in Korean culture. Sensitivity to socially desirable aspects of parenting may thus explain the observed positive relation between the *Certainty about mental states* subscale and reported parenting style.

However, it is important to be cautious in interpreting the meaning of this association between reporting certainty about one's infant's internal states and more optimal self-

reported parenting. Although Korean society may value and expect parents to have certainty about and mastery over their young children's thoughts and feelings, this does not mean that such certainty and mastery represent optimal parenting; cultural values and expectations do not necessarily accord with views on what represents 'good' or 'bad' parenting. For example, adolescents in Korea have reported traditional Korean mothering to be 'hostile' and 'rejecting' (Kim & Hoppe-Graff, 2001). Furthermore, this cultural value of certainty may inhibit an important element of PRF—the tendency to wonder and experience doubt about an individual child's mental states and to understand that people can hide their mental states from each other (Fonagy et al., 1998). In the absence of observational data, it is thus not possible to understand how Korean parents' certainty about their infants' internal states relates to the quality of parent–infant interaction. Indeed, such limitations in the ability to establish how the different subscales of the PRFQ relate to actual parenting on the basis solely of self-report measures was noted by Rostad and Whitaker (2016). Future research should therefore assess parenting with observational measures to investigate how cultural variation in *Certainty about mental states* and the other aspects of PRF relate to parents' behavior during actual parent–child interaction. Taking observational measures of infant temperament would also be useful in exploring how high scores on the different PRFQ subscales relate to child characteristics across different cultures. ²

The results of the present study should be interpreted in light of a number of important points. First, the participating parents were somewhat homogeneous in terms of age and educational level. Second, we did not collect data on various demographic factors, such as duration of the parent's relationship with their partner. According to Luyten, Mayes et al.'s (2017) study, relationship duration was positively related to the *Interest and curiosity*

² These two directions for future research are addressed in the studies reported in Chapters 3 and 4.

in mental states subscale, and these authors suggested that the quality of the parent's romantic relationship could influence the quality of PRF towards their children. Third, we used the dispositional empathy questionnaire to explore the relation between PRF and general mentalizing, but future research could explore how empathy specifically in the parent-child relationship relates to PRF. Fourth, some subscales of the questionnaire used to assess parenting style (in particular chaos and autonomy support) had somewhat low levels of internal reliability. Data involving these scales should therefore be treated with a degree of caution. Finally, given that this study is the first to use the K-PRFQ, further research to validate this new measure is required. For example, investigating how cultural differences in relational sensitivity relate to responses on the PRFQ will enable future research to distinguish cultural expectations about parenting from pre-mentalising aspects of PRF. Such research would help extend research on parental mentalisation beyond the boundaries of Western culture. This would enable researchers to investigate important questions relating to the interplay between culture, parents' representations of their children as individual mental agents, and their reflections on themselves in the caregiving role.

Chapter 3

Study 2: Cultural differences in parental mentalisation, empathy, parenting, maternal well-being, and infant temperament between the UK and South Korea

3.1 Introduction

As discussed in Chapter 1, the aims of this thesis are to explore how culture and empathy are associated with parental mentalisation, defined as maternal mind-mindedness and PRF. Firstly, Study 1 explored the reliability and validity of the K-PRFQ with Korean parents. We found that the K-PRFQ had factors similar to the original subscales of *Certainty about mental states* and *Interest and curiosity in mental states*, while the Korean *Pre-mentalising modes* subscale showed low reliability. Moreover, the related items that were supposed to be in the *Pre-mentalising modes* subscale created new additional factors, indicating potential cultural differences in Korean parental mentalisation compared to the subscales found in Western cultures. In Study 2, we conducted a cross-cultural comparison of British and Korean mothers and infants to investigate how parental mentalisation varied depending on the cultural context.

Individualism and collectivism are considered as overarching value systems that have been used to categorise people at the societal level (Kim, Triandis, Kâğitçibaşı, Choi, & Yoon, 1994). Although cultural value systems require a careful approach, as they could contribute to an over-simplified classification of cultures, they are still useful to elucidate how cultural values communicate ways of thinking, feeling, and behaving for individuals in the society (Harkness & Super, 2002). Naturally, cultural values are considered to interact with parental ethnotheories, which refer to parents' cultural belief system regarding children, families, and themselves as parents (Edwards, Knoche, Aukrust, Kumru, & Kim, 2006), and parental ethnotheories play a key role in shaping parental behaviour (Harkness & Super,

2002). In individualistic cultures, for instance, parenting may focus on children's individual mental states and personal qualities so as to encourage their children to have independent and self-contained values. However, in collectivistic cultures, emphasising values of interdependence with others and conformity, parents may be more inclined to focus on the acceptance of social norms and hierarchies in interacting with their children, in order to establish harmonious families and society (Greenfield, Keller, Fuligni, & Maynard, 2003; Kağıtçıbaşı, 2007; Keller et al., 2006). Consequently, this leads to an expectation that parental mentalisation would differ between individualistic and collectivistic cultures, reflecting the respective parental ethnotheories.

There are only three studies that have investigated cultural differences in mind-mindedness, only one of which studied cultural differences in maternal mind-mindedness using the indices of appropriate and non-attuned mind-related comments. Dai et al. (2019) reported that Chinese mothers made fewer mind-related comments compared to those of Australian mothers, and Chinese mothers scored less highly for appropriate comments and more highly for non-attuned comments than their Australian counterparts during mother–infant interaction at age 19 months. The results were interpreted in light of cultural values: as the emphasis on the values of individuality and autonomy are typical in Australian culture, it might render Australian mothers more likely to make mind-related comments on their children's individual mental states.

One noteworthy thing is that, although, like China, South Korea is a collectivistic country, influenced by Confucian values, there are critical differences in mother–infant interaction in Korean versus Chinese culture. While Chinese mothers focus on 'training' to structure their children's behaviour (i.e., *guanjiao*) (Lau & Cheng, 1987; Chao, 1994; Wang, & Supple, 2010), Korean mothers are more likely to emphasise interdependence in parent–child relationships (i.e., *hyo*) (Chung et al., 2007; Ryu, 2007). Indeed, in Dai et al.'s study,

they found that Chinese mothers' non-attuned comments often arose due to attempts to redirect their children's behaviour using mental state words (i.e., want), which is consistent with structuring/training the infant's behaviour. For example, Chinese mothers often asked "Do you want to..." while their children were already focused on playing with a particular toy. Given that Korean mothers are more likely to emphasise interdependence, it is possible that mind-mindedness may be somewhat different in Korean versus Chinese mothers. One possibility is that Korean mothers' pursuit of 'oneness' with their children facilitates Korean mothers' attunement to their infants' internal states. If this is the case, Korean mothers would be expected to score more highly for appropriate mind-related comments and/or lower for non-attuned mind-related comments than their British counterparts. However, oneness also entails a melding of the internal states of the mother and infant, with an expectation for the mother to be at one with her infant's thoughts and feelings; this may result in Korean mothers projecting their own mental states onto their infants. On this account, one would predict that Korean mothers would score higher for non-attuned comments compared to their British counterparts.

The study reported in this chapter also investigated whether cultural differences were evident in the *content* of mothers' mind-related comments. Lillard (1998) argued that people's attempts to read other people's minds (e.g., intentions, feelings) may be universal in different cultural groups. However, differences may exist across cultures with respect to the specific internal states typically ascribed, as the concept of mind and the value placed on individual internal states varies across cultures. In line with this suggestion, Fujita and Hughes (2020) found that Japanese mothers were more likely to describe others' perspectives about their children while British mothers' descriptions were more child-focused. Moreover, Dai et al. (2019) also reported that Australian mothers used *want* and *like* for referring to the child's desires and preference significantly more than their Chinese counterparts. The

different mind-related contents observed in Japanese and Chinese mothers compared to those of Western mothers are in accordance with their collectivist parental ethnotheories, with their focus on harmony with others over promoting their infants' individual desires and autonomy.

As Korean mothers' beliefs and goals focus on building relational closeness and achieving oneness with their children (Park & Kim, 2004, 2006), a sense of knowing their infants' thoughts and feelings might be more crucial for Korean mothers than for British mothers. Therefore, we anticipated that Korean mothers may concentrate more than their British counterparts on commenting on their infants' emotional and cognitive states. However, the fact that British mothers rear their infants in an individualistic cultural context that emphasises independence would lead one to hypothesise that comments relating to the infant's individual preferences and desires will be more common in British mothers.

Turning to PRF, the study reported in this chapter was the first to investigate cultural differences in this aspect of parental mentalisation, assessing PRF using the PRFQ. Once again, the Korean emphasis on 'oneness' is central to formulating hypotheses on likely differences in PRF between Korean and British mothers. Implicit in oneness is the notion that effective parents are always able to interpret their children's internal states. We therefore hypothesised that Korean mothers would score more highly than British mothers on the PRFQ subscale of *Certainty about mental states*. Relatedly, we reasoned that this sense of implicit relatedness and knowledge may compromise Korean mothers' curiosity about what their infants may be experiencing, leading to the prediction that Korean mothers would score lower than British mothers on the PRFQ subscale of *Interest and curiosity in mental states*.

In order to explore whether any observed cultural differences in mentalisation were specific to the caregiver-child relationship, we included two measures to provide information on mothers' more general mentalising abilities: (a) mind-mindedness in relation to their romantic partner and/or close friends and (b) dispositional empathy. Study 2 was the first to

investigate cultural differences in mind-mindedness in the context of partners and friends. Considering that Korean collectivistic cultural context emphasises interconnectedness in close relationships, with the concept of “we-ness” referring to extending the me-self to we-self (Choi & Han, 2008), it was hypothesised that Korean mothers would show more mind-mindedness than British mothers in relation to their romantic partners and close friends.

In terms of empathy, despite the fact that cross-cultural studies of empathy have presented mixed findings across cultures (see Aival-Naveh, Rothschild-Yakar, & Kruman, 2019), one consensus is that the cultural context might influence empathic skills at both the behavioural and neural level. Notably, when Chopik, O’Brien, and Konrath (2017) compared self-reported empathy in 104,365 typically developing adults across 63 countries, they found that participants from collectivistic countries were more likely to show higher self-reported empathic concern as measured by the Interpersonal Reactivity Index (IRI; Davis, 1983) compared with participants from individualistic countries. Although the researchers did not find a significant relation between the individualism/collectivism cultural value dimension assessed by the self-reported questionnaire of Hofstede’s dimensions (Hofstede, Hofstede, & Minkov, 2005) and perspective-taking ability on the IRI, the study potentially suggested that collectivistic cultural contexts might encourage people to be more engaged with others’ mental states. We therefore hypothesised that Korean mothers may report higher levels of cognitive and affective empathy than British mothers.

The study reported in this chapter also assessed parenting quality and style. Considering that parents’ cultural belief system (i.e., parental ethnotheory) is the source of daily interactions with their children and parental practice (Harkness, & Super, 1992; Harkness, Super, & Keefer, 1992; Super, & Harkness, 1986, 1994), it is not surprising to see cultural differences in parenting style and parent–child interaction (e.g., Chao, 1994; Chen-Bouck, Patterson, & Chen, 2019; Senese, Bornstein, Haynes, Rossi, & Venuti, 2012). Choi et

al. (2013) reported that Korean parenting style was a mixture of authoritative and authoritarian styles—showing high levels of both warmth and control—which appear incompatible from a Western cultural perspective. However, Asian mothers from Confucian cultural backgrounds, such as China, Taiwan, and Korea, have a responsibility to guide their children, which results in mothers engaging in controlling parenting (Fu & Markus, 2014; Miller, Wiley, Fung, & Liang, 1997; Lim & Jung, 2004; Park & Kim, 2006). Within these cultures, such controlling behaviour is therefore not perceived to be at odds with parental warmth and affection.

In the current study, we used both self-report and observational measures in order to capture the potential cultural differences in parenting. British and Korean mothers' parenting styles were assessed via a self-reported questionnaire, and their intrusive parental behaviours were assessed through a laboratory observation of mother–infant interaction. It was hypothesised that Korean mothers would report higher rejective and less autonomy-supportive parenting style and show more intrusive parental interaction compared with British mothers, indicating Korean mothers' more controlling style of parenting.

These cross-cultural differences were explored in light of a number of important control variables. Maternal psychological well-being is known to influence parenting interactions and the quality of relationships between mother and infant (Barnes & Theule, 2019; Field, 2010; Liming, 2019; Moehler, Brunner, Wiebel, Reck, & Resch, 2006). As Fonagy suggested that the lack of capacity to understand mental states is a crucial factor for borderline personality disorder (Fonagy, 1991), mothers' psychological difficulties could also be an important factor linked with parental mentalisation. Indeed, empirically, mothers with clinical mental health difficulties showed significantly elevated levels of non-attuned mind-related comments (Schacht et al., 2017), and PRF showed negative associations with mothers' psychological distress in both non-clinical (Ahrnberg et al., 2020; Rostad &

Whitaker, 2016) and clinical (e.g., mothers with borderline personality disorder; Steele, Townsend, & Grenyer, 2020) samples. Moreover, parenting stress has also been reported to show negative relations with mind-mindedness (Dai, Lim, & Xu, 2019; Larkin et al., 2020; McMahon & Meins, 2010), and PRF (Nijssens, Bleys, Casalin, Vliegen, & Luyten, 2018; Rutherford et al., 2013, 2015). We therefore included maternal mental health and parenting stress variables to investigate their potential associations with parental mentalisation across cultures and to enable us to control for these variables in subsequent analyses.

With regard to cultural differences in maternal psychological well-being, Asian mothers are known to have generally poorer psychological health compared with Western mothers. This may be related to low parental support from their husbands/partners and entangled relationships with mothers-in-law (Jones & Coast, 2013; Roomruangwong & Epperson, 2011). Comparing across Korean, Israeli, and American women, O'Brien, Ganginis, Yoo, Cinamon, and Han (2014) found that Korean women reported the highest levels of depression and the least support from their partners. Furthermore, an epidemiological survey of mental disorders in Korea found that diagnosed depression was twice as high in Korean married women than in Korean married men (Hong, Lee, & Ham, 2016). The disproportionate depression rate in Korean married women has been considered to be partially related to the Korean traditional gender role in the patriarchal social structure, placing restrictions on Korean women's careers in order to favour home-making (Choi & Harwood, 2004). Therefore, we hypothesised that Korean mothers would present with poorer mental health and higher parenting stress than their British counterparts.

Finally, infant temperament was assessed to control for the potential influence of infant factors on any observed relations with parental mentalisation, and also to enable us to compare temperament across cultures. We used a parent-report questionnaire and a laboratory task to measure both perceived temperament (how the parent experiences their

infant's temperament) and observed infant temperament (as measured objectively using a validated coding scheme). According to Krassner et al. (2017), compared to Polish and American toddlers aged around 2 years, Korean toddlers were perceived by their mothers to be somewhat more difficult in terms of negative affect (i.e., Korean mothers reported higher levels of discomfort in their toddlers compared with Polish and American mothers). However, given that there is a scarcity of research on cultural differences in infant temperament, we explored the infants' temperament between the two cultural groups without formulating specific directional hypotheses. The study reported in this chapter is the first to explore temperament in UK and Korean infants using both self-reported and observed measurements.

In summary, the study reported in this chapter investigated cultural differences between Korean and British mothers and infants in (a) parental mentalisation (mind-mindedness and parental reflective functioning), (b) mind-mindedness in relation to a romantic partner and close friend, (c) dispositional empathy, (d) parenting quality and style, (e) mothers' mental health and parenting stress, and (f) infant temperament.

3.2 Methods

3.2.1 Participants

Participants were British mothers and their infants ($n = 63$, 37 boys, 26 girls), and South Korean mothers and their infants ($n = 66$, 34 boys, 32 girls). The Korean mothers were a subsample of those who participated in Study 1. All mothers were aged 22 to 48 years; the mean age of British mothers was $M = 32.51$ years ($SD = 7.24$ years, range 22 – 48 years) and the Korean mothers' mean age was $M = 33.11$ years ($SD = 3.41$ years, range 26 – 41 years). Two British mothers did not provide their age. British infants' age was $M = 6.14$ months ($SD = 1.55$, range 3.50 - 9.40 months), and Korean infants' age was $M = 7.49$ months ($SD = 1.15$, range 4.23 - 10.63 months). Except for two mothers, all mothers in the British group were

White (61 White, 1 Mixed race, and 1 Asian British,), while all mothers in the Korean group were Asian.

In the British group, almost half of the mothers reported that their infants were their first child (49.2%), 46% of the mothers reported that they also had one older child, and 4.8% of mothers had more than two children. In the Korean group, 81.8% of mothers reported that their infants were their first child and the remainder reported that the infants were their second child (18.2%).

Regarding maternal education level, most mothers had at least a graduate degree (British mothers: 92.1%, Korean mothers: 86.3%). Using the Office for National Statistics National Standard Occupational Classification 2010 Index and Korean standard classification of occupations 2017, 87.3% of British mothers and 66.6% of Korean mothers were in managerial or professional occupations. This occupational difference between the two countries seems to reflect a facet of Korean society meaning that Korean married women are less likely than single women to be involved in the labour force (Lee, Jang, & Sarkar, 2008). All Korean mothers and 96.8% of British mothers were married or in a steady relationship with the infant's father; 3.2% of British mothers (two out of 63 British participants) reported that they were not in a relationship.

3.2.2 Materials and Methods

Both British and Korean mothers were recruited in local communities, through the Internet, visiting local baby classes (e.g., Baby Sensory© class), and word of mouth. British mothers visited the developmental laboratory at the University of York with their infants, while Korean mothers could choose to attend either Ewha Womans University Children's Centre for Developmental Support or an office located in Eastern Seoul. All mothers in the study were asked to provide demographic information on their age, ethnicity, educational attainment, number of children, occupation, and their infant's gender and age, and completed

a set of online questionnaires (see section 3.2.2.4 below). When a mother and her infant arrived at the laboratory, they participated in a battery of measures for mind-mindedness and infant temperament in a testing session that lasted approximately 20 to 30 minutes; the session was recorded for later coding. All participants were informed that they provided information anonymously using only ID numbers, and that they could withdraw from the study at any point. The procedure was approved by the relevant University ethics committee and Korean ethics committee (2018-1504-006).

3.2.2.1 Mind-mindedness

3.2.2.1.1 Maternal Mind-Mindedness. Maternal mind-mindedness was measured via a 10-minute mother–infant free play. The mother was instructed to play with her infant for 10 minutes as she would do at home when they had free time. They were situated in a room set up with a range of age-appropriate toys and a video recorder. Mothers' speech was transcribed verbatim using the video recordings, and was later coded according to the mind-mindedness coding manual (Meins & Fernyhough, 2015). All mothers' comments regarding their infant's mind or emotion (i.e., mind-related comments) were identified from the transcripts. Mind-related comments include mothers' comments about the infants' (a) desires and preferences, (b) cognitions, (c) emotions, (d) epistemic states, and (e) talking on the infant's behalf.

Each mind-related comment was then classed as appropriate or non-attuned by a trained coder. Appropriate or non-attuned mind-related comments were assessed by watching the filmed interaction. Mind-related comments were classified as appropriate, if any of the following criteria were met: (a) the coder agreed with the mother's reading of the infant's current internal state, (b) the mother's comment linked the infant's current internal state with similar events in the past or future, or (c) the comment suggested the infant would like or want a new object or activity after a lull in the interaction. Comments were classified as non-

attuned if: (a) the coder disagreed with the mother's reading of the infant's current internal state, (b) the mother's comment regarding a past or future event was not related to the infant's current internal state, (c) the mother asked what the infant wanted to do or suggested a new activity when the infant was already involved in something else, (d) the comment seemed not to be based on the infant's behaviour or seemed to project the mother's internal states onto the infant, or (e) the referent of the comment was not clear. To control for verbosity, appropriate and non-attuned mind-related comments were calculated as a proportion of the total number of comments made during the play session. Non-attuned mind-related comments were defined in the same way. For coding Korean maternal mind-mindedness, the original English manual was translated into Korean, and the validity of the translated coding system was carefully considered with two other bilingual Korean experts working as a developmental clinical psychologist and a developmental practitioner. A randomly selected 20% of the free-play sessions was coded by a second trained coder, who was blind to all other measures. Inter-rater reliability was $\kappa_{UK} = .72$, and $\kappa_{KOR} = .86$. Disagreements were resolved by discussion.

In addition, the mothers' mind-related comments were classified into categories regarding the content of the comments to further investigate differences in mothers' mind-related comments across cultures. The mind-related comments were coded as one of the following exhaustive and exclusive categories: (a) desire and preference (e.g., "*Do you like the ball?*"), (b) cognitions (e.g., "*Do you know what it is?*"), (c) intention (e.g., "*Are you trying to put that one in?*"), (d) emotions (e.g., "*Are you happy?*"), (e) epistemic states (e.g., "*Are you playing games with me?*"), (f) talking on the infant's behalf (any utterance that is obviously meant to be said or thought by the infant, e.g., "*I don't like it, mum*"), (g) physical statement (e.g., "*Are you tired?*"). As appropriate mind-related comments did not have the physical statement, the category was only applied for non-attuned comments. The categorical

coding was based on the categories described in Meins and Fernyhough's (2015) coding manual. There was complete agreement between first and second trained coders with regard to the mental state categories.

3.2.2.1.2 Mind-Mindedness in Relation to Friends and Partners. After having completed the play session with their infants, mothers were given a short interview in order to assess their mind-mindedness in relation to adults. Meins et al.'s (1998) adaptation of the 'describe your child' interview was used, with mothers being asked to describe their partner and secondly to describe a close friend in response to the following prompt: "*Can you describe your partner/close friend for me?*". Mothers' speech was audio-recorded and transcribed verbatim for coding.

The coding followed the mind-mindedness coding manual (Meins & Fernyhough, 2015). First the text was divided into discrete descriptions that could be a single word, a phrase, or a sentence. Each description was then classified into one of the following exhaustive and exclusive categories: (a) mind-minded: comments regarding the emotions, mental life, and intellect of the person being described (e.g., "*he is clever*"), (b) behavioural: comments about activities or interactions with others on a purely behavioural level and the person's occupation (e.g., "*she is a GP*"), (c) physical: comments about any physical characteristics including age and family relationships (e.g., "*she is beautiful*", "*she has two daughters*"), (d) self-referential: comments focusing on the self rather than the person being described (e.g., "*he makes me laugh*"), (e) relationships: comments focusing on the relationship rather than the individual (e.g., "*we are opposites*"), and (f) general: miscellaneous comments, including the person's name, where they live, and non-specific value judgements (e.g., "*he's great*"). Each mother was given a score for the use of mind-minded descriptions as a percentage of the total number of comments used to describe her partner/friend. For the Korean mind-mindedness coding, the same translation and validation

processes applied as explained in the section on maternal mind-mindedness (see section 3.2.2.1.1 above). A randomly selected 20% of the interviews was coded by a second trained coder, who was blind to all other measures. Inter-rater reliabilities across all the categories were: partner, $\kappa_{UK} = .84$, and $\kappa_{KOR} = .78$; friend, $\kappa_{UK} = .92$, and $\kappa_{KOR} = .74$. Disagreements were resolved by discussion.

3.2.2.2 Maternal Intrusiveness. Maternal intrusiveness was rated during the free-play sessions using the relevant coding manual (Miller & Sameroff, 1998). Given that the original coding system was for three-minute interactions, we divided the 10-minute session into three 3-minute 20-second epochs. The total score was averaged over the three epochs. The level of intrusiveness in each epoch was coded by the degree to which a mother handled her infant roughly on scales of 0 (no intrusiveness) to 3 (predominant or high intrusiveness). If a mother showed two fairly mild intrusive behaviours (e.g., bringing face into close proximity with the infant's face, lightly poking the infant's face or body, tickling) or even one moderate intrusive instance (e.g., jerking the infant's body around) she would receive a score of 1 (minimal intrusiveness). For a score of 2 (mixed or moderate intrusiveness), a mother would need to demonstrate more than two of the mild intrusiveness instances or one highly intrusive instance (e.g., using a shrill tone of voice in the infant's face, pulling the infant's arm, restricting movement, rough tickling). For a score of 3 (predominant or high intrusiveness), a mother would need to show more than 2 instances of handling the infant in an angry or rough way (e.g., fixing clothing in an abrupt manner, persisting with a particular game or toy if the infant did not want to, holding the infant's wrist to use their hand to interact with a toy, overwhelming the infant with toys). Intrusive behaviours should be consistent or prevalent for most of the interactions with the infant for a mother to receive a score of 3. A randomly selected 20% of the free-play sessions was double coded by a second

trained coder, who was blind to other measures. Inter-rater reliability was $ICC_{UK} = .92$, and $ICC_{KOR} = .92$.

3.2.2.3 Observed Infant Temperament. The car seat task from the Infant Laboratory Temperament Assessment Battery (Lab-TAB; Goldsmith & Rothbart, 1996) was used for measuring observed infant temperament. It was conducted between the play session and the short interview with the mothers about their partners and close friends. This task has good predictive and concurrent validity for assessing infant temperament when used in isolation from the whole Lab-TAB battery (Hay et al., 2010, 2014; Larkin, Oostenbroek et al., 2019). It was designed to elicit mild anger responses from infants by briefly restraining them in a car seat, secured to a chair in the laboratory; a video camera was positioned to record the infant's face and body movements. The episode started when the mother buckled her infant into the seat. The infant was left in the seat for 30 seconds while the mother moved to the side and slightly behind the car seat, where the infant could not easily see her face. The episode was terminated if the infant became highly distressed.

In order to score the episode, the 30 seconds were divided into six 5-second epochs to code intensity of (a) facial anger (0: no facial expression to 3: an appearance change occurs in all 3 facial regions or gives an impression of strong anger), (b) facial sadness (0: no facial expression to 3: an appearance change occurs in all 3 facial regions or gives an impression of strong sadness), (c) distress vocalizations (0: no distress to 5: full intensity cry/scream), and (d) struggle (0: no struggle at all to 4: high intensity struggle) (see Appendix 1). Average scores for each category were calculated across the epochs. Higher scores indicate greater negative affect, distress, and struggle, suggestive of a more difficult temperament. A randomly selected 20% of the Lab-TAB sessions was double coded by a second trained coder, who was blind to other measures. Inter-rater reliability for the ratings were: facial anger, $ICC_{UK} = .97$, and $ICC_{KOR} = .77$; facial sadness, $ICC_{UK} = .89$, and $ICC_{KOR} = .93$;

distress vocalization, $ICC_{UK} = .97$, and $ICC_{KOR} = .94$; struggle, $ICC_{UK} = .80$, and $ICC_{KOR} = .68$. There was good reliability for a composite measure of the four ratings, $\alpha_{UK} = .81$, and $\alpha_{KOR} = .86$. The composite measure was used in the analyses.

3.2.2.4 Questionnaire measures

Mothers completed the following questionnaire measures.

3.2.2.4.1 Empathy. The Questionnaire of Cognitive and Affective Empathy (QCAE; Reniers, Corcoran, & Drake, 2011; see Appendix 2) was completed to assess parents' empathy. It consists of 31 items on a 4-point Likert scale (1: strongly disagree to 4: strongly agree) with two subscales, cognitive and affective empathy, to reflect a multidimensional concept of empathy. Cognitive empathy measures the degree to which people take others' perspective within emotional processes. It is comprised of two subcomponents: (a) perspective taking (e.g., *I can pick up quickly if someone says one thing but means another*) and (b) online simulation (e.g., *Before I do something, I try to consider how my friend will react to it*). Affective empathy measures the degree to which people vicariously experience others' emotions and have affective responses in various social situations. It is comprised of three subcomponents: (a) emotional contagion (e.g., *I am inclined to get nervous when others around me seem to be nervous*), (b) proximal responsivity (e.g., *I often get emotionally involved with my friends' problems*), and (c) peripheral responsivity (e.g., *I usually stay emotionally detached when watching a film*). Korean parents completed the Korean Questionnaire of Cognitive and Affective Empathy (K-QCAE; Kang, 2013; see Appendix 3). The K-QCAE has the same contents and structure to the original English questionnaire (Kang, 2013).

Cognitive empathy and affective empathy scores range between 19 and 76, and 12 and 48, respectively, and the total scores for cognitive empathy and affective empathy were used in the analyses. Higher scores on each subscale indicate a greater level of the

corresponding empathetic ability. Internal reliability of cognitive empathy was $\alpha_{UK} = .88$, and $\alpha_{KOR} = .87$ and for affective empathy was $\alpha_{UK} = .64$, and $\alpha_{KOR} = .72$.

3.2.2.4.2 Parenting Style. The Revised Parents as Social Context Questionnaire (R-PSCQ; Egeli, Rogers, Rinaldi, & Cui, 2015; Skinner et al., 2005; see Appendix 4) was used to assess multiple aspects of parenting style. It consists of 30 items rated on a 4-point Likert scale (1: not at all true to 4: very true). Parenting style could be conceptualized as a constellation of attitudes toward the child that creates an emotional climate during parent–child interaction, including tone of voice, body language, and attention (Darling, & Steinberg, 1993). Therefore, the questionnaire comprises multiple core dimensions of parenting: (a) warmth (e.g., *I set aside time to talk to my child about what is important to him/her*); (b) rejection (e.g., *Sometimes, my child is hard to like*); (c) structure (e.g., *I expect my child to follow our family rules*); (d) chaos (e.g., *When my child gets in trouble, my reaction is not very predictable*); (e) autonomy support (e.g., *I trust my child*); and (f) coercion (e.g., *My child fights me at every turn*). Each subscale’s score ranges between 5 and 20, and a higher score on each subscale indicates a greater level of the corresponding parenting in that area. Korean parents completed the adapted Korean version of the PSCQ (Egeli et al., 2015; Jeong & Shin, 2011; Skinner et al., 2005; see Appendix 5). Internal reliability was as follows: warmth $\alpha_{UK} = .66$, and $\alpha_{KOR} = .79$; rejection $\alpha_{UK} = .67$, and $\alpha_{KOR} = .68$; structure $\alpha_{UK} = .72$, and $\alpha_{KOR} = .70$; chaos $\alpha_{UK} = .78$, and $\alpha_{KOR} = .61$; autonomy support $\alpha_{UK} = .64$, and $\alpha_{KOR} = .60$; and coercion $\alpha_{UK} = .75$, and $\alpha_{KOR} = .77$.

In order to increase the validity of subsequent analyses (i.e., regression, Schmidt & Finan, 2018), a composite score for the PSCQ was used in these analyses. We first integrated scores of the PSCQ subscales into positive and negative parenting styles: positive parenting style is the sum of scores for warm, structured, and autonomy-supportive parenting styles, while negative parenting style is the sum of scores for rejective, chaotic, and coercive

parenting styles. The composite score was calculated by subtracting the score for negative parenting style from the score for positive parenting style. Internal reliability of the composite score of the PSCQ was $\alpha_{UK} = .87$, and $\alpha_{KOR} = .85$. A high composite score on the PSCQ indicates a more positive parenting style.

3.2.2.4.3 Parenting Stress. The parents completed the Parenting Stress Index-Short Form (PSI-SF; Abidin, 1990; see Appendix 6), which is a 36-item questionnaire using a 5-point Likert scale (1: strongly agree to 5: strongly disagree). The questionnaire consists of three subscales: parental distress (PD), parent–child dysfunctional interaction (P-CDI), and difficult child (DC). The PD scale reflects a parent’s perceived distress related to parenting (e.g., conflict with spouse, social support, and restrictions caused by having a child), the P-CDI scale reflects a parent’s perception that interactions with his/her child do not meet expectations, and the DC scale reflects parents’ perception of the child’s characteristics and the extent to which dealing with the child is difficult (e.g., demandingness, temper tantrums). Each subscale’s score ranges from 12 to 60, and the total score across the three subscales indicates the overall level of parenting stress, ranging from 36 to 180. For Korean mothers, the Korean Parenting Stress Index-Short Form (K-PSI-SF; Lee, Chung, Park, & Kim, 2008; see Appendix 7) was used. Due to the different direction of scales of the K-PSI-SF (1: strongly disagree to 5: strongly agree) from the English version, the scores of the English PSI-SF were reversed, and thus a low raw score indicated a low level of stress related to parenting. Internal reliability was as follow: PD, $\alpha_{UK} = .84$, and $\alpha_{KOR} = .81$; P-CDI, $\alpha_{UK} = .88$, and $\alpha_{KOR} = .83$; DC, $\alpha_{UK} = .87$, and $\alpha_{KOR} = .88$; and total score, $\alpha_{UK} = .92$, and $\alpha_{KOR} = .90$.

3.2.2.4.4 Parental Mental Health. The Hospital Anxiety and Depression Scale (HADS; Bjelland, Dahl, Haug, & Neckelmann, 2002; see Appendix 8) was used to measure parental mental health. The HADS is a 14-item questionnaire using a 4-point Likert scale

ranging from 0 to 3. It has two subscales: anxiety (HADS-A), and depressive symptoms (HADS-D). Each of the two subscales has a range between 0 and 21, and the total score range is 0 to 42. A higher score indicates a greater level of anxiety/depressive symptoms. The Korean Hospital Anxiety and Depression Scale (K-HADS; Oh, Min, & Park, 1999, see Appendix 9) was used for Korean parents. The two subscales and a composite score for the two subscales were used. Internal reliability was as follows: HADS-A, $\alpha_{UK} = .77$, and $\alpha_{KOR} = .84$; HADS-D, $\alpha_{UK} = .68$, and $\alpha_{KOR} = .76$; HADS-Total, $\alpha_{UK} = .82$, and $\alpha_{KOR} = .87$.

3.2.2.4.5 Parenting Reflective Functioning. The Parental Reflective Functioning Questionnaire (PRFQ; Luyten et al., 2017; see Appendix 10) was completed to assess parents' PRF. The PRFQ is an 18-item questionnaire using a 7-point Likert scale (1: strongly disagree to 7: strongly agree), designed to assess multidimensional traits of PRF with three subscales: (a) *Pre-mentalising modes* (6 items), (b) *Certainty about mental states* (6 items), and (c) *Interest and curiosity in mental states* (6 items). The subscale of *Pre-mentalising modes* measures parents' inability to enter their children's mental states and their tendency to make malevolent attributions (e.g., *When my child is fussy, he or she does that just to annoy me*). A high score on this subscale indicates parents' non-mentalising stance. The *Certainty about mental states* subscale captures parents' tendency to be highly certain about their children's mental states (e.g., *I always know what my child wants*). A high score on this subscale reflects lack of awareness of the opacity of mental states, while an extremely low score reflects difficulty in having confidence about their children's subjective world. Lastly, the *Interest and curiosity in mental states* subscale measures parents' genuine interest and curiosity in their children's subjective world (e.g., *I like to think about the reasons behind the way my child behaves and feels*). A high score on this subscale indicates parents' high interest in their children's mental states. In total, the PRFQ gives each mother three separate average scores for the three subscales, ranging from 1 to 7.

The British mothers completed the PRFQ in English; the Korean mothers completed the new Korean translation of the PRFQ that was described and reported in Chapter 2 (see Appendix 11). Internal reliability with the current sample was as follows: *Pre-mentalising Modes*, $\alpha_{UK} = .72$, and $\alpha_{KOR} = .40$; *Certainty about mental states*, $\alpha_{UK} = .64$, and $\alpha_{KOR} = .83$; *Interest and curiosity in mental states*, $\alpha_{UK} = .76$, and $\alpha_{KOR} = .71$. Due to the low reliability of the Korean *Pre-mentalising modes* subscale, results relating to this subscale were not interpreted in this study.

3.2.2.4.6 Perceived Infant Temperament. The Difficult Child (DC) subscale of the PSI-SF (Abidin, 1990) and the K-PSI-SF (Lee et al., 2008) was used to measure a mother's perception of her infant's temperament. Details about the questionnaire are described above. As mentioned on page 70, internal reliability was $\alpha_{UK} = .87$, and $\alpha_{KOR} = .88$.

3.3 Results

3.3.1 Descriptive Statistics and Preliminary Analyses

During the interview in relation to mind-mindedness towards partners, two British mothers and one Korean mother did not participate in or complete the task due to their circumstances (e.g., divorce). Two British mother did not answer her age question, and another British mother's HADS and PSI-SF responses could not be used due to a technological issue.

Infant gender was unrelated to the proportion of appropriate and non-attuned mind-related comments, and any subscales of the PRFQ (Maternal mind-mindedness: appropriate mind-related comments, boys $M = .07$, $SD = .08$; girls $M = .06$, $SD = .04$, $F(1, 127) = .14$, $p = .707$; non-attuned mind-related comments, boys $M = .02$, $SD = .02$; girls $M = .02$, $SD = .02$, $F(1, 127) = .06$, $p = .815$; the PRFQ: *Pre-mentalising modes*, boys $M = 1.93$, $SD = .79$; girls $M = 1.98$, $SD = .84$, $F(1, 127) = .08$, $p = .774$; *Certainty about mental states*, boys $M = 4.31$,

$SD = .95$; girls $M = 4.55$, $SD = 1.04$, $F(1, 127) = 1.90$, $p = .170$; *Interest and curiosity in mental states*, boys $M = 6.04$, $SD = .67$; girls $M = 6.05$, $SD = .65$, $F(1, 127) = .003$, $p = .957$).

Infant age was negatively related to the proportion of non-attuned mind-related comments, $r(127) = -.29$, $p = .001$, indicating that mothers who had younger infants were more likely to misread their infants' mental states than mothers who had comparatively older infants. On the other hand, infant age was positively related to the subscales of *Pre-mentalising modes*, $r(127) = .18$, $p = .038$, and *Certainty about mental states*, $r(127) = .34$, $p < .001$, indicating that mothers who had older infants were more likely to have difficulties entering into their infants' internal states and tended to be overly certain when mentalising regarding their infants.

Maternal age was not related to the proportion of appropriate mind-related comments, $r(126) = -.06$, $p = .502$, non-attuned mind-related comments, $r(126) = .04$, $p = .677$, or any subscales of the PRFQ (*Pre-mentalising modes*, $r(126) = .04$, $p = .621$; *Certainty about mental states*, $r(126) = -.08$, $p = .345$; *Interest and curiosity in mental states*, $r(126) = .16$, $p = .074$); maternal education level was not associated with appropriate mind-related comments, $r(127) = .09$, $p = .323$, non-attuned mind-related comments, $r(127) = .11$, $p = .220$, the subscale of *Pre-mentalising modes*, $r(127) = .07$, $p = .416$, or the subscale of *Certainty about mental states*, $r(127) = .10$, $p = .241$. However, it was associated with the subscale of *Interest and curiosity in mental states*, $r(127) = .20$, $p = .025$. As a result of these associations, subsequent analyses controlled for infant age for maternal mind-mindedness and PRF, and maternal education level for PRF.

3.3.2 Cultural Differences in Maternal Mind-mindedness

3.3.2.1 The Proportion of Mind-Related Comments

Cultural differences in maternal mind-mindedness were investigated using MANCOVA. Scores for the appropriate mind-related comments and non-attuned mind-

related comments were entered as dependent variables, nationality was entered as a fixed factor, and infant age was added as a covariate. The descriptive statistics and cultural differences in maternal mind-mindedness are shown in Table 3.1.

As shown in Table 3.1, there were no significant differences between British and Korean mothers in the proportion of appropriate or non-attuned mind-related comments. Regarding total verbosity and the overall proportion of mind-related comments, there were no significant differences between the two groups (total verbosity, UK $M = 175.24$, $SD = 48.59$; KOR $M = 178.42$, $SD = 58.28$, $t(127) = -.34$, $p = .737$; overall proportion of mind-related comments, UK $M = .08$, $SD = .04$; KOR $M = .07$, $SD = .05$, $t(127) = .92$, $p = .359$).

Table 3.1: Descriptive Statistics and Cultural Differences in Maternal Mind-Mindedness.

| | UK | | South Korea | | F (1, 126) | Partial η^2 |
|---|-----------|---------|-------------|---------|------------|------------------|
| | Mean (SD) | Range | Mean (SD) | Range | | |
| AMRC (proportion) | .07 (.09) | 0 - .70 | .06 (.04) | 0 - .23 | .05 | < .001 |
| NMRC (proportion) | .02 (.02) | 0 - .07 | .01 (.01) | 0 - .08 | .33 | .003 |
| * $p < .05$, ** $p < .01$, *** $p < .001$ | | | | | | |
| <i>Note.</i> AMRC, Appropriate Mind-Related Comments; NMRC, Non-attuned Mind-Related Comments | | | | | | |

3.3.2.2 Cultural Differences in Mind-Related Comments Categories

Cultural differences in mind-related comments categories were explored using MANCOVA as described in section 3.3.2.1 above. Table 3.2. shows the descriptive statistics and cultural differences in the individual categories of mind-related comments for British and Korean mothers. As shown in Table 3.2, British mothers commented more frequently in both

appropriate and non-attuned ways on their infants' desires and preferences than did Korean mothers. Korean mothers made more appropriate mind-related comments about their infants' cognitive and emotional states compared with British mothers. Furthermore, Korean mothers were more likely than British mothers to misinterpret their infants' emotional and physical states (see Table 3.2).

Table 3.2: Categories of Maternal Mind-Related Comments: UK and South Korea

| | Mind-related comments | UK | | South Korea | | F (1, 126) | Partial η^2 |
|--|--------------------------------|-----------|---------|-------------|---------|------------|------------------|
| | | Mean (SD) | Range | Mean (SD) | Range | | |
| | Desire and preferences | .74 (.22) | 0 - 1 | .58 (.29) | 0 - 1 | 13.66*** | .098 |
| Appropriate Mind-Related Comments (proportion) | Cognition | .12 (.17) | 0 - 1 | .20 (.23) | 0 - .75 | 5.50* | .042 |
| | Intention | .04 (.09) | 0 - .50 | .01 (.05) | 0 - .27 | 2.74 | .021 |
| | Emotion | .07 (.13) | 0 - .50 | .15 (.22) | 0 - 1 | 9.38** | .069 |
| | Epistemic states | 0 (0) | . | 0 (0) | . | . | . |
| | Talking on the infant's behalf | .01(.05) | 0 - .33 | .03 (.10) | 0 - .57 | 1.61 | .013 |
| | Desire and preferences | .68 (.40) | 0 - 1 | .38 (.41) | 0 - 1 | 11.14** | .081 |
| Non-Attuned Mind-Related Comments (proportion) | Cognition | .06 (.17) | 0 - 1 | .08 (.21) | 0 - 1 | 0.22 | .002 |
| | Intention | .01 (.06) | 0 - .50 | .02 (.11) | 0 - .75 | 0.73 | .006 |
| | Emotion | .03 (.14) | 0 - 1 | .08 (.17) | 0 - .67 | 4.07* | .031 |
| | Epistemic states | 0 (0) | . | .01 (.08) | 0 - .67 | 0.72 | .006 |
| | Talking on the infant's behalf | 0 (0) | . | 0 (0) | . | . | . |
| | Physical statement | .03 (.10) | 0 - .50 | .15 (.29) | 0 - 1 | 13.54*** | .097 |

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

3.3.2.3 Cultural Differences in Mind-Mindedness in Relation to Partners and Close Friends

Cultural differences in mind-mindedness in relation to partners and close friends were explored using an independent sample *t* test. As shown in Table 3.3, British mothers were more verbose when they described their partners and close friends than their Korean counterparts. However, there were no significant differences between British and Korean mothers in the proportion of mental characteristics used in the descriptions of partners and close friends (see Table 3.3).

Table 3.3: Descriptive Statistics and Cultural Differences in Mind-Mindedness in Relation to Partner and Friend

| | | UK | | South Korea | | <i>t</i> | <i>p</i> |
|-----------------|---------------------------------|-------------|---------|-------------|--------|----------|----------|
| | | Mean (SD) | Range | Mean (SD) | Range | | |
| Partner (n=126) | Mental descriptors (proportion) | .33 (.21) | 0 - .80 | .33 (.30) | 0 - 1 | 0.06 | .953 |
| | Total verbosity (frequency) | 9.16 (3.22) | 2 - 16 | 4.55 (2.55) | 1 - 12 | 8.94*** | < .001 |
| Friend (n=129) | Mental descriptors (proportion) | .26 (.23) | 0 - .83 | .28 (.26) | 0 - 1 | -.36 | .718 |
| | Total verbosity (frequency) | 8.35 (3.74) | 3 - 18 | 4.06 (2.47) | 1 - 11 | 7.72*** | < .001 |

p* < .05, *p* < .01, ****p* < .001

3.3.2.4 Cultural Differences in PRF

Cultural differences in PRF were explored using MANCOVA. Scores for the three subscales were entered as dependent variables, nationality was entered as a fixed factor, and infant age and maternal education level were added as covariates. As shown in Table 3.4, and consistent with our hypothesis, Korean mothers scored more highly than British mothers on the subscale of *Certainty about mental states*. However, contrary to expectations, scores for the *Interest and curiosity in mental states* subscale did not differ between British and Korean mothers. On the other hand, the scores for the *Pre-mentalising modes* subscale were significantly different between British and Korean mothers, with higher scores among Korean mothers, but as the reliability of the Korean *Pre-mentalising modes* subscale was low, interpretation of this subscale must be cautious (see Table 3.4).

Table 3.4: Descriptive Statistics and Cultural Differences in PRF (the subscales of the PRFQ)

| | UK | | South Korea | | F (1, 124) | Partial η^2 |
|-----|------------|-------------|-------------|-------------|---------------|---------------------|
| | Mean (SD) | Range | Mean (SD) | Range | | |
| PM | 1.65 (.70) | 1.00 – 4.83 | 2.25 (.80) | 1.00 – 4.00 | 15.09*** | .108 |
| CMS | 3.94 (.88) | 1.83 – 6.33 | 4.88 (.88) | 2.83 – 6.83 | 21.17*** | .146 |
| IC | 6.09 (.65) | 4.67 – 7.00 | 6.00 (.66) | 4.17 – 7.00 | .34 | .003 |

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

Note. PM, Pre-mentalising Modes; CMS, Certainty about Mental States; IC, Interest and Curiosity in Mental states.

3.3.2.5 Cultural Differences in Empathy

Cultural differences in empathy were explored using independent sample t tests.

Contrary to our hypotheses, British mothers scored more highly than Korean mothers on the subscale of cognitive empathy, whereas scores on the subscale of affective empathy between British and Korean mothers were not significantly different (see Table 3.5).

Table 3.5: Descriptive Statistics and Cultural Differences in Reported Empathy

| | UK | | South Korea | | <i>t</i> (127) | <i>p</i> |
|-------------------|--------------|---------|--------------|---------|----------------|----------|
| | Mean (SD) | Range | Mean (SD) | Range | | |
| Cognitive Empathy | 60.54 (6.97) | 43 – 75 | 56.85 (6.45) | 41 – 74 | 3.12** | .002 |
| Affective Empathy | 34.65 (3.87) | 25 – 42 | 34.26 (4.45) | 24 – 42 | .54 | .594 |

p* < .05, *p* < .01, ****p* < .001

3.3.2.6 Mental Health

Cultural differences in mothers' mental health were explored using independent sample t tests. British mothers showed higher scores than Korean mothers on the anxiety subscale, while Korean mothers showed higher scores than British mothers on the depression subscale (see Table 3.8). As shown in Table 3.8, the total scores on the HADS were higher in Korean mothers than British mothers, in line with our hypothesis that Korean mothers would show poorer mental health.

Table 3.6: Reported Mental Health (HADS subscales scores) between British and South Korean Mothers

| | UK | | South Korea | | t (126) | p |
|------------|--------------|--------|--------------|--------|----------|--------|
| | Mean (SD) | Range | Mean (SD) | Range | | |
| HADS-A | 6.60 (3.11) | 0 – 13 | 5.02 (3.53) | 0 – 14 | 2.68** | .008 |
| HADS-D | 4.45 (2.71) | 0 – 13 | 8.41 (3.68) | 0 – 17 | -6.89*** | < .001 |
| HADS-Total | 11.05 (5.12) | 2 – 23 | 13.42 (6.50) | 2 – 28 | -2.29* | .024 |

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

Note. HADS-A, The Hospital Anxiety and Depression Scale-Anxiety subscale; HADS-D, The Hospital Anxiety and Depression Scale-Depression subscale; HADS-Total, The Hospital Anxiety and Depression Scale-Total score

3.3.2.7. Parenting Stress

Cultural differences in parenting stress were explored using independent sample t tests. As shown in Table 3.7, Korean mothers scored more highly than British mothers on the PSI-SF subscale of *Parenting distress*. However, there were no significant differences between British and Korean mothers in the subscales of *Parent-child dysfunctional interaction* and *Difficult child*. Consequently, the total scores of the PSI-SF were not significantly different between the groups of British and Korean mothers. Nevertheless, the Korean mothers' higher scores on *Parenting distress* compared to the British mothers' counterparts were in line with our hypothesis (see Table 3.7).

Table 3.7: Reported Parenting Stress (PSI-SF subscale scores) between British and South Korean Mothers

| | UK | | South Korea | | <i>t</i> (126) | <i>p</i> |
|-------------|---------------|----------|---------------|----------|----------------|----------|
| | Mean (SD) | Range | Mean (SD) | Range | | |
| PD | 27.32 (7.34) | 12 – 41 | 32.52 (8.25) | 12 – 47 | -3.75*** | < .001 |
| P-CDI | 19.16 (5.58) | 12 – 35 | 18.71 (5.81) | 12 – 37 | .45 | .657 |
| DC | 23.27 (7.20) | 12 – 42 | 23.24 (7.78) | 12 – 45 | .02 | .981 |
| Total score | 69.50 (16.31) | 42 – 109 | 74.47 (17.34) | 36 - 113 | -1.67 | .098 |

p* < .05, *p* < .01, ****p* < .001

Note. PD, Parenting Distress; P-CDI, Parent–Child Dysfunctional Interaction; DC, Difficult Child.

3.3.2.8 Cultural Differences of Parenting Behaviour

3.3.2.8.1 Intrusiveness

Cultural differences in maternal intrusiveness were explored using an independent sample *t* test. In line with our hypothesis, Korean mothers were observed to have a higher number of intrusive behaviours than British mothers (British mothers, $M = .83$, $SD = .59$, Range = 0 – 2; Korean mothers, $M = 1.28$, $SD = .72$, Range = 0 – 2.33), $t(127) = -3.90$, $p < .001$).

3.3.2.8.2 Parenting Style

Cultural differences in parenting style were explored using MANOVA. Table 3.8 shows that British mothers generally scored more highly on parenting style compared with Korean mothers, indicating British mothers reported more positive parenting style than their Korean counterparts. When we looked at the results in detail, British mothers scored more highly than Korean mothers on the subscales of warmth and autonomy-support, while Korean

mothers reported higher scores than British mothers on the rejection subscale. These results were in line with our hypothesis that Korean mothers would show more controlling parenting style than British mothers (i.e., a more rejecting and less autonomy-supporting parenting style).

Table 3.8 Reported Parenting style (PSCQ subscale scores) between British and South Korean mothers

| | UK | | South Korea | | F (1, 127) | Partial η^2 |
|------------------|--------------|---------|--------------|---------|------------|------------------|
| | Mean (SD) | Range | Mean (SD) | Range | | |
| Warmth | 18.57 (1.46) | 13 – 20 | 17.17 (2.44) | 11 – 20 | 15.57*** | .109 |
| Rejection | 8.44 (2.51) | 5 – 16 | 9.80 (2.94) | 5 – 18 | 7.94** | .059 |
| Structure | 15.76 (2.07) | 10 – 19 | 15.35 (2.48) | 10 – 20 | 1.05 | .008 |
| Chaos | 8.24 (2.10) | 5 – 13 | 8.53 (2.43) | 5 – 13 | .53 | .004 |
| Autonomy-support | 18.70 (1.57) | 12 – 20 | 17.33 (1.98) | 13 – 20 | 18.70*** | .128 |
| Coercion | 8.57 (2.56) | 5 – 14 | 8.24 (2.50) | 5 – 14 | .55 | .004 |
| Composite score | 27.78 (7.73) | -2 – 42 | 23.27 (9.63) | -4 – 44 | 8.53** | .063 |

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

3.3.2.9 Infant Temperament

Cultural differences in observed infant temperament were explored using independent sample t test. British and Korean infants showed similar levels of anger and frustration in the car-seat task of the Lab-TAB (British mothers, $M = 2.93$, $SD = 2.01$, Range = 0 – 9.67; Korean mothers, $M = 3.56$, $SD = 2.61$, Range = .67 – 11.67), $t(127) = -1.54$, $p = .125$). This is

in line with the finding that scores on the *Difficult child* subscale of the PSI-SF, which is a measure of perceived infant temperament, did not significantly differ between British and Korean mothers (see Table 3.7).

The correlations between perceived (as assessed by the DC subscale of the PSI-SF reported above) and observed infant temperament were also analysed across cultures. British mothers' perceived infant temperament scores were not related to their infants' observed temperament, $r(60) = .16$, $p = .229$, whereas Korean mothers' perceived infant temperament was positively related to their infants' observed temperament, $r(64) = .27$, $p = .031$. However, the difference between the two correlation coefficients was not significant, $z = -.64$, $p = .522$, indicating that the relations between observed and reported temperament were not stronger in the Korean sample than in the UK sample.

3.4 Discussion

The main aim of Study 2 was to compare British and Korean mothers' mind-mindedness and PRF. In addition, cultural differences in (a) mind-mindedness in relation to a partner/close friend, (b) self-reported empathy, (c) parenting quality and interactions, (d) maternal psychological well-being, and (e) infant temperament were also explored. We did not find significant cross-cultural differences in the proportion of appropriate and non-attuned mind-related comments. However, while British mothers made more mind-related comments about their infants' desires and preferences compared with Korean mothers in both appropriate and non-attuned ways, Korean mothers made more appropriate mind-related comments about their infant's cognition and emotions, and more non-attuned mind-related comments about their infant's emotional and physical states. In terms of PRF, as we expected, Korean mothers scored more highly than British mothers on the subscale assessing certainty about their infants' mental states, but the scores on the *Interest and curiosity in mental states* subscale did not differ between the groups, indicating the Korean mothers' high

levels of certainty about their infants' mental states might not compromise their levels of genuine interest and curiosity in their infants' minds. Korean mothers scored more highly on the *Pre-mentalising modes* subscale compared to their British counterparts, but due to the low reliability of the Korean *Pre-mentalising modes* subscale, this finding should be interpreted with caution.

Turning to mind-mindedness in relation to romantic partners and close friends, the proportion of mental descriptors did not significantly differ between British and Korean mothers, which is different from our expectation. Moreover, contrary to our hypothesis that Korean mothers would have higher empathy scores than their British counterparts, we found that British mothers' reported cognitive empathy scores were higher than those of Korean mothers, but the scores for affective empathy were not significantly different between the two groups. This may indicate that we cannot simply assume that living in a collectivistic culture means that people perceive themselves as being more empathetic. Regarding parenting style and interactions, British mothers scored more highly on warm and autonomy-supporting parenting styles, whereas Korean mothers scored more highly on rejection and were observed to engage in more intrusive behaviours with their infants. These findings were in accord with our hypothesis that Korean mothers would display more controlling parenting compared with British mothers. Parenting distress and depression levels were significantly higher in Korean mothers compared to British mothers, which was also in line with our hypotheses. Finally, levels of perceived and observed infant temperament were similar between British and Korean mothers.

Although we did not find significant differences in the proportion of appropriate and non-attuned mind-related comments between British and Korean mothers, there were significant differences between British and Korean mothers in terms of the categories of mind-related comments, which appear to be aligned with our hypotheses. British mothers

made more mind-related comments than did Korean mothers about their infants' desires and preferences (e.g., want, like). This may reflect the British mothers' parenting goals of facilitating their infants' individuality and agency under their individualistic cultural context. Indeed, during the free play sessions, British mothers often started their play asking about their infant's preference for different toys (e.g., "What would you like to play with?"), while most Korean mothers started the play asking about an object (e.g., "What is this?"). This is consistent with Keller et al.'s (2007) finding that German mothers presented more autonomy-supportive verbal discourse than urban Chinese mothers during free play.

On the other hand, Korean mothers' greater proportion of comments about their infants' *cognition, emotion, and physical states* compared with their British counterparts might indicate Korean mothers' parenting goals of establishing relational closeness with their infants. Korean mothers' endeavours to check and assure their infants' interests, emotions, and physical states might be their manner of being emotionally close to their infants. The pursuit of a special mother–infant bond based on sharing the infant's mental states was also observed in different countries with similar cultural values to Korea. For instance, urban Nso mothers, who lived in an interdependent cultural community in Cameroon, emphasised mutual experience of emotion between mother and infant more than did mothers from the United States and Germany. The urban Nso mothers believed emotional sharing was critical to establish a special bond with their infants (Keller et al., 2004). At the same time, they also used mentalistic verbal phrases when they described their own experiences in terms of interactions with their infants, like the American and German mothers. Indeed, focusing on infants' interests, emotion, and physical states seems to be more effective in building physical and psychological connections than asking about their infants' individual desires, which might give their infants more space to realise and express their own desires. Consequently,

our findings support the notion that maternal mind-mindedness is universal, but that there are cultural differences that might be derived from different parental cultural beliefs.

It is worth comparing our data on Korean mothers' mind-mindedness with that of the Chinese mothers in Dai et al.'s (2019) study. Whereas our sample of Korean mothers did not differ from their British counterparts in terms of appropriate or non-attuned comments, Dai et al. reported that Chinese mothers scored lower than their Australian counterparts for appropriate mind-related comments and higher for non-attuned comments. Although these differences between the studies may arise due to the age range of infants and the different Western countries studied, they might equally suggest that not all East Asian mothers show the same patterns of maternal mind-mindedness. In particular, as discussed earlier, the Korean mothers' parental ethnotheories, emphasising interconnectedness with their children based on the notion of "*hyo*", might render Korean mothers more likely than Chinese mothers to make mind-related comments especially about infants' interests and emotions (note that there were no significant cultural differences in the categories in the Dai et al.'s study). This is in line with Harkness, Super, and van Tijen's (2000) proposal that there may be subtle but diverse culturally-structured ways of conceptualising the self and parenting beliefs in each country, rather than one "Western mind" or "Eastern mind". Future research on cultural differences within individualistic or collectivistic cultures would thus be beneficial to study further links between cultural-specific parenting beliefs and their parental mentalisation.

Turning to PRF, in the cultural parenting context, it is not surprising that Korean mothers reported higher confidence than British mothers about their infants' mental states. Considering that the Korean cultural parenting context emphasises relatedness between mother and infant, this might lead Korean mothers to consider themselves to know their children better than anyone else. This proposal is supported by anecdotal evidence from the free play observation. For example, Korean mothers more often used prior knowledge about

their infants' favourites to recommend a new toy, rather than asking or waiting for the infants' preferences at the current moment during the free play (e.g., [suggesting a new toy] “오, 여기 너가 좋아하는 거 있다” “*Oh, there is the one you like*”, “이거 너가 좋아하는 색이네” “*This is the colour you like*”). However, given that the Korean mothers' scores on the *Interest and curiosity mental states* subscale of the PRFQ were not significantly different from those of British mothers, the specific cultural parenting context does not necessarily mean lower levels of interest in their infants' mental states. Rather, it suggests that the levels of maternal interest in their infants' mental states might be universal, but the specific ways that parental mentalisation operates might be distinctive according to the parental ethnotheories determining what optimal parenting looks like and which socialisation goals should be prioritised for children in that cultural context.

With regard to mothers' psychological well-being, the Korean mothers reported higher levels of depressive symptoms and scored more highly on parenting stress than their British counterparts, findings consistent with previous research (e.g., O'Brien et al., 2014). Indeed, during the mind-mindedness interview about their partners, Korean mothers often described their difficulties with their partners related to sharing housework and childrearing (e.g., “남자 여자에 관한 일에 대해 분명한 편이라, 경계가 분명해서, 여자가 밥을 잘 해주고 그런 걸 좋아해서 가끔 힘들 때가 있어요” “*As he has a clear boundary about work for male and female, he likes the ideas that women should prepare meals well (for husbands) on time and so on. So, those kind of his trait makes me feel things are difficult sometimes*”). This was rather the opposite to British mothers' descriptions of their partners and how they supported childrearing and shared housework (e.g., “they love bath time, that's his thing ... he's really involved and very supportive”). The observed higher levels of parenting stress and depression in Korean mothers compared to their British counterparts may be explained in terms of the

patriarchal social structure and unequal gender roles within the Korean Confucian family system (Choi & Harwood, 2004; Song, 2019; Yoo, 2020).

In light of these cultural differences in depression and parenting stress, the finding that British mothers scored more highly than Korean mothers on the subscale of anxiety is interesting. This might simply reflect mothers' different levels of psychological well-being across cultures. However, given that the levels of anxiety and depression were measured during the postnatal period, it is important to consider the role of the parenting environment. It may be that motherhood in individualistic cultures such as the UK is associated with higher anxiety, whereas the heightened focus on the maternal role and increased involvement of extended family in caring for young infants in Korea may lessen feelings of anxiety. Further study to explore whether the distinctive cultural parenting context may influence the way in which maternal psychological distress presents would thus be interesting.

Lastly, Korean mothers' lower scores on the autonomy-supporting parenting subscale and higher scores for intrusive behaviours in comparison with British mothers are in accord with the Korean family system's pursuance of child conformity and family hierarchy (Park & Kim, 2006; Schwarz, Schäfermeier, & Trommsdorff, 2005; Sovet & Metz, 2014; Vinden, 2001). However, Korean mothers' lower scores on warm parenting compared to British mothers were somewhat inconsistent with previous research. Asian parenting was reported to be rigid, but warm, and is thus thought to be a blend of authoritarian and authoritative parenting styles (Chao & Tseng, 2002; Choi et al., 2013). One potential explanation for the disparity in these findings is that Korean parenting focuses more on nonverbal and indirect expressions of parental love, stemming from the Confucian heritage (Kim, Cain, & McCubbin, 2006). Choi and her colleagues (2013) found that more than 90% of Korean immigrant parents reported to express their parental love through indirect expression, such as cooking a child's favourite dishes or working hard, more than through verbal expressions.

Therefore, the finding of different levels of reported warmth between British and Korean mothers might be observed due to the culturally different expression of parental love.

In summary, Study 2 found no cultural differences in mothers' use of appropriate or non-attuned mind-related comments, but differences in the content of mothers' mind-related comments. Korean mothers focused more on their infants' thoughts, feelings and physical states, whereas British mothers focused more on their infants' individual preferences and desires. In terms of PRF, Korean mothers reported higher levels of the *Pre-mentalising modes* and *Certainty about mental states* subscales compared with British mothers, but there were no cultural differences in the levels of the mothers' genuine interest in their infants' mental states (i.e., *Interest and curiosity in mental states*). Therefore, it is concluded that mind-mindedness and PRF are universal, but the operationalisation of parental mentalisation might be different according to underlying parental cultural beliefs systems. However, what is yet to be explored is whether the empathy, PRF, and parenting factors correlate with maternal mind-mindedness, and whether relations between these variables may be different in the two cultures. This was the aim of Study 3.

Chapter 4

Study 3: Associations and predictors of parental mentalisation in the UK and South Korea: empathy, parenting, maternal well-being, and infant temperament

4.1 Introduction

The results of Study 2 provide initial evidence of cultural differences in maternal mind-mindedness and PRF, in addition to mothers' dispositional empathy, parenting quality, psychological well-being, and infant temperament. The aims of Study 3 were to investigate (a) how maternal mind-mindedness and PRF relate to each other (b) how parental mentalisation relates to empathy and parenting factors (intrusiveness, parenting style, parenting stress, and maternal mental health) and (c) whether any observed relations between these variables generalise across cultures.

Few studies have explored relations between the two indices of maternal mind-mindedness and PRF. Although Rosenblum et al. (2008) reported that maternal RF assessed via the coding system of parenting reflexivity (see p. 13) was positively related to appropriate mind-related comments, they did not report the relation between the parenting reflexivity codes and non-attuned mind-related comments. Moreover, as the parenting reflexivity coding system made several adaptations to Slade et al.'s PDI coding system without validation (e.g., the parenting reflexivity coding scale is a 5-point scale vs. the 9-point PDI coding scale), it is unclear whether parenting reflexivity is a valid assessment of PRF. Alternatively, Yatziv et al. (2020) reported a positive correlation between maternal mind-mindedness and PRF as measured using the PDI ($r = .30$), but they used the "describe your child" measure for maternal mind-mindedness.

However, recently, two studies investigated both indices of observation-based mind-mindedness and PRF, and presented different findings from the previous studies. For instance, Dollberg (2021) reported that there were no significant relations between PRF

measured via the short version of the interview (PDI-R2-S) and both indices of maternal mind-mindedness (i.e., appropriate and non-attuned mind-related comments) in mothers of 3-month-old infants. Krink and Ramsauer (2021) also found no links between any subscales of the PRFQ and either index of maternal mind-mindedness in mothers of 3- to 10-month-olds. Furthermore, both studies showed that each parental mentalising skill was differently associated with the quality of mother–infant interaction (i.e., only appropriate mind-related comments were positively associated with maternal sensitivity and dyadic reciprocity; Dollberg, 2021) and maternal psychopathology (i.e., high levels on the *Pre-mentalising modes* subscale of the PRFQ were related to increased postpartum depression and anxiety, while fewer non-attuned mind-related comments were related to obsessive-compulsive personality disorder in mothers with postpartum depression; Krink & Ramsauer, 2021). Mothers' capacity to reflect on their infants' mental states and their mind-mindedness during actual infant–mother interaction thus do not appear to have the same links with mothers' mental health or parenting interactive behaviours.

Although Krink and Ramsauer's (2021) study used the PRFQ, their sample was restricted to clinically diagnosed mothers with postpartum depression. Moreover, as the German version of the PRFQ in their study has not yet been validated, it is unclear whether the three subscales of the German PRFQ measure the same aspects as the original (English) PRFQ. Study 3 was therefore the first to examine the link between maternal mind-mindedness during real-time interaction and PRF using the validated PRFQ in a non-clinical sample.

Given that maternal mind-mindedness and PRF are operationalised very differently to measure the parental mentalising process, there is debate over whether the two constructs should relate to each other. The describe-your-child measure of mind-mindedness might be considered to be similar to PRF given that it can be assessed from an interview. However, the

“describe your child” measure assesses mind-mindedness from the caregiver’s spontaneous use of mind-related descriptions of the child, whereas PRF is assessed in terms of the quality of the caregiver’s representational narrative on their own and their children’s inner experiences as prompted by a set of specific questions. In the infant observational assessment, mind-mindedness focuses on the extent to which parents make appropriate mind-related verbal comments on their children’s mental states during their real-time interactions. In light of these differences in operationalisation and recent empirical findings, it may be that the capacity to reflect on one’s infant’s mental states (PRF) does not necessarily manifest as the tendency to make real-time mind-related comments in response to the infant’s cues (mind-mindedness). Indeed, maternal mind-mindedness is thought to be a construct at the interface between behavioural and representational operationalisations of the caregiver–child relationship (Meins et al., 2012), while PRF focuses purely on the representational facet of parental mentalisation. These considerations led to the hypothesis that any associations between mind-mindedness and PRFQ would be weak.

In terms of empathy, as Barreto et al. (2016) reported a null finding between parental mind-mindedness assessed via the ‘describe your child’ measure and ToM ability (which refers to understanding another’s thoughts, intentions, and feelings, see Frith & Frith, 2006; Tholen, Trautwein, Böckler, Singer, & Kanske, 2020), we hypothesised that maternal mind-mindedness would not be related to mothers’ cognitive empathy skills in either Korean or British mothers. This would prove consistent with the relational nature of mind-mindedness, in that mind-mindedness depends on the quality of close relationships rather than being a general trait of understanding others’ perspectives (Meins et al., 2014). In other words, although one may have the capacity to understand others’ mental states, this would not necessarily lead to making mind-related comments about the infants’ cues at a behavioural level (what Meins et al., 2006, referred to as the ‘competence–performance gap’). This notion

of mind-mindedness as a relational construct led us to hypothesise that mind-mindedness would also be unrelated to mothers' self-reported empathy.

Turning to PRF and empathy, PRF and self-reported empathy seem to have conceptually and empirically greater overlap. Firstly, as the concept of PRF focuses on caregivers' representations of their children's mental states, PRF and the caregivers' self-reported empathy might share a common reflective capacity of being aware of and attending to one's internal mental states. Moreover, empirically, Borelli, Stern et al. (2020) reported positive correlations between PRF and maternal empathy in mothers with school-aged children in two studies. In the first study, the researchers reported a robust positive correlation between PRF and maternal empathy, both of which were assessed using interviews about the mothers' own and their 10-year-old children's thoughts and feelings after they watched the children's performance on a stressful task. In their second study, the researchers found a positive correlation between PRF and maternal empathy when both were assessed using the PDI-R in mothers who had 7- to 10-year-old children.

Despite the fact that there were some limitations of Borelli, Stern et al.'s study (e.g., using the same interview to assess PRF and maternal empathy), we expected that there would be positive relations between PRF and both affective and cognitive empathy. Specifically, it was hypothesised that both aspects of self-reported empathy would be positively correlated with *Interest and curiosity in mental states* and negatively correlated with *Pre-mentalising modes*. In terms of *Certainty about mental states*, given that heightened cognitive and affective empathy might encourage a sense of confidence about others' mental states, it was expected that this subscale would be positively related to both empathy components across cultures.

The associations between parental mentalisation and parenting quality were also examined. Although we found cultural differences in parenting style between the Korean and

British mothers, we expected that mothers who understood their infants' mental states would be less likely to exhibit adverse parenting styles across cultures. As described in Chapter 3, parenting quality was assessed using both self-report and observational measures, with the latter assessing maternal intrusiveness. Although there is little research investigating associations between parenting style and maternal mind-mindedness, given the positive associations reported in the extant literature between appropriate mind-related comments and maternal sensitivity (e.g., Meins et al., 2002, 2012), we predicted that appropriate comments would be positively correlated with self-reported optimal parenting style. However, Meins et al.'s (2012) study also showed that non-attuned mind-related comments were unrelated to sensitivity. We therefore expected no relation between non-attuned comments and parenting quality. Regarding intrusiveness, unlike the previous correlational findings between maternal mind-mindedness and maternal sensitivity, Riva Crugnola, Ierardi, and Canevini (2018) reported null relations between both indices of observed maternal mind-mindedness and intrusiveness with adolescent and adult mothers of 3-month-old infants. Therefore, we expected that maternal mind-mindedness would not be significantly correlated with observed intrusiveness. These associations were hypothesised to be seen cross-culturally.

In the validation study reported in Chapter 2, Korean mothers' PRF was positively associated with self-reported optimal parenting styles (e.g., warm parenting style) and negatively associated with adverse parenting styles (e.g., chaotic parenting style). Specifically, optimal self-reported parenting was associated with higher scores on both the *Interest and curiosity in mental states* and *Certainty about mental states* subscales of the PRFQ (see pp. 46-47). We expected to replicate these findings in this sub-sample of the Korean participants from the validation study. However, as discussed in Chapter 2, the positive association between parenting quality and certainty may be culturally specific to South Korea (see p. 51). Consequently, for the British participants, we predicted a positive

association between self-reported optimal parenting and *Interest and curiosity in mental states* and a negative association between optimal parenting and the *Pre-mentalising modes* PRFQ subscale, with no hypothesis relating to the *Certainty about mental states* subscale.

With regard to how PRF relates to the quality of parenting observed during actual infant–caregiver interaction, there are several studies investigating the association between PRF based on the interview measures (e.g., the PDI) and the quality of observed parenting behaviours (e.g., Buttitta et al., 2019; Kelly et al., 2005, Suchman et al., 2010), but few studies examine the links between PRF assessed by the PRFQ and observed caregiving behaviours. Krink, Muehlhan, Luyten, Romer, and Ramsauer (2018), for example, found that the PRFQ subscale of *Pre-mentalising modes* was negatively related to observed maternal sensitivity assessed by a short version of the maternal behaviour Q-set (Mini-MBQS-V; Moran, 2009) in 50 mothers with postpartum depression who had infants aged 3- to 10-months. However, given that the study used a clinical sample, their findings may not generalise. If the relations between the PRFQ subscales and parenting are genuine, then the same pattern of findings should be seen when parenting quality is assessed from observed caregiver–infant interaction. The observational measure of parenting quality that was assessed in this thesis was intrusiveness. A negative association between intrusiveness and the *Interest and curiosity in mental states* PRFQ subscale and a positive association between intrusiveness and the *Pre-mentalising modes* subscale would indicate that PRF is related to more optimal parenting. We also explored whether the positive association between the *Certainty about mental states* subscale and optimal parenting in Korean mothers would be replicated using observational parenting data. However, if the relations observed between parenting quality and PRFQ arose because both of these constructs were assessed using self-report measures, it may be that the PRFQ subscales will be unrelated to maternal intrusiveness.

Lastly, relations between parental mentalisation and (a) parenting stress, (b) mental health, and (c) infant temperament were investigated across cultures. Given that parenting stress and mental health could influence the quality of mother–infant relationships and parental interactions (e.g., Barnes & Theule, 2019; Field, 2010; Liming, 2019; Moehler et al., 2006), we expected that mothers who are prone to be distressed by parenting, and/or feel anxious or depressed would be less likely to be involved in their infants’ mental states in an appropriate way in both cultures. Similarly, it was expected that mothers’ poor psychological well-being (i.e., high levels of parenting stress, depression/anxiety) would be positively related to the subscale of *Pre-mentalising modes* and negatively related to the subscale of *Interest and curiosity in mental states* in both cultures. As unstable mental health could evoke either mothers’ confusion regarding mentalising towards their infants, or perhaps excessive levels of certainty, no directional hypotheses were made with regard to associations between mothers’ psychological well-being and the *Certainty about mental states* subscale. We also included infant temperament, assessed via mothers’ report and direct observation, to control for the infant’s influence on the quality of mother–infant interaction and mentalisation.

4.2 Methods

Participants and methods are the same as described in Chapter 3 (see pp. 61-72). As discussed in Chapter 2, due to its low reliability, the results of the Korean *Pre-mentalising modes* subscale of the PRFQ will be reported, but any further interpretations will be made with caution. Since we used the subscale of Difficult Child (DC) in the PSI-SF as a measure of perceived infant temperament, we used another subscale (Parenting Distress; PD) as a measure of reported parenting stress, rather than using the total score of all subscales in the PSI-SF. The subscale of PD is designed to assess a parent’s perceived stress in relation to parenting (e.g., conflict with spouse, social support, and restrictions caused by having a child), while the DC subscale focuses on parents’ perceptions of their child’s characteristics

and their own difficulties dealing with the child. For the quality of parenting style and mental health, the composite score of the PSCQ and the total score of the HADS were used.

The analysis strategy was to conduct initial correlational analyses for each culture to explore how the parental mentalisation variables related to mothers' dispositional empathy, parenting style, maternal intrusiveness, maternal psychological well-being, and infant temperament. The analyses provide information on the simple bivariate relations between variables in each culture. Initial correlational analyses also investigate how maternal mind-mindedness and PRF related to one another within each culture. The correlational analyses and cross-cultural comparison analyses reported in Chapter 3 were then used to inform the hierarchical multiple regression analyses to explore independent predictors of the different indices of parental mentalising (i.e., appropriate mind-related comments, non-attuned mind-related comments, *Pre-mentalising Modes*, *Certainty about mental states*, and *Interest and curiosity in mental states*).

4.3 Results

4.3.1 Descriptive Statistics and Preliminary Analyses

Table 4.1. Descriptive statistics for the variables in the UK and Korea

| | | UK (n = 63) | | | KOR (n = 66) | | |
|--------------------------|------------------------------------|-------------|------|-------------|--------------|------|-------------|
| | | M | SD | Range | M | SD | Range |
| Maternal mind-mindedness | AMRC (proportion) | .07 | .09 | 0 - .70 | .06 | .04 | 0 - .23 |
| | NMRC (proportion) | .02 | .02 | 0 - .07 | .01 | .02 | 0 - .08 |
| PRFQ | PM | 1.65 | .70 | 1.00 - 4.83 | 2.25 | .80 | 1.00 - 4.00 |
| | CMS | 3.94 | .88 | 1.83 - 6.33 | 4.88 | .88 | 2.83 - 6.83 |
| | IC | 6.09 | .65 | 4.67 - 7.00 | 6.00 | .66 | 4.17 - 7.00 |
| Empathy | Cognitive empathy | 60.54 | 6.97 | 43 - 75 | 56.85 | 6.45 | 41 - 74 |
| | Affective empathy | 34.65 | 3.87 | 25 - 42 | 34.26 | 4.45 | 24 - 42 |
| Parenting | Intrusiveness | .83 | .59 | 0 - 2 | 1.28 | .72 | 0 - 2.33 |
| | Parenting style | 27.78 | 7.73 | -2 - 42 | 23.27 | 9.63 | -4 - 44 |
| Psychological well-being | PSI-SF-PD* | 27.32 | 7.34 | 12 - 41 | 32.52 | 8.25 | 12 - 47 |
| | HADS* | 11.05 | 5.12 | 2 - 23 | 13.42 | 6.50 | 2 - 28 |
| Infant temperament | PSI-SF-DC* (Perceived temperament) | 23.27 | 7.20 | 12 - 42 | 23.24 | 7.78 | 12 - 45 |
| | Lab-TAB (Observed temperament) | 2.93 | 2.01 | 0 - 9.67 | 3.56 | 2.61 | .67 - 11.67 |

Note 1. AMRC, Appropriate Mind-Related Comments; NMRC, Non-attuned Mind-Related Comments; PM, Pre-mentalising Modes; CMS, Certainty about Mental States; IC, Interest and Curiosity in Mental states; PSI-SF-PD, Parenting Stress Index-Short Form-Parenting Distress; HADS, The Hospital Anxiety and Depression Scale-Depression subscale; PSI-SF-DC, Parenting Stress Index-Short Form-Difficult Child; Lab-TAB, Laboratory Temperament Assessment Battery.

Note 2. *: $n_{UK} = 62$.

Descriptive statistics are presented in Table 4.1. Normal distributions were found for: cognitive empathy, the PRFQ *Certainty about mental states* subscale, HADS, and the

parenting distress subscale of PSI-SF in the British sample, and structured parenting style, HADS, and total score of the PSI-SF in the Korean sample. The remaining variables were not found to follow a normal distribution; non-parametric correlations are therefore reported. In case of the same results for parametric and non-parametric correlations, parametric correlations are reported for ease of interpretation of effect sizes.

4.3.2 Correlational results of parental mentalisation

4.3.2.1 Relations between Maternal Mind-mindedness and PRF

Correlational analyses were used to investigate relations between maternal mind-mindedness and PRF. As shown in Table 4.2, in the British sample, appropriate and non-attuned mind-related comments were not related to any subscales of the PRFQ, consistent with our hypothesis. Similarly, there were no significant relations between Korean mothers' appropriate and non-attuned mind-related comments and any subscales of the K-PRFQ (see Table 4.2).

Table 4.2. Correlations between maternal mind-mindedness and the PRFQ

| | | Appropriate Mind-Related Comments | Non-attuned Mind-Related Comments |
|---------------|-----|--------------------------------------|--------------------------------------|
| UK (n=63) | PM | -.06 | -.10 |
| | CMS | -.14 | -.03 |
| | IC | .07 | .11 |
| KOR (n=66) | PM | -.13 | <u>-.21</u> |
| | CMS | .14 | .18 |
| | IC | .18 | .20 |

Note 1. PM, Pre-mentalising modes; CMS, Certainty about mental states; IC, Interest and curiosity in mental states.

Note 2. The underlined figures were Spearman's Rho correlations. All other correlations were Pearson's correlations.

4.3.2.2 Relations between Parental Mentalisation and Empathy

Correlations between maternal mind-mindedness and mothers' reported empathy are shown in Table 4.3. As we expected, there were no significant relations between either index of mind-mindedness and both cognitive and affective empathy in British mothers. Affective empathy was similarly unrelated to the mind-mindedness indices in the Korean mothers. However, Korean mothers' appropriate and non-attuned mind-related comments were positively related to reported cognitive empathy (see Table 4.3). British and Korean correlation coefficients between maternal mind-mindedness and cognitive empathy were significantly different: for the relation between appropriate mind-related comments and cognitive empathy, $z = -2.05$, $p = .040$, and for the relation between non-attuned mind-related comments and cognitive empathy, $z = -2.03$, $p = .042$.

Table 4.3. Correlations between maternal mind-mindedness and reported empathy

| | | Cognitive Empathy | Affective Empathy |
|---------------|------|-------------------|-------------------|
| UK (n=63) | AMRC | .14 | -.13 |
| | NMRC | .01 | .06 |
| KOR (n=66) | AMRC | .47*** | .15 |
| | NMRC | .36** | -.16 |

* $p < .05$ (two-tailed), ** $p < .01$ (two-tailed), *** $p < .001$ (two-tailed)

Note. AMRC, Appropriate Mind-Related Comments; NMRC, Non-attuned Mind-Related Comments

With regard to PRF, as shown in Table 4.4, British mothers' scores specifically on the *Interest and curiosity* subscale were positively related to reported cognitive empathy. On the other hand, Korean mothers' scores on the *Pre-mentalising modes* subscale were negatively related to reported cognitive empathy, while the *Certainty about mental states* and *Interest*

and curiosity in mental states subscales were positively related to reported cognitive empathy. These results were partially consistent with our hypotheses that empathy across cultures would be negatively related to the *Pre-mentalising modes* subscales and positively related to the subscales of *Certainty about mental states* and *Interest and curiosity in mental states*. There were significant differences between British and Korean correlations in terms of the relation between cognitive empathy and *Pre-mentalising modes*, $z = 2.23$, $p = .026$, and the relation between cognitive empathy and *Certainty about mental states*, $z = -2.58$, $p = .010$, but not in the relation between cognitive empathy and *Interest and curiosity in mental states*, $z = -1.39$, $p = .165$. In both the British and Korean mothers, scores on all PRFQ subscales were unrelated to reported affective empathy (see Table 4.4).

Table 4.4. Correlations between the PRFQ and reported empathy

| | | Cognitive Empathy | Affective Empathy |
|---------------|-----|-------------------|-------------------|
| UK (n=63) | PM | -.07 | .20 |
| | CMS | .11 | -.23 |
| | IC | <u>.29*</u> | -.01 |
| KOR (n=66) | PM | -.44*** | -.06 |
| | CMS | .52*** | .10 |
| | IC | .50*** | <u>.22</u> |

* $p < .05$ (two-tailed), ** $p < .01$ (two-tailed), *** $p < .001$ (two-tailed)

Note 1. PM, Pre-mentalising modes; CMS, Certainty about mental states; IC, Interest and curiosity in mental states.

Note 2. The underlined figures were Spearman's Rho correlations. All other correlations were Pearson's correlations.

4.3.2.3 Relations between Parental mentalisation and Parenting

As shown in Table 4.5, British mothers' appropriate and non-attuned mind-related comments did not relate to mothers' observed intrusiveness, consistent with our hypothesis that maternal mind-mindedness would not be associated with observed intrusiveness. Interestingly, Korean mothers' observed intrusiveness was negatively related to appropriate mind-related comments, and positively related to non-attuned mind-related comments (see Table 4.5). In other words, Korean mothers who were less intrusive to their infants were likely to attune their infants' mental states in an appropriate way. However, the coefficients of the relations between maternal mind-mindedness and intrusiveness across cultures were not significantly different (appropriate mind-related comments, $z = 1.26, p = .208$; non-attuned mind-related comments, $z = -.92, p = .358$). Null findings were found for relations between both indices of mind-related comments and self-reported parenting style in both cultures, partially consistent with our expectation that non-attuned mind-related comments would not relate to the parenting variables (see Table 4.5).

Table 4.5. Correlations between maternal mind-mindedness and parenting (i.e., mother's observed intrusiveness and self-reported parenting style)

| | | Intrusiveness | Parenting style |
|------------|------|---------------|-----------------|
| UK (n=63) | AMRC | -.06 | -.17 |
| | NMRC | .11 | .01 |
| KOR (n=66) | AMRC | <u>-.28*</u> | .04 |
| | NMRC | <u>.27*</u> | .15 |

* $p < .05$ (two-tailed), ** $p < .01$ (two-tailed), *** $p < .001$ (two-tailed)

Note 1. AMRC, Appropriate Mind-Related Comments; NMRC, Non-attuned Mind-Related Comments

Note 2. The underlined figures were Spearman's Rho correlations. All other correlations were Pearson's correlations.

With regard to PRF, as shown in Table 4.6, British and Korean mothers' observed intrusiveness was unrelated to all of the subscales of the PRFQ. However, in terms of self-reported parenting style, as expected, British and Korean mothers' scores on the *Pre-mentalising modes* subscale were negatively related to reported parenting style, and the scores on the *Certainty about mental states* subscale were positively related to reported parenting style in both groups (see Table 4.6). Only Korean mothers' scores on the *Interest and curiosity in mental states* subscale were positively related to reported parenting style, but the correlation coefficients between the two groups were not significantly different ($z = -1.46$, $p = .144$).

Table 4.6. Correlations between the PRFQ and parenting (i.e., mother's observed intrusiveness and self-reported parenting style)

| | | PM | CMS | IC |
|------------|-----------------|---------|--------|------------|
| UK (n=63) | Intrusiveness | .12 | -.19 | -.21 |
| | Parenting style | -.62*** | .48*** | <u>.23</u> |
| KOR (n=66) | Intrusiveness | .01 | -.13 | .01 |
| | Parenting style | -.52*** | .55*** | .46*** |

* $p < .05$ (two-tailed), ** $p < .01$ (two-tailed), *** $p < .001$ (two-tailed)

Note 1. PM, Pre-mentalising modes; CMS, Certainty about mental states; IC, Interest and curiosity in mental states.

Note 2. The underlined figures were Spearman's Rho correlations. All other correlations were Pearson's correlations.

4.3.2.4 Relations between Parental Mentalisation and Maternal Psychological

Well-Being

As shown in Table 4.7, there were no significant relations between maternal mind-mindedness and relevant variables of maternal psychological well-being in either country.

Table 4.7. Correlations between maternal mind-mindedness and reported maternal psychological well-being

| | | PSI-SF-Parenting Distress | HADS |
|--------------|------|---------------------------|------|
| UK (n = 62) | AMRC | -.03 | -.02 |
| | NMRC | -.13 | .15 |
| KOR (n = 66) | AMRC | < .001 | -.02 |
| | NMRC | -.22 | -.05 |

Note. PSI-SF, Parenting Stress Index-Short Form; HADS, Hospital Anxiety and Depression scale; AMRC, Appropriate Mind-Related Comments; NMRC, Non-attuned Mind-Related Comments.

In terms of PRF, correlations with reported parenting distress and maternal mental health are shown in Table 4.8. As shown in Table 4.8, British and Korean mothers' scores on the *Pre-mentalising modes* subscale were positively related to the mothers' reported parenting stress and depression/anxiety, while the scores on the *Certainty about mental states* were negatively related to mothers' reported parenting stress and mental health. These findings were congruent with our hypotheses. However, the *Interest and curiosity in mental states* subscales were not associated with any measures of maternal psychological well-being in either country (see Table 4.8).

Table 4.8. Correlations between the PRFQ and reported maternal psychological well-being

| | | PSI-SF-Parenting Distress | HADS |
|-----------------|-----|---------------------------|--------------|
| UK (n = 62) | PM | .46*** | .29* |
| | CMS | -.30* | <u>-.26*</u> |
| | IC | < .01 | .11 |
| KOR (n = 66) | PM | .34** | .30* |
| | CMS | -.46*** | -.33** |
| | IC | -.14 | -.04 |

* $p < .05$ (two-tailed), ** $p < .01$ (two-tailed), *** $p < .001$ (two-tailed)

Note 1. PSI-SF, Parenting Stress Index-Short Form; HADS, Hospital Anxiety and Depression scale; PM, Pre-mentalising modes; CMS, Certainty about mental states; IC, Interest and curiosity in mental states.

Note 2. The underlined figures were Spearman's Rho correlations. All other correlations were Pearson's correlations

4.3.2.5 Relations between Parental Mentalisation and Infant Temperament

As shown in Table 4.9, British infants' perceived temperament as reported by their mothers (i.e., the subscale of difficult child of the PSI-SF) was not significantly related to appropriate mind-related comments, or non-attuned mind-related comments. British infants' observed temperament as assessed by researchers (i.e., the Lab-TAB) was also unrelated to maternal mind-mindedness. Similarly, Korean infants' perceived and observed temperament was not associated with appropriate mind-related comments, or non-attuned mind-related comments (see Table 4.9).

Table 4.9. Correlations between maternal mind-mindedness and perceived and observed infant temperament

| | | PSI-SF-Difficult Child | Lab-TAB | |
|-----------------|------|------------------------|-----------------|-----|
| UK (n = 62) | AMRC | .18 | UK (n = 63) | .22 |
| | NMRC | <u>-.17</u> | | .05 |
| KOR (n = 66) | AMRC | -.05 | KOR (n = 66) | .17 |
| | NMRC | -.10 | | .15 |

* $p < .05$ (two-tailed), ** $p < .01$ (two-tailed), *** $p < .001$ (two-tailed)

Note. PSI, Parenting Stress Index; Lab-TAB, Laboratory Temperament Assessment Battery; PM, Pre-mentalising modes; CMS, Certainty about mental states; IC, Interest and curiosity in mental states; AMRC, Appropriate Mind-Related Comments; NMRC, Non-attuned Mind-Related Comments.

The relations between PRF and infants' perceived and observed temperament are shown in Table 4.10. As shown in Table 4.10, infants' difficult temperament as reported by mothers was positively correlated with the *Pre-mentalising modes* subscale and negatively correlated with the *Certainty about mental states* subscale in both the British and Korean samples. However, British and Korean infants' difficult temperament as reported by their mothers was not related to their scores on the *Interest and curiosity in mental states* subscale. British and Korean infants' observed temperament as assessed by researchers was not correlated with any subscales of the PRFQ (see Table 4.10).

Table 4.10 Correlations between the PRFQ and perceived and observed infant temperament

| | | PSI-SF- Difficult Child | | Lab-TAB | |
|-----------------|-----|-------------------------|--|-----------------|------|
| UK (n = 62) | PM | .35** | | UK (n = 63) | -.17 |
| | CMS | <u>-.28*</u> | | | .01 |
| | IC | -.22 | | | .21 |
| KOR (n = 66) | PM | .32** | | KOR (n = 66) | .01 |
| | CMS | -.27* | | | .10 |
| | IC | <u>-.23</u> | | | -.01 |

* $p < .05$ (two-tailed), ** $p < .01$ (two-tailed), *** $p < .001$ (two-tailed)

Note 1. PSI-SF, Parenting Stress Index-Short Form; Lab-TAB, Laboratory Temperament Assessment Battery; PM, Pre-mentalising modes; CMS, Certainty about mental states; IC, Interest and curiosity in mental states.

Note 2. The underlined figures were Spearman's Rho correlations. All other correlations were Pearson's correlations.

4.3.3 Independent predictors of parental mentalisation

A series of hierarchical multiple regression analyses was performed to explore predictors of the individual indices of parental mentalisation: appropriate mind-related comments, non-attuned mind-related comments, PRFQ *Pre-mentalising modes*, PRFQ *Certainty about mental states*, and PRFQ *Interest and curiosity in mental states*. In each regression analysis, the independent variables were cognitive empathy, affective empathy, a composite score of parenting style, intrusiveness, parenting stress, a total score of anxiety and depression levels (i.e., HADS), perceived temperament, observed temperament, and nationality. Given that this research was primarily focused on the relations between mind-mindedness, PRF, and empathy, we added an interaction term between nationality and cognitive empathy on parental mentalising. This decision was further based on our previous

findings that (a) there are cultural differences in cognitive empathy, (b) cognitive empathy was robustly related to maternal mind-mindedness specifically in Korean mothers, and (c) cognitive empathy related strongly to all three subscales of PRFQ in Korean mothers, but only moderately to one subscale in British mothers. No variable other than cognitive empathy met these criteria and therefore other interaction terms involving nationality were not entered into the regression equations. In the regression analyses for predictors of mind-mindedness, the subscales of *Pre-mentalising modes*, *Certainty about mental states* and *Interest and curiosity in mental states* were included as additional independent variables, and for the analyses for predictors of the PRFQ, both indices of maternal mind-mindedness (i.e., appropriate mind-related comments, non-attuned mind-related comments) were included as additional independent variables. Because infant age was associated with some dependent variables (i.e., non-attuned mind-related comments, the *Pre-mentalising modes* and *Certainty about mental states* subscale, see Chapter 3 pp. 72-73), it was also included as an independent variable.

In each regression model, infant age was entered at the first step, and the main independent variables were entered at the second step. These included not merely important control variables such as maternal psychological well-being and infant temperament, but the PRFQ variables for predictors of the mind-mindedness indices, or the mind-mindedness variables for predictors of the PRFQ subscales. This step thus tested the degree of independence between the mind-mindedness and PRF constructs. At the third step, the interaction term between nationality and cognitive empathy was added. All predictors in the analyses were transformed using grand mean centring to ease interpretations. To reveal the significant interaction effect, simple slopes in British and Korean groups were examined in the *Certainty about mental states* analysis.

4.3.3.1 Predictors of appropriate mind-related comments

Table 4.11. Summary of multiple regression analysis for variables predicting mothers' appropriate mind-related comments

| Variables | B | β | <i>p</i> |
|---|--------|---------|----------|
| Step 1 | | | |
| Infant age | -.01 | -.14 | .123 |
| $R^2 = .019$ | | | |
| Step 2 | | | |
| Infant age | -.01 | -.12 | .266 |
| Nationality | .02 | .12 | .384 |
| Cognitive empathy | < .01 | .25 | .016 |
| Affective empathy | < -.01 | -.05 | .580 |
| Parenting style | < -.01 | -.26 | .055 |
| Intrusiveness | -.01 | -.09 | .361 |
| Parenting distress | < -.01 | -.10 | .498 |
| Anxiety/Depression | < -.01 | -.04 | .736 |
| Perceived infant temperament | < .01 | .12 | .268 |
| Observed infant temperament | < .01 | .13 | .170 |
| Pre-mentalising modes | -.01 | -.13 | .254 |
| Certainty about mental states | -.01 | -.10 | .456 |
| Interest and curiosity in mental states | .01 | .10 | .346 |
| $\Delta R^2 = .141, R^2 = .159$ | | | |
| Step 3 | | | |
| Infant age | -.01 | -.12 | .241 |
| Nationality | .02 | .15 | .270 |
| Cognitive empathy | < .01 | .12 | .351 |
| Affective empathy | < -.01 | -.08 | .413 |
| Parenting style | < -.01 | -.26 | .060 |
| Intrusiveness | -.01 | -.12 | .277 |
| Parenting distress | < -.01 | -.13 | .384 |
| Anxiety/Depression | < .001 | -.04 | .769 |
| Perceived infant temperament | < .01 | .13 | .215 |
| Observed infant temperament | < .01 | .13 | .151 |
| Pre-mentalising modes | -.01 | -.10 | .400 |
| Certainty about mental states | -.01 | -.14 | .281 |
| Interest and curiosity in mental states | .01 | .09 | .412 |
| Nationality * Cognitive empathy | < .01 | .21 | .126 |
| $\Delta R^2 = .017, R^2 = .177$ | | | |

As shown in Table 4.11, at the first step, the model for predictors of appropriate mind-related comments was not significant, $F(1, 126) = 2.41, p = .123$, accounting for 2% of the variance. With all main variables entered into the regression equation, the overall model remained non-significant, $F(13, 114) = 1.66, p = .079$, accounting for 16% of the variance, with cognitive empathy being the only significant predictor of appropriate mind-related comments across cultures. In this model, parenting style showed a non-significant trend to predict appropriate mind-related comments ($p = .055$) (see Table 4.11). Note that this association was negative, indicating that less optimal reported parenting style was associated with higher scores for appropriate mind-related comments. At the third step, the overall model with the interaction term for predicting appropriate mind-related comments approached significance, $F(14, 113) = 1.73, p = .059$, accounting for 18% of the variance. With the interaction term between nationality and cognitive empathy entered, the main effect of cognitive empathy became non-significant, and there were no significant predictors for appropriate mind-related comments. However, the parenting style variable still showed a non-significant trend to predict appropriate mind-related comments ($p = .060$) (see Table 4.11).

4.3.3.2 Predictors of non-attuned mind-related comments

Table 4.12 describes the regression models for non-attuned mind-related comments. At the first step, as infant age significantly predicted non-attuned mind-related comments, the model of non-attuned mind-related comments was significant, $F(1, 126) = 11.68, p = .001$, accounting for 8.5% of the variance. However, at the second step, infant age did not significantly predict non-attuned mind-related comments. Instead, parenting distress and mental health significantly predicted independent variance in mothers' non-attuned mind-related comments across cultures. Surprisingly, high levels of mothers' parenting distress predicted lower non-attuned mind-related comments, but high levels of maternal mental

Table 4.12. Summary of multiple regression analysis for variables predicting mothers' non-attuned mind-related comments

| Variables | B | β | <i>p</i> |
|---|--------|---------|----------|
| Step 1 | | | |
| Infant age | < -.01 | -.29 | .001 |
| $R^2 = .085$ | | | |
| Step 2 | | | |
| Infant age | < -.01 | -.17 | .101 |
| Nationality | < -.01 | -.08 | .545 |
| Cognitive empathy | < .001 | .13 | .174 |
| Affective empathy | < .001 | -.07 | .446 |
| Parenting style | < .001 | -.18 | .156 |
| Intrusiveness | < .01 | .15 | .126 |
| Parenting distress | < -.01 | -.34 | .015 |
| Anxiety/Depression | < .01 | .33 | .010 |
| Perceived infant temperament | < .001 | -.12 | .235 |
| Observed infant temperament | < .01 | .08 | .373 |
| Pre-mentalising modes | < -.01 | -.16 | .150 |
| Certainty about mental states | < .001 | .03 | .816 |
| Interest and curiosity in mental states | < .01 | .08 | .422 |
| $\Delta R^2 = .147, R^2 = .232$ | | | |
| Step 3 | | | |
| Infant age | < -.01 | -.17 | .088 |
| Nationality | < -.01 | -.05 | .728 |
| Cognitive empathy | < .001 | .01 | .966 |
| Affective empathy | < .001 | -.09 | .297 |
| Parenting style | < .001 | -.18 | .169 |
| Intrusiveness | < .01 | .11 | .237 |
| Parenting distress | < -.01 | -.37 | .009 |
| Anxiety/Depression | < .01 | .33 | .008 |
| Perceived infant temperament | < .001 | -.11 | .292 |
| Observed infant temperament | < .01 | .08 | .338 |
| Pre-mentalising modes | < -.01 | -.13 | .262 |
| Certainty about mental states | < .001 | -.02 | .887 |
| Interest and curiosity in mental states | < .01 | .07 | .499 |
| Nationality * Cognitive empathy | < .01 | .21 | .105 |
| $\Delta R^2 = .018, R^2 = .250$ | | | |

health problems (i.e., anxiety and depression) predicted greater non-attuned mind-related comments (see Table 4.12). The overall model at the second step remained significant, $F(13, 114) = 2.65, p = .003$, accounting for 23% of the variance. At the third step with all independent variables including the interaction term entered into the regression equation, the overall model was significant, $F(14, 113) = 2.69, p = .002$, accounting for 25% of the variance; parenting distress and mental health variables remained significant predictors.

4.3.3.3 Predictors of the *Pre-mentalising modes* subscale

With regard to PRF, at the first step, the model for predictors of the *Pre-mentalising modes* subscale was significant, $F(1, 126) = 4.32, p = .040$, accounting for 3.3% of the variance (see Table 4.13). As shown in Table 4.13, at the second step, with all of the main variables entered into the regression equation, nationality and reported parenting style significantly explained independent variance in the *Pre-mentalising modes* subscale. The overall model at the second step was significant, $F(12, 115) = 7.96, p < .001$, accounting for 45% of the variance. At the last step, when the interaction term was added in the regression model, the overall model was significant, $F(13, 114) = 7.61, p < .001$, accounting for 47% of the variance, without any significant changes compared to the second step (see Table 4.13). Korean nationality and less optimal reported parenting style independently predicted higher levels of non-mentalising stance. However, as the reliability of the Korean *Pre-mentalising modes* subscale was low, the results should be interpreted with caution.

Table 4.13. Summary of multiple regression analysis for variables predicting mothers' scores of the *Pre-mentalising modes* subscale

| Variables | B | β | <i>p</i> |
|-----------------------------------|-------|---------|----------|
| Step 1 | | | |
| Infant age | .10 | .18 | .040 |
| $R^2 = .033$ | | | |
| Step 2 | | | |
| Infant age | -.01 | -.02 | .808 |
| Nationality | .31 | .19 | .039 |
| Cognitive empathy | < .01 | -.05 | .544 |
| Affective empathy | < .01 | -.03 | .651 |
| Parenting style | -.04 | -.44 | <.001 |
| Intrusiveness | .06 | .05 | .561 |
| Parenting distress | < .01 | .04 | .753 |
| Anxiety/Depression | < .01 | .05 | .623 |
| Perceived infant temperament | .01 | .10 | .236 |
| Observed infant temperament | -.01 | -.04 | .610 |
| Appropriate mind-related comments | -1.00 | -.08 | .270 |
| Non-attuned mind-related comments | -5.20 | -.11 | .171 |
| $\Delta R^2 = .421, R^2 = .454$ | | | |
| Step 3 | | | |
| Infant age | < .01 | -.01 | .945 |
| Nationality | .30 | .19 | .048 |
| Cognitive empathy | < .01 | .05 | .620 |
| Affective empathy | < .01 | -.01 | .892 |
| Parenting style | -.04 | -.41 | < .001 |
| Intrusiveness | .08 | .07 | .416 |
| Parenting distress | < .01 | .06 | .605 |
| Anxiety/Depression | < .01 | .04 | .681 |
| Perceived infant temperament | < .01 | .09 | .312 |
| Observed infant temperament | -.02 | -.04 | .571 |
| Appropriate mind-related comments | -.80 | -.07 | .371 |
| Non-attuned mind-related comments | -4.16 | -.09 | .269 |
| Nationality * Cognitive empathy | -.03 | -.16 | .130 |
| $\Delta R^2 = .011, R^2 = .465$ | | | |

4.3.3.4 Predictors of the *Certainty about mental states* subscale

As shown in Table 4.14, the model for predictors of *Certainty about mental states* at the first step was significant, $F(1, 126) = 15.80, p < .001$, accounting for 11.1% of the variance. After all of the main variables were entered into the regression equation at the second step, nationality, reported cognitive empathy and reported parenting style significantly explained independent variance in *Certainty about mental states*, with non-significant trends for infant age ($p = .059$). The overall model at the second step was significant, $F(12, 115) = 9.71, p < .001$, accounting for 50% of the variance. At the third step, with the interaction variable between nationality and cognitive empathy, the *Certainty about mental states* subscale was predicted by nationality, reported parenting style and the interaction variable (see Table 4.14). In particular, only Korean mothers' reported cognitive empathy predicted the levels of the *Certainty about mental states* ($\beta = .07, p < .001$), but not those of UK mothers ($\beta = .01, p = .357$) (see Figure 4.1). This indicates that higher scores for certainty about infants' mental states were predicted by being Korean, reporting more optimal parenting style, and Korean mothers' high levels of reported cognitive empathy. As shown in Table 4.14, at the last step, cognitive empathy became non-significant ($p = .981$) and the non-significant trends of infant age reduced compared to the second step. The overall model at the third step was significant, $F(13, 114) = 9.89, p < .001$, accounting for 53% of the variance.

Table 4.14. Summary of multiple regression analysis for variables predicting mothers' scores of the *Certainty about mental states* subscale

| Variables | B | β | <i>p</i> |
|-----------------------------------|--------|---------|----------|
| Step 1 | | | |
| Infant age | .22 | .33 | < .001 |
| $R^2 = .111$ | | | |
| Step 2 | | | |
| Infant age | .10 | .15 | .059 |
| Nationality | 1.20 | .60 | < .001 |
| Cognitive empathy | .02 | .16 | .039 |
| Affective empathy | < -.01 | -.01 | .879 |
| Parenting style | .04 | .34 | < .001 |
| Intrusiveness | -.14 | -.09 | .216 |
| Parenting distress | -.02 | -.15 | .185 |
| Anxiety/Depression | < .01 | .02 | .873 |
| Perceived infant temperament | < -.01 | -.03 | .676 |
| Observed infant temperament | .03 | .06 | .367 |
| Appropriate mind-related comments | -.80 | -.06 | .444 |
| Non-attuned mind-related comments | 1.19 | .02 | .786 |
| $\Delta R^2 = .392, R^2 = .503$ | | | |
| Step 3 | | | |
| Infant age | .09 | .13 | .102 |
| Nationality | 1.22 | .62 | <.001 |
| Cognitive empathy | < .001 | < .01 | .981 |
| Affective empathy | -.01 | -.05 | .503 |
| Parenting style | .03 | .30 | .001 |
| Intrusiveness | -.18 | -.12 | .101 |
| Parenting distress | -.02 | -.19 | .093 |
| Anxiety/Depression | < .01 | .03 | .763 |
| Perceived infant temperament | < -.01 | -.01 | .894 |
| Observed infant temperament | .03 | .07 | .312 |
| Appropriate mind-related comments | -1.16 | -.08 | .264 |
| Non-attuned mind-related comments | -.67 | -.01 | .878 |
| Nationality * Cognitive empathy | .05 | .25 | .012 |
| $\Delta R^2 = .027, R^2 = .530$ | | | |

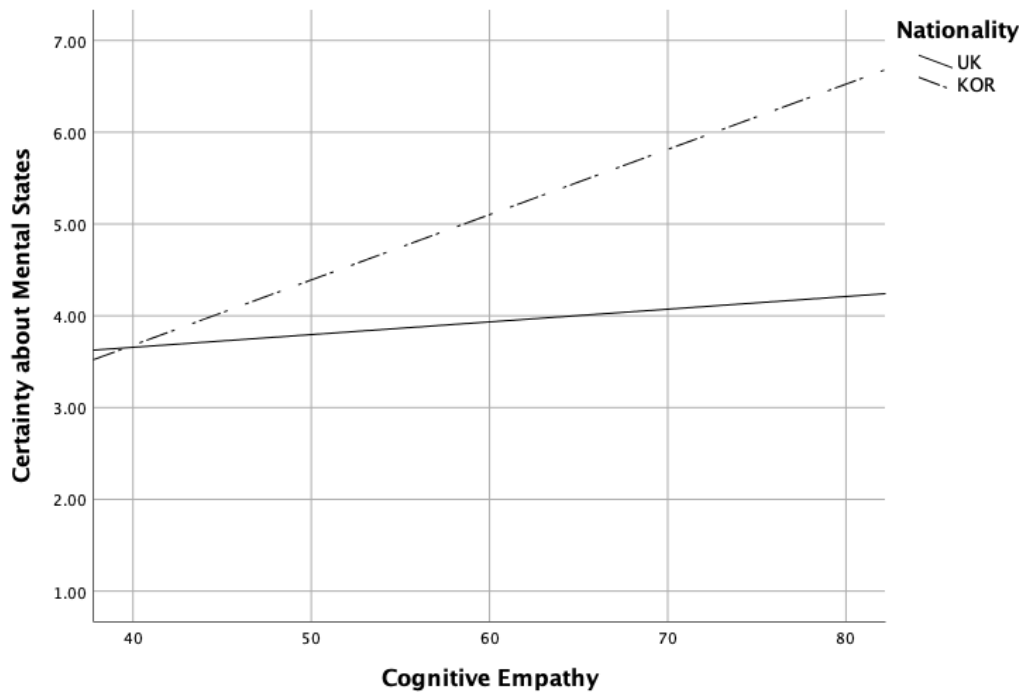


Figure 4.1. The links between reported cognitive empathy (independent variable) and the Certainty about mental states (dependent variable) in the UK and Korean groups.

4.3.3.5 Predictors of the *Interest and curiosity in mental states* subscale

Table 4.15 describes the models for predictors of *Interest and curiosity in mental states* subscale through the three steps. As shown in Table 4.15, at the first step, the model for predictors of *Interest and curiosity in mental states* subscale was not significant, $F(1, 126) = .55, p = .460$, accounting for 0.4% of the variance. However, at the second step, the overall model became significant, $F(12, 115) = 4.43, p < .001$, accounting for 31.6% of the variance. At this step, reported cognitive empathy and parenting style positively predicted mothers' scores on the *Interest and curiosity in mental states* subscale across cultures with a non-significant trend for affective empathy ($p = .073$) (see Table 5.4). At the third step, with all variables including the interaction term entered into the regression equation, the overall model was significant, $F(13, 114) = 4.12, p < .001$, accounting for 32% of the variance; only reported parenting style remained significant, indicating more self-reported optimal parenting

Table 4.15. Summary of multiple regression analysis for variables predicting mothers' scores of the *Interest and curiosity in mental states* subscale.

| Variables | B | β | <i>p</i> |
|-----------------------------------|--------|---------|----------|
| Step 1 | | | |
| Infant age | -.03 | -.07 | .460 |
| $R^2 = .004$ | | | |
| Step 2 | | | |
| Infant age | < .01 | < .01 | .974 |
| Nationality | .03 | .02 | .817 |
| Cognitive empathy | .02 | .24 | .009 |
| Affective empathy | .02 | .15 | .073 |
| Parenting style | .03 | .44 | < .001 |
| Intrusiveness | .02 | .02 | .793 |
| Parenting distress | .01 | .13 | .320 |
| Anxiety/Depression | .02 | .15 | .227 |
| Perceived infant temperament | -.01 | -.12 | .215 |
| Observed infant temperament | .01 | .05 | .587 |
| Appropriate mind-related comments | .68 | .07 | .385 |
| Non-attuned mind-related comments | 2.60 | .07 | .428 |
| $\Delta R^2 = .312, R^2 = .316$ | | | |
| Step 3 | | | |
| Infant age | < -.01 | < -.01 | .953 |
| Nationality | .04 | .03 | .777 |
| Cognitive empathy | .02 | .18 | .126 |
| Affective empathy | .02 | .13 | .111 |
| Parenting style | .03 | .43 | <.001 |
| Intrusiveness | .01 | .01 | .893 |
| Parenting distress | .01 | .12 | .380 |
| Anxiety/Depression | .02 | .15 | .213 |
| Perceived infant temperament | -.01 | -.11 | .245 |
| Observed infant temperament | .01 | .05 | .569 |
| Appropriate mind-related comments | .60 | .06 | .452 |
| Non-attuned mind-related comments | 2.15 | .06 | .518 |
| Nationality * Cognitive empathy | .01 | .09 | .427 |
| $\Delta R^2 = .004, R^2 = .320$ | | | |

style predicted mothers' high scores on their interest and curiosity in their infants' mental states.

4.4 Discussion

The aims of Study 3 were to investigate associations between maternal mind-mindedness and PRF, and to explore how these two aspects of parental mentalisation related to empathy, parenting, maternal psychological well-being, and infant temperament across cultures. Furthermore, we investigated independent predictors of parental mentalisation.

First, with regard to the relations between maternal mind-mindedness and PRF, no significant associations were observed between either index of mind-mindedness and any of the subscales of the PRFQ in both Korean and British mothers. These null findings were consistent with our hypothesis and recent studies that reported no significant relations between observed maternal mind-mindedness and PRF (Dollberg 2021; Krink & Ramsauer, 2021). The results of Study 3 suggest that mothers' self-reported understanding of the opaque nature of mind or interest in mental states (PRF) are distinct aspects of parental mentalisation from mothers' tendency to make appropriate or non-attuned mind-related comments during actual mother–infant interaction (mind-mindedness). The fact that the regression analyses showed that mind-mindedness indices and PRFQ subscales did not predict independent variance in one another supports the proposal that PRF and mind-mindedness are separate facets of parental mentalisation.

Regarding relations between mind-mindedness and mothers' reported empathy, Study 3's findings were consistent with our hypotheses for the British mothers, for whom mind-mindedness and both aspects of empathy were unrelated. However, Korean mothers' appropriate and non-attuned mind-related comments were positively associated with reported cognitive empathy, with medium to large effect sizes. These culturally different correlations between maternal mind-mindedness and empathy are intriguing, as the findings may indicate

different approaches to attunement to their infants' minds between the British and Korean mothers. British mothers may be more likely to conceive of the infant as an individual, and to attempt to understand them from their interactions with their infants. Therefore, generalisations from their mentalising about other people, or how they attune to others' minds, would not be relevant to maternal mind-mindedness, explaining the lack of association between empathy and both appropriate and non-attuned mind-related comments in the current study.

On the other hand, Korean mothers may consider that the capacity to know about others' minds would be a benefit to learning about their infants' minds within the Korean cultural context, which emphasises interpersonal relatedness rather than individual identity (Choi & Kim, 2006; Choi et al., 2013; Park & Kim, 2004). Therefore, Korean mothers may generalise from their experience of empathising with other people in order to know or predict their infant's point of view, suggesting more of a top-down approach to mind-reading. Such generalisation may make Korean mothers focus on their infants' mental states, but it does not necessarily help the mothers to read these states accurately, hence the positive correlation between empathy and both appropriate and non-attuned comments. However, the regression analyses showed that cognitive empathy did not predict independent variance in either index of mind-mindedness, suggesting that relations between mind-mindedness and empathy are not robust.

Turning to the relations between PRF and empathy, in accordance with our hypothesis, British and Korean mothers' *Interest and curiosity in mental states* were positively related to their reported cognitive empathy, indicating that in both cultures, mothers' general perception of their cognitive empathy skills is associated with their willingness to tease out their infants' mental experiences. However, unlike British mothers, Korean mothers' reported cognitive empathy was also related to their scores on the *Certainty*

about mental states subscale. This suggests that Korean mothers may generalise their overall empathic skills to a sense of mastery of knowledge over their infants' minds. In support of this view, high levels of cognitive empathy specifically in Korean mothers predicted high levels of the *Certainty about mental states* subscale. This indicates that nationality moderates the link between reported cognitive empathy and the mothers' certainty about their infants' mental states. Additionally, findings showing that *Pre-mentalising modes* were negatively related specifically to Korean mothers' reported cognitive empathy are in line with the proposal that there is a degree of generalisation across targets in Korean mothers' mentalising. However, given the low reliability of the Korean *Pre-mentalising modes* subscale, this interpretation is made with caution.

In contrast to these significant associations with reported cognitive empathy in Korean mothers, affective empathy was not associated with any PRFQ subscales in either the British or Korean groups. The non-significant correlation between affective empathy and the *Interest and curiosity in mental state* subscale in Korean mothers did not replicate the results of the validation study reported in Chapter 2. Considering the current study used a subsample of the validation study, and the effect size of the correlations between the two studies is similar (Study 1 in chapter 2: $r_s(65) = .24, p = .048$, the current study: $r_s(64) = .22, p = .079$), the different sample sizes between the two studies is likely to have caused the variation in findings.

With regard to parenting, we did not find any significant correlations between self-reported parenting style and appropriate or non-attuned mind-related comments in the UK or Korea. However, the regression analysis indicated that less optimal self-reported parenting style predicted higher scores for appropriate mind-related comments at trend level. These findings thus fail to present convincing evidence that perceiving oneself to parent in an optimal fashion relates to one being mind-minded when interacting with one's infant.

Alternatively, the negative association might indicate that mothers who are more critical of their own parenting style may be more likely to monitor their children's cues and attempt to respond to them appropriately. Maternal intrusiveness was also unrelated to both indices of mind-related comments in British mothers, which was congruent with findings of a previous study (Riva Crugnola et al., 2018). However, Korean mothers' appropriate mind related comments were negatively related, and non-attuned mind-related comments were positively related, to observed maternal intrusiveness. Given that Korean mothers made more non-attuned mind-related comments about their infants' physical states (e.g., hunger, tiredness) compared to British mothers (see Chapter 3, p. 75), Korean mothers' intrusiveness might be associated with the mothers misreading their infants' cues as physical discomfort. This is in line with the finding of Jin et al. (2012) who reported that Korean mothers tended to seek closeness to their children after the strange situation procedure even though their children did not seem distressed. Naturally, Korean mothers who do attune well to their infants' mental states, including their physical needs, might show fewer intrusive behaviours as they do not need to interrupt their infants' play to provide unnecessary comfort. In short, Korean mothers' efforts to establish closeness with their children, not merely mentally but physically, may explain the culturally-specific correlations between intrusiveness and maternal mind-mindedness. However, since neither intrusiveness nor culture were identified as predictors of either index of mind-related comments in the regression analysis, further cross-cultural research is needed to investigate the link between intrusiveness and maternal mind-mindedness.

In terms of PRF, we replicated the findings of the validation study reported in Chapter 2: Korean mothers' reported optimal parenting style was negatively related to the *Pre-mentalising modes* subscale, and positively related to the *Interest and curiosity in mental states* subscale. Moreover, British mothers' reported parenting style was also negatively

related the *Pre-mentalising modes* subscale, in accordance with our hypothesis. However, contrary to our expectation that the positive correlations between reported parenting style and the *Certainty about mental states* would be specific in Korean mothers as they culturally value the sense of knowing about their infants, the positive correlation was also observed in British mothers. This suggests that, regardless of cultural parenting contexts, mothers who are more likely to perceive themselves as having positive parenting styles (e.g., warm, autonomy supportive) are more confident about knowing their infants' psychological states.

Interestingly, while British mothers' reported parenting style was not associated with their genuine interest and curiosity in their infants' mental states, Korean mothers' reported parenting style was positively associated with this subscale. This suggests that British mothers might present their interest and curiosity in their infants' mental states, regardless of how they perceive the quality of their parenting. In other words, compared with Korean mothers, British mothers' parental mentalisation might be more independent from other relevant skills (e.g., general mentalising, parenting styles) as British parental ethnotheories emphasise treating their infants as unique individuals (Keller et al., 2007). Nevertheless, the correlations between the two groups were not significantly different, and parenting style robustly predicted all subscales of the PRFQ across cultures in the regression analyses. Therefore, it seems likely that self-reported quality of parenting style relates to the quality of mothers' representations of their infants' mental states in the UK and Korea.

On the other hand, observed intrusive maternal behaviour was unrelated to PRF in both countries. This finding is not consistent with Krink et al.'s (2018) negative correlation between observed maternal sensitivity and the *Pre-mentalising modes* subscale in a clinical sample with postpartum depression. Moreover, our findings were also different from Luyten, Mayes et al.'s (2017) study that found a negative link between mothers' reported intrusive behaviours and PRF measured by the PRFQ. Given that our study used actual observed

maternal behaviours in non-clinical samples across cultures, our null correlations may suggest that mothers' capacity to reflect upon their infants' minds measured by the PRFQ is related to the conception of parenting that the mothers have, but not necessarily to mothers' actual parenting behaviours. It may also indicate that the relations between reported parenting quality and the PRFQ were observed due to common method variance (i.e., using self-reported questionnaires).

Regarding mothers' psychological well-being, we did not find any significant correlations between maternal mind-mindedness and parenting distress or mental health. Moreover, in the regression analyses, mental health and parenting stress accounted for non-attuned mind-related comments in different directions: (1) poorer reported mental health predicted more non-attuned mind-related comments, but (2) higher reported parenting distress predicted fewer non-attuned mind-related comments. Firstly, the link between mothers' mental health and non-attuned mind-related comments may expand the association between mind-mindedness and mental health from a clinical sample, in line with Schacht et al.'s (2017) findings. Their study showed highly elevated levels of non-attuned mind-related comments in mothers with severe mental illness, compared to psychologically well mothers. Mothers' depression and anxiety symptoms may increase mothers' non-attuned comments towards their infants' non-verbal signs.

On the other hand, in terms of parenting distress, the negative relation between parenting distress and non-attuned mind-related comments is unexpected. One plausible explanation is that mothers who experience high levels of parenting stress may not easily recognise the kinds of subtle non-verbal infant cues that are more likely to be misinterpreted. Indeed, according to Azhari et al. (2019), parenting stress is associated with less dyadic mother-child brain synchrony within the medial left prefrontal cortex that is involved in mental inferencing abilities. Thus, a high level of parenting stress might compromise

mothers' synchrony with their infants and lead them to be less aware of their infants' more obscure non-verbal gestures, resulting in fewer non-attuned mind-related comments. Future research should explore this possibility.

In terms of the PRFQ, as we expected, mothers who reported more psychological distress (i.e., anxiety, depression, high levels of parenting stress) were more likely to experience difficulties in reflecting on their infants' mental states (i.e., *Pre-mentalising modes*) and were less likely to feel certain about their infants' inner experiences (i.e., *Certainty about mental states*) in both countries. However, the *Interest and curiosity in mental states* subscale was not associated with these variables, indicating that across cultures, mothers' psychological well-being in non-clinical circumstances might not be relevant to their genuine interest in their child's mental states. The fact that the regression analyses showed none of the psychological well-being variables accounted for variance in any subscales of the PRFQ also suggests that mothers' high psychological distress in a non-clinical situation may not always mean low levels of parental mentalisation.

With regard to infant temperament, neither index of maternal mind-mindedness was significantly correlated with infant observed and perceived temperamental difficulties, which is consistent with the previous studies (e.g., Larkin, Oostenbroek et al., 2019; Meins et al., 2011). On the other hand, in terms of the PRFQ, in both countries, when mothers perceived their infants were temperamentally difficult, they were more likely to feel that it was hard to understand the mental states underlying their infants' behaviours (i.e., *Pre-mentalising modes*) and less likely to feel certain about their infants' mental states (i.e., *Certainty about mental states*). In contrast, observed infant temperament was not related to any subscales of the PRFQ. This suggests that mothers' perception of their infants may be more critical than the objective temperamental trait of their infants to PRF. But once again, these findings may

equally be explained in terms of shared method variance regarding the questionnaire-based assessments for PRF and temperament.

Lastly, it is worth noting that culture (i.e., nationality) accounted for independent variance in the *Certainty about mental states* subscale of the PRFQ in the regression analyses, with Korean nationality predicting higher scores. Being Korean also significantly predicted high levels of the *Pre-mentalising modes* subscale, but given the lack of reliability of the Korean version of the subscale, this finding should be interpreted with caution. These findings are in line with our argument that the Korean parenting context, highlighting interdependency in the mother–child relationship, may encourage Korean mothers’ confidence in their knowledge of their infants’ psychological states. At the same time, it also indicates that different nationalities, accompanied with different parenting contexts, may not account for variance in the mothers’ genuine interest in their infants’ mental states and the mothers’ tendency to make mind-related comments towards their infants. It may be that mothers’ enthusiasm for reflecting upon their infants’ mental states or the inclination to use mentalistic words would be universal regardless of the cultural contexts.

In summary, Study 3 explored correlations among and potential predictors of the two measures of parental mentalisation. We found that maternal mind-mindedness and the PRFQ are strikingly distinct as constructs, but given the different operationalisations of the constructs, their lack of association is not surprising. In both countries, mothers’ confidence about the accuracy of their knowledge of their infants’ minds, or curiosity about their infants’ mental states, seem not to guarantee greater appropriate or non-attuned mind-mindedness, and vice versa. We also found different results from correlational and predictive relations between maternal mind-mindedness and the PRFQ. The *Interest and curiosity in mental states* PRFQ subscale was related to self-reported cognitive empathy in both countries, but both indices of maternal mind-mindedness were related to only Korean mothers’ cognitive

empathy. Moreover, only Korean mothers' reported cognitive empathy predicted the *Certainty about mental states* PRFQ subscale. These findings may suggest a culturally-specific tendency in Korean mothers to generalise their mentalising skills to parental mentalising. In terms of parenting behaviour, maternal mind-mindedness was found to be distinct from parenting behaviours across cultures, while a more optimal self-reported parenting style seemed to be consistent with high PRF. Finally, we found that maternal psychological well-being variables and infant temperament did not predict appropriate mind-related comments or any subscales of the PRFQ, but self-reported well-being did predict non-attuned comments. Mothers' nationality explained variance in the *Certainty about mental states* subscale, in line with Korean parental ethontheories. Although the nature of these data and the study's design preclude drawing causal relationships, our findings shed some light on potential variables that could account for individual differences in the different indices of parental mentalisation. Implications and limitations of the studies will be discussed in the next chapter.

Chapter 5

General discussion

5.1 Summary of findings

The studies in this thesis aimed to explore cultural differences in parental mentalisation between the UK and Korea, and to investigate how culture, empathy, and parent-focused variables (parenting style, intrusiveness, parenting stress, and maternal mental health) related to parental mentalisation, in order to find potential predictors. Maternal mind-mindedness assessed by observation of mother–infant interaction and the three main features of PRF measured by the PRFQ (i.e., *Pre-mentalising modes*, *Certainty about mental states*, *Interest and curiosity in mental states*) were used as operational concepts of parental mentalisation, and their relations were also investigated to establish the extent to which different facets of parental mentalisation relate to one another in each country.

Study 1 was the preliminary validation study of the K-PRFQ. It was conducted to establish the validity of the Korean version of the PRFQ (see chapter 2) before using the questionnaire for Studies 2 and 3. With the validated Korean PRFQ, Study 2 explored cultural differences in maternal mind-mindedness and the subscales of the PRFQ between British and Korean cultures, in addition to mothers' reported dispositional empathy, parenting quality (i.e., parenting style and maternal intrusiveness), maternal psychological well-being (i.e., parenting stress, mental health), and infant temperament. Lastly, Study 3 examined (a) relations between parental mentalisation and these maternal and infant variables in each country, (b) the relations between maternal mind-mindedness and PRF, and (c) whether any observed relations between these variables were common across cultures. The results of each study are collectively outlined below.

5.1.1 Preliminary Validation of the K-PRFQ

Study 1 explored whether the K-PRFQ held the same three-factor structure as the original PRFQ, and investigated the convergent validity of the K-PRFQ. We found that the original three-factor structure, which comprises *Pre-mentalising modes*, *Certainty about mental states*, and *Interest and curiosity in mental states*, appeared to be a poor fit for the K-PRFQ after the confirmatory factor analysis. In particular, the Korean *Pre-mentalising modes* subscale showed low internal reliability (.45) and half of the items of the subscale created two new additional factors after exploratory factor analysis. One of the new additional factors seemed to reflect parents' uncertainty about their children's mental states, and the other one seemed to be related to parents' consideration of others' thoughts and feelings about their parenting (i.e., social sensitivity regarding parenting). These results were in accord with the Korean collectivist culture, which highlights interdependency in close relationships (Kim et al., 2005), suggesting that the items of *Pre-mentalising modes* may be viewed differently depending on cultural contexts. Meanwhile, the Korean subscales of *Certainty about mental states* and *Interest and curiosity in mental states* showed good internal reliability and maintained most of the original items of the subscales after the factor analyses. Therefore, due to the low reliability and the results of factor analyses, results relating to the Korean *Pre-mentalising modes* subscale were interpreted with caution in further studies.

With regard to convergent validity, Korean mothers who were more confident about their mentalising towards their infants (i.e., *Certainty about mental states*) reported higher levels of reported cognitive empathy, optimal reported parenting style, less parenting stress, and better mental health. The *Interest and curiosity in mental states* subscale of the K-PRFQ was also positively related to reported empathy, and reported parenting style. These findings are in line with the previous correlational research with the original PRFQ (Borelli, Stern et

al., 2020; Luyten, Mayes et al., 2017), indicating good convergent validities of these two subscales of the K-PRFQ.

5.1.2 Cultural Differences in Parental Mentalisation

Study 2 aimed to explore cultural differences in maternal mind-mindedness and the subscales of the PRFQ between British and Korean cultures. Regarding maternal mind-mindedness, we found that the total proportions of appropriate and non-attuned mind-related comments towards infants were similar between British and Korean mothers. Furthermore, the proportion of mind-minded descriptions in relation to partners and close friends were also similar between British and Korean mothers, although British mothers' total verbosity in the interview was higher than their Korean counterparts. Therefore, we confirmed that mothers' tendency to use mind-related words towards their infants or mental descriptors about significant others does not appear to differ across the two cultures.

However, British mothers made more mind-related comments on their infants' individual desires and preferences compared to their Korean counterparts, both in terms of appropriate and non-attuned comments. Meanwhile, Korean mothers made more mind-related comments on their infants' cognitive, emotional, and physical states than their British counterparts. Interestingly, Korean mothers scored more highly than their British counterparts specifically on *appropriate* cognitive and emotional mind-related comments, suggesting that Korean mothers not only focus more on these internal states but are more accurate in reading them. Conversely, Korean mothers were more likely than British mothers to misinterpret their infants' cues relating to emotional and physical states such as tiredness, which might indicate Korean mothers' pursuit of mental and physical relatedness with their children. These results are in line with the findings of Keller et al. (2007), who reported that cultures differences are reflected in the contents of mothers' verbal discourse to their children. Namely, British mothers, who rear their infants in an individual society, seem more

aware of their infants' individual desires when they take a mentalising stance towards their infants, while Korean mothers who rear their infants in a collectivist society, seem to try to tease out their infants' cognitive, emotional or physical states amid the parenting goal of achieving the sense of oneness.

We also found cultural differences in the PRFQ: Korean mothers showed higher scores on the *Certainty about mental states* subscale than their British counterparts. This is in line with the Korean parenting context that emphasises strong emotional relatedness between mother and child (Kim & Choi, 1994; Kim et al., 2005). Although findings need to be interpreted with caution due to the low reliability of the *Pre-mentalising modes* subscale in the Korean sample, Korean mothers attained higher scores on this aspect of PRF compared with their British counterparts. However, the levels of the subscale of *Interest and curiosity in mental states* were not significantly different between the two cultures, indicating mothers' genuine interest in their infants' minds does not vary as a function of cultural context.

In summary, cultural differences emerged in the content of mothers' mind-related comments when interacting with their infants and in their PRFQ scores in relation to *Certainty about mental states* and *Pre-mentalising modes* (i.e., the PRFQ). These differences in mentalisation thus seem to support our suggestion that the cultural differences in parental mentalisation might be associated with parental cultural belief systems (i.e., parental ethnotheories).

5.1.3 Cultural Differences in Other Variables

In Study 2, apart from parental mentalisation, cultural differences in other variables were additionally investigated. Regarding empathy, British mothers showed higher scores on reported cognitive empathy than Korean mothers, while the scores on reported affective empathy were similar between the two countries. On the other hand, in terms of parenting, Korean mothers showed higher numbers of intrusive behaviours towards their infants, and

reported less warm, less autonomy-supportive, and more rejecting parenting styles compared to their British counterparts. Indeed, previous studies have also demonstrated that Asian mothers showed more controlling, and less autonomy-supporting parenting compared with Western mothers (e.g., Chao & Tseng, 2002; Sovet & Metz, 2014). However, there were no significant differences on the structured, chaotic, and coercive parenting style subscales across cultures, indicating that the strict rules or physical punishment that are one of the traits of Korean traditional parenting are different from harsh or unstructured parenting.

Maternal psychological well-being was also one of the maternal factors showing cultural differences. Korean mothers reported higher levels of parenting stress and depression compared to their British counterparts. This may be a result of the Korean conservative family system and unequal gender roles, with bringing up children being mainly the responsibility of mothers (Choi & Harwood, 2004; Song, 2019; Yoo, 2020). Indeed, Korean mothers complained about low parenting support from their husbands during the mind-mindedness interview in the current study. Interestingly, British mothers showed higher scores on the anxiety subscale than Korean mothers. This suggests that the specific types of maternal psychological distress experienced during the early postpartum period differ between British and Korean cultures.

Lastly, there were no cultural differences between British and Korean infants' temperament using both observed (i.e., car-seat task) and perceived (i.e., mothers' self-report) measures.

5.1.4 Relations between Parental Mentalisation and culture, maternal, and infant variables in the UK and Korea

Study 3 explored correlations between parental mentalisation and maternal variables in the UK and Korea, and predictors of the individual indices of parental mentalisation were explored using regression. We found culturally-different correlations between maternal mind-

mindfulness and mothers' reported cognitive empathy. Korean mothers' reported cognitive empathy skills were positively related to appropriate and non-attuned mind-related comments, while British mothers' reported cognitive empathy skills were not associated with either index of maternal mind-mindedness. This suggests that Korean mothers may generalise their reported cognitive empathy skills to their mentalising interactions with their infants. Moreover, we found that only Korean mothers showed a negative relation between reported cognitive empathy and the *Pre-mentalising modes* subscale, and a positive relation between reported cognitive empathy and the *Certainty about mental states* subscale of the PRFQ. Furthermore, the regression analyses showed that the interaction term between Korean nationality and higher scores on reported cognitive empathy predicted mothers' higher certainty about their infants' mental states. These findings support our suggestion that Korean mothers may generalise their perceived cognitive empathic skills to parental mentalising, indicating a top-down approach to representing their infants' mental experiences.

Nevertheless, in both countries, mothers' reported cognitive empathy was positively associated with the *Interest and curiosity about mental states* subscale. This may mean that, regardless of cultural background, mothers who perceived themselves to be good at understanding others' perspectives, were likely to report high levels of genuine interest and curiosity in their infants' inner experiences. However, as the regression analyses showed that reported cognitive empathy did not predict independent variance in any aspect of parental mentalisation, the relations between empathy and parental mentalisation do not appear to be robust.

Regarding the quality of parenting, self-reported parenting style predicted independent variance in all three subscales of the PRFQ, with perceptions of more optimal parenting predicting lower scores for the *Pre-mentalising modes* subscale and higher scores for the *Certainty about mental states* and *Interest and curiosity in mental states* subscales.

These findings are consistent with those of previous studies (Luyten, Mayes et al., 2017; Rostad & Whitaker, 2016), and provide consistent evidence that mothers' perception of themselves in the parenting role is a crucial variable in their self-reported reflection on their infants' minds across different cultural contexts.

In contrast, none of the PRFQ subscales related to observed maternal intrusiveness. This indicates that the quality of actual parenting behaviours was not associated with mothers' reflective functioning skills in relation to their infants' inner states. Therefore, the associations between the PRFQ subscales and reported parenting style discussed above may have arisen due to the self-report nature of the PRF and parenting style measures, rather than indicating genuine links between PRF and parenting style.

Turning to relations with mind-mindedness, the regression analyses showed that observed maternal intrusiveness did not predict variance in either index of mind-mindedness. While reported parenting style was unrelated to non-attuned mind-related comments, the regression analysis did, however, show that self-reported less optimal parenting predicted higher scores for appropriate mind-related comments. This finding is somewhat counterintuitive, given previous findings that appropriate mind-related comments are positively correlated with caregiver behavioural sensitivity (e.g., Meins et al., 2001, 2012). One explanation for this finding may be the items of the PSCQ, which was used to assess self-reported parenting. Some items indicating less optimal aspects of parenting, such as rejection, are framed in terms of having to 'work out' what the child is thinking or feeling (e.g., "I don't understand my child very well") or the caregiver feeling that they do not meet perfect standards of parenting (e.g., "My child needs more than I have time to give him/her", "Sometimes I feel like I can't be there for my child when s/he needs me"). These items appear to be consistent with caregivers being very conscious of the need to read their children's cues, and this may explain the observed negative trend for less optimal self-

reported parenting to predict appropriate mind-related comments. Future research should explore the association between self-reported parenting and mind-mindedness using different measures in order to investigate this relation further.

In terms of maternal psychological well-being, the regression analyses showed that self-reported internalising symptoms and parenting distress did not predict variance in any of the PRFQ subscales. Mothers' psychological well-being was similarly unrelated to appropriate mind-related comments, but both internalising symptoms and parenting distress predicted non-attuned mind-related comments. Higher reported levels of distress predicted lower scores for non-attuned comments, whereas higher reported internalising symptoms predicted higher non-attuned scores. As discussed in Chapter 4, the counterintuitive negative association between parenting distress and non-attuned comments may be due to higher levels of distress being associated with less awareness of subtle non-verbal infant cues that are more likely to be misinterpreted, and thus result in non-attuned comments.

Replicating previous findings (Larkin, Oostenbroek et al., 2019; Meins et al., 2011) mind-mindedness was found to be unrelated to infant temperament, with the findings reported here extending these null findings to a different cultural context. Observed temperament was similarly unrelated to the PRFQ subscales, but mothers' reported difficult temperament was positively related to *Pre-mentalising modes* scores and negatively related to *Certainty about mental states* scores in both cultures. That said, the regression analyses showed that neither observed nor reported infant temperament predicted independent variance in any of the PRFQ subscales.

Lastly, this thesis explored relations between the two parental mentalisation constructs. Across cultures, there were no relations between maternal mind-mindedness and the subscales of the PRFQ, and the regression analyses showed that the maternal mind-mindedness indices did not predict variance in any of subscales of the PRFQ, and nor did

PRF predict either index of mind-mindedness. This finding is in line with recent studies suggesting that maternal mind-mindedness and PRF are distinct facets of parental mentalisation (Dollberg, 2021; Krink & Ramsauer, 2021).

5.2 Study Limitations

The low reliability of the *Pre-mentalising modes* subscale of the K-PRFQ limits the extent to which conclusions can be drawn on cultural differences in this aspect of parental mentalisation. That said, the factor analytic data on the Korean *Pre-mentalising modes* subscale may still reflect important aspects of Korean mothers' parental mentalisation. For instance, given that the items of the additional fourth factor of the K-PRFQ mainly consisted of items on the *Pre-mentalising modes* subscale that indicated a sense of failing to know their children's mental states (e.g., "The only time that I'm certain my child loves me is when s/he is smiling at me"), higher scores on the *Pre-mentalising modes* subscale might reflect Korean mothers' sensitivity to the cultural need to master their knowledge about their children's psychological states (Triandis, 2001). In Korean culture, pre-mentalising modes may thus not indicate mothers' tendency to interpret their infants' internal states in a distorted way. Further research is therefore needed to investigate traits associated with the non-mentalising stance in Korean society. Such research would also benefit from including other cultural groups, from Asian and Western societies.

Using a self-report questionnaire to assess mothers' parenting style (the PSCQ; Skinner et al., 2005) may not have captured subtle cultural differences in parenting. Korean parents prefer indirect expressions of affection (e.g., cooking a child's favourite dishes, working hard) (Choi et al., 2013) rather than explicit shows of affection more typical in Western parent–children relationships (Choi & Kim, 1999). Although there is a validated version of the PSCQ, it may not accurately capture Korean caregivers' warmth in parenting their children. For example, the items of the "warm parenting style" subscale of the PSCQ

mainly ask about parents' explicit expression of their parental love (e.g., I do special things with my child), which might not encompass parental love and affection in a culturally appropriate way for Korean parents. This may help explain why Korean mothers scored lower than their British counterparts for warmth, contrary to previous research that has suggested that Korean parenting is characterised by high levels of control combined with high levels of warmth (Choi et al., 2013). It would therefore be interesting to explore how more culturally-sensitive assessments of parental warmth relate to parental mentalisation and parenting practices across cultures.

Assessing PRF using the PRFQ may also be a limitation. The PRFQ was developed relatively recently compared with the interview-based assessments of PRF, and the literature indicating how the PRFQ subscales relate to important aspects of caregiving and child development is not yet well-established. Moreover, more work is required to validate the PRFQ against the well-established measure of PRF as obtained from interviews such as the PDI. While the latter can be regarded as the gold standard means of assessing PRF, the labour-intensive nature of this assessment, together with the time-consuming and expensive training and reliability procedures that are required to be able to code PRF in this way, meant that using interviews was not feasible within the scope of a PhD programme of research.

Lastly, as the data in the thesis were collected concurrently, it is difficult to draw strong conclusions about the directions of effect between parental mentalisation and maternal factors. Furthermore, as most of the participants in the current study were from educated, middle-class backgrounds, it cannot be assumed that our findings will generalise to other populations. A longitudinal design involving families from more diverse backgrounds would be able to provide a more comprehensive picture of how various aspects of parental mentalisation evolve and develop in families that vary according to both cultural and socio-economic context.

5.3 Theoretical Implications

The studies reported in this thesis expanded the findings from the extant literature on cultural differences in parental mentalisation. In contrast to previous findings indicating that mothers in Asian cultures are less mind-minded than their Western counterparts (Dai et al., 2019; Fujita & Hughes, 2020; Hughes et al., 2018), we found no differences between Korean and British mothers in their use of either appropriate or non-attuned mind-related comments. Rather, cultural differences in mind-mindedness emerged with regard to the types of internal state that mothers commented on. Our findings thus suggest that different cultural contexts might result in a different focus of attention for mothers' interpretations of their infants' mental experiences (e.g., infants' individual preferences in the UK vs. cognitive and emotional processes in Korea). This is in line with Lillard's (1998) suggestion that the specific features of mental states that are ascribed—rather than the overall propensity to talk about mental states of others—differ depending on how the particular culture comprehends the concept of mind and its development.

In Korea, “*maum*”, which is commonly translated as mind, has a strongly affective connotation compared to the Western concept of mind (Choi & Han, 2008). The Korean conception of mind thus represents affective and cognitive components as equally important elements of the mind. Reading the unspoken *maum* of significant others and demonstrating recognition of each other's *maum* through certain behaviours (e.g., gift, dining, visiting) are crucial social skills to build close interpersonal relationships in Korea (Choi & Han, 2008; Choi & Kim, 2006). Moreover, given that Korean parental ethnotheories highlight building strong relatedness (i.e., the sense of oneness) with their children under the collectivist society (Kim et al., 2005; Park & Kim, 2006), it would be natural that Korean parents are expected to master their knowledge of their children's *maum* without their children's specific verbal cues (Choi & Kim, 2006).

These cultural differences in the conception of mind may explain our finding that Korean mothers were more accurate than their British counterparts in reading their infants' cognitions and emotions. The finding that, compared with British mothers, Korean mothers also made more non-attuned comments on emotional and physical states such as tiredness may also reflect Korean mothers' efforts to interpret their infants' behaviour in terms of its underlying physical and psychological state. This keenness to read behaviours in this way may lead to Korean mothers overinterpreting subtle cues during play. Meanwhile, British individualistic society's emphasis on independence may lead British mothers to focus on their infants' desires and preference, so as to help their infants to become aware of their individual needs and establish their unique identity. Mothers' mental representation on their infants' mental states (i.e., PRF) in Study 1 and 2 also presented cultural differences between the UK and Korea, reflecting Korean mothers' higher sense of certainty about their infants' mental states that is congruent with Korean parental ethnotheories.

Further, our results highlight the danger of assuming homogeneity in collectivistic or individualistic cultures. In fact, our findings of cultural differences were not consistent with Dai et al.'s (2019) study that reported low levels of mind-mindedness (i.e., lower proportion of appropriate mind-related comments and higher proportion of non-attuned mind-related comments) in Chinese mothers. The inconsistency could be caused by different Western counterparts (Dai et al.'s study was in Australia) or different ages of infants between the two studies. However, considering that Chinese parenting focuses on training and teaching their children how to behave (Lau & Cheng, 1987; Chao, 1994; Wang, & Supple, 2010), while Korean parenting focuses on interdependency (Chung et al., 2007; Ryu, 2007), the divergent pattern of findings might reflect different emphases in Chinese versus Korean parental ethnotheories. This is in line with Harkness and colleagues' warnings about using the concepts of individualism and collectivism as a dichotomy and deeming all collectivist or

individualist countries to have the same ideas and concepts (Harkness et al. 2000; Harkness & Super, 1996). In conclusion, although parental mentalisation appears to be universal, the details of parental mentalising processes are likely to differ according to parental ethnotheories underlying the specific cultural context.

The research in this thesis was the first to investigate cultural differences in mind-mindedness in relation to representations of close friends and partners. As was the case for overall mind-mindedness in relation to one's infant, we found no cultural differences in mind-mindedness in relation to descriptions of significant others. In contrast, when the general capacity to understand others' perspectives (i.e., cognitive empathy) was assessed, cultural differences emerged, with Korean mothers scoring lower than their British counterparts. These findings indicate that cultural differences in mentalisation between the UK and Korea may exist at the global level of engaging in general with others' emotions, but do not pertain to mothers' mentalising about people with whom they have close personal relationships. Once again, these findings are in line with the emphasis in Korean culture of accurately interpreting the *maum* of significant others. The fact that self-reported empathy did not predict mind-mindedness is also consistent with this argument.

The null findings for relations between mind-mindedness and empathy extend those in the extant literature indicating that mind-mindedness is unrelated to parents' theory of mind skills (Barreto et al., 2016; Devine & Hughes, 2019). However, given that these previous studies assessed mind-mindedness using the interview measure, the findings in this thesis are the first to indicate that interactional mind-mindedness in the first year of life does not relate to caregivers' general mentalising abilities. These findings are thus consistent with the proposal that there is a competence–performance gap between general mentalising abilities and mind-mindedness (e.g., Meins et al., 2006) and that mind-mindedness is a quality of close personal relationships rather than an individual trait (Meins et al., 2014).

The findings on relations between parental mentalisation as assessed using the PRFQ and cognitive empathy are, however, more difficult to interpret within the cultural framework for understanding mind outlined above. The regression analyses showed that the interaction between nationality and cognitive empathy predicted independent variance in scores on the *Certainty about mental states* subscale of the PRFQ, with higher scores being associated with Korean nationality and higher cognitive empathy. These culturally specific relations suggest that Korean mothers may generalise their certainty about others' thoughts and feelings to the sense of mastery of knowing about their infants' minds. However, this relation may also be explained in terms of the self-report nature of both the empathy measure and the PRFQ. Without further research that assesses these concepts using different methodologies, these results are therefore difficult to interpret.

Finally, in terms of the relation between maternal mind-mindedness and PRF, our findings show that these concepts are strikingly distinct across cultures. These null findings are in line with previous studies reporting no associations between maternal mind-mindedness and PRF (Dollberg, 2021; Krik & Ramsauer, 2021), and with theoretical proposals highlighting the differences between the constructs both in terms of conception and operationalisation (e.g., Meins, 1999, 2013; Meins et al., 2001, 2012). As explained in previous chapters, PRF is a purely representational construct that evolved from the work of Fonagy and colleagues on attachment narratives (Fonagy et al., 1991, 1998). In contrast, mind-mindedness developed from a rethinking of the concept of maternal sensitivity and is at the interface between representational and behavioural measures of parenting (e.g., Meins et al., 2012). In order to be mind-minded, the caregiver first has to represent their infant's putative internal state, and then comment on this state while interacting with the infant. Our findings thus support conceptualising parental mentalisation as a multi-dimensional

construct: maternal mind-mindedness and the different aspects of PRF tap different areas of parental mentalisation as distinctive constructs.

5.4 Directions for future research

Future research with a longitudinal design would help to refine our understanding of cultural differences in parental mentalisation and establish how focusing on infants' internal states predicts child development across cultures. There is a well-established literature indicating that mind-mindedness predicts wide-ranging positive aspects of children's development in Western cultures (see McMahon & Bernier, 2017, for a review), but such research is scarce in other cultures. Moreover, much less is known about the potential role of PRF in predicting children's development.

First, considering our findings imply that parental mentalisation seems to reflect the respective cultural model of parenting and indigenous concepts of minds, it would be intriguing to investigate whether the different social contexts underlying parental mentalisation could influence the link between parental mentalisation and the development of children's mentalising skills. The capacity to resonate with and understand others' emotions is fundamental for social relationships, and having mentalising parents is thought to facilitate the development of mentalisation in their children (Fonagy & Allison, 2013; Twmlow et al., 2005). Empirically, maternal mind-mindedness is known to predict children's mentalising ability in Western countries (Kirk et al., 2015; Laranjo et al., 2010; Lundy, 2013; Meins et al., 2002, 2013). However, little is known about the link between parental mentalisation and the development of children's mentalising skills in non-Western countries. Exceptionally, Hughes et al. (2018) found that British mothers were more likely to use mental state words when describing their children (i.e., interview-based mind-mindedness) than Hong Kong mothers, and the cultural difference in mind-mindedness explained the lower ToM performance of Hong Kong children compared to their British counterparts.

Given our finding that Korean mothers were more accurate than their British counterparts in reading their infants' cognitions and emotions, it would be interesting to investigate how these cultural differences in mind-mindedness predict children's later understanding of mind. For example, it may be that Korean children will outperform their Western peers on tasks that assess others' understanding of emotions and cognitions. This expectation is in line with the results of Vinden's (2001) study that Korean American children achieved higher scores on ToM tasks compared with American children aged 3 to 5 years.

Moreover, because of the Korean cultural emphasis on accurately interpreting the internal states of significant others, future research could explore cultural differences in children's understanding of the internal states of individuals with whom they have close relationships versus those of unknown others. Korean society expects children to develop skills to read their parents' unspoken feelings and needs, and act accordingly (Choi & Kim, 2006). In fact, Choi and Kim (2006) noted that the awareness of misreading others' minds is explicitly highlighted in the Korean cultural context, and there is even a separate Korean term, called "shimjung", referring to one's own and others' true mind, in case conflicts arise due to misreading each other's minds. These cultural factors might therefore lead to the prediction that Korean children will be advanced in their understanding of their parents' internal states. It would also be interesting to test whether cultural differences in mothers' verbal discourse about the mind influence how their children develop concepts of the self and others.

Future research could also investigate whether there is longitudinal continuity in mind-mindedness across cultures. Studies on Western families have shown that interaction-based mind-mindedness in the first year of life is associated with caregivers' mind-minded descriptions of their children in the preschool years (e.g., Meins et al., 2003). Establishing

similar continuity in a different culture would provide evidence that such stability in caregivers' attunement to their children's internal states is universal. Such longitudinal cross-cultural research could also explore whether early observation-based mind-mindedness predicts caregivers' later mind-mindedness during actual caregiver-child interaction. A new scheme for assessing mind-mindedness in the preschool years from observations of caregiver-child interaction rather than from the describe-your-child measure has been developed very recently (Meins et al., 2019). Observation-based mind-mindedness in the preschool years is operationalised in terms of the caregiver's use of (a) adaptive communication (acknowledging rather than ignoring or rejecting input from the child), (b) solicited child involvement (asking questions and making suggestions rather than directing and commanding), and (c) mental state language. Meins et al. (2019) reported that the new mind-mindedness measure is positively related both to appropriate mind-related comments in the first year of life and to parents' mind-minded descriptions of their children in the preschool years. Assessing mind-mindedness in Korean mothers using this new scheme and investigating links with the well-established assessments of mind-mindedness would be an interesting avenue for future research.

The findings reported in this thesis showed that there were no cultural differences in mothers' mind-minded descriptions of close friends and romantic partners. Given our finding that cultural differences emerged in relation to mind-mindedness with regard to infants when we looked at the content of mothers' mind-related speech, it would be interesting to investigate whether cultural differences emerge in relation to specific types of mind-minded description. For example, it may be that Korean mothers may focus more on emotional and cognitive characteristics, whereas British mothers may focus more on desires and preferences, mirroring the results found for infant-mother mind-mindedness. Alternatively,

one might predict that this focus on emotion and cognition will be specific to Korean mother–child relationships given the cultural emphasis on oneness in relation to one’s child.

Looking at cross-cultural differences in mind-mindedness in fathers is a further interesting avenue for future research. Previous studies in Western cultures have consistently reported that fathers demonstrate more non-attuned mind-related comments than mothers in the first year of life (Arnott & Meins, 2007; Colonnese, Zeegers, Majdandžić, van Steensel, & Bögels, 2019; Planalp, O’Neill, & Braungart-Rieker, 2019). Lundy (2003) also found differences in the content of mind-mindedness at 6 months between mothers and fathers. Fathers made more mind-related comments about problem solving while mothers made mind-related comments in the form of talking on the infant’s behalf. In Korean society, where the roles between father and mother are prominently different in the family structure, it would be interesting to explore how these different parental roles relate to mind-mindedness. Compared with Western societies, Korean fatherhood is more related to hierarchy in the family and less involved with child-rearing (Park & Kim, 2004). Moreover, while Korean mothers want egalitarian gender roles, Korean fathers still maintain traditional gender roles in their family (Song, 2019; Yoo, 2020). These different characterisations of the parenting role may mean that Korean fathers will be less likely than Korean mothers to pursue the sense of oneness with their children. Consequently, there may be differences in parental mentalisation between Korean fathers and mothers and between Korean and Western fathers. For example, with regard to the PRFQ scales, Korean fathers may show less interest and curiosity in their infants’ internal states, but also less certainty about their infants’ internal states. While Korean fathers would be expected to make more non-attuned mind-related comments than Korean mothers, mirroring the pattern of findings in Western parents, it may also be the case that Korean fathers will be less mind-minded than their Western counterparts.

Finally, it is critical that future cross-cultural research develops culturally appropriate and sensitive measures of parenting and parental mentalisation. While the measures of mind-mindedness appear to be culturally neutral, given that they are obtained from parents' discourse with or about their children, questionnaire measures for use in cross-cultural research should be developed from a knowledgeable viewpoint of the target cultures and cultural practices. To this end, it may not be appropriate simply to translate a questionnaire into a new language; rather, such translation should be viewed as a first step in the process of adapting a questionnaire for use in a different culture.

This issue was highlighted in the study reported in Chapter 2, which sought to validate a Korean version of the PRFQ. The *Interest and curiosity in mental states* and *Certainty about mental states* subscales appeared valid and reliable in Korean parents, but items in the *Pre-mentalising modes* subscale did not cohere into a single factor, and a five-factor solution was the best fit for the Korean data. The two new factors contained very few items, with one consisting of two items indexing uncertainty about the child's internal states ("The only time that I'm certain my child loves me is when s/he is smiling at me", "I believe there is no point in trying to guess what my child feels"), and the other consisting of the single item in the PRFQ that involves other people's perceptions of the parent ("My child cries around strangers to embarrass me"). Given the themes in Korean parenting culture that have been developed throughout this thesis—importance of oneness in mother-child relationships, the heavy expectation for mothers to have exquisite knowledge of their child and to ensure that they comply with cultural expectations of filial piety—these new factors are not unexpected and highlight useful ways in which the PRFQ could be developed in a culturally sensitive manner. For example, adding new items to assess parents' views on how broader society perceives them in the parenting role would be valuable in shedding further light on the construct of PRF in Korean culture.

It is also critical that future research does not evaluate the quality of parenting in different cultures through the lens of what is considered optimal in Western cultures. Certainty about the mental states of one's infant is considered to indicate a lack of awareness of the opacity of mental states, and is thus taken to indicate lower levels of PRF and less optimal parenting in Western cultures. However, the same does not appear to be true of cultures such as Korea. If such certainty is culturally appropriate, it may therefore be associated with positive aspects of child development. While findings like this would appear counterintuitive when interpreted with reference to Western parenting ideals, it would not from the perspective of Korean parenting ideals. Sensitive future research on different populations and cultures will therefore enrich our understanding of the parenting role and the many ways in which parenting relates to children's development.

Appendix 1: the Infant Laboratory Temperament Assessment Battery (Lab-TAB; Goldsmith & Rothbart, 1996) - Restraint in car seat task

Definitions of variables:

a) Intensity of facial anger: Peak intensity of facial anger or anger blends is noted in each epoch using AFFEX (See Appendix A for definitions) and rated on the following scale:

0= No facial region shows codable anger movement.

1= Only one facial region shows codable movement, identifying a low intensity anger, or expression is ambiguous.

2= Only 2 facial regions show codable anger movement or movement is very clear in one facial region.

3= An appearance change occurs in all 3 facial regions, or coder otherwise has impression of strong anger.

b) Intensity of facial sadness: Peak intensity of facial sadness or sadness blends is noted in each epoch using AFFEX (See Appendix 1.1) and rated on the following scale:

0= No facial region shows codable sadness movement.

1= Only one facial region shows codable movement; identifying very low or ambiguous facial sadness.

2= Only 2 facial regions show codable movement, or expression in one region is very clear.

3= An appearance change occurs in all 3 facial regions or coder otherwise has impression of strong facial sadness.

c) Presence of bodily sadness: (slight slump, drop of head, slumped shoulders, head in arms or hands).

0= No detectable sadness.

1= Detectable sadness.

d) Intensity of distress vocalizations: Peak intensity of distress vocalizations is noted in each epoch and rated on the following scale:

0= No distress.

1= Mild protest verbalization that may be difficult to identify as hedonically negative.

2= Definite protest, limited to a short (1-2 second) duration.

3= Longer protest, fussing or mild, low-intensity cry (cry has extended or rhythmic quality).

4= Definite non-muted crying.

5= Full intensity cry/scream (child is losing control).

*Note: Some vocalizations in this episode will not be anger-related and should not be coded.

e) Intensity of struggle: Peak intensity of struggling in each epoch is rated on the following scale:

0= No struggling at all. No resistant movement.

1= Low intensity struggle. Examples include 1-2 instances of pushing against the restraints, shifting, twitching, light wiggling, and low intensity kicking.

2= Medium intensity struggle. Full body movements such as 2 or more intense pushes against the car seat restraints, twisting, leaning forward, arching back or kicking.

3= Moderately high intensity struggle. Near continuous moderate intensity movements including those from '2' with higher intensity. These movements usually last more than half of the epoch.

4= High intensity struggle. Continuous movement of moderately high intensity with intervals of high intensity resistance. Struggle lasts the entire epoch.

Appendix 1.1. AFFEX facial expression definitions

| Emotion | Movements In Forehead/Brows Regions | Movements In Eyes/Nose/Cheeks Regions | Movement In Mouth/Lips/Chin Regions | Notes |
|-----------------|---|--|--|---|
| Anger | <ul style="list-style-type: none"> ✓ Inner corners are lowered and drawn together. ✓ Bulging or vertical furrows between the eyes may be visible due to this movement. | <ul style="list-style-type: none"> ✓ Eyes may look tense or squinted. ✓ Cheeks may be raised. ✓ Folds under eyes may deepen. | <ul style="list-style-type: none"> ✓ Mouth looks tense, wide open and squarish. ✓ Alternatively, mouth appears closed with lips pressed together. | <ul style="list-style-type: none"> ✓ Don't confuse brow movements with those in interest. ✓ See illusion of sadness note. |
| Fear | <ul style="list-style-type: none"> ✓ Entire brow should be raised and drawn together. ✓ Brows may also look straighter across than usual. ✓ Faint horizontal furrows may be present in forehead. | <ul style="list-style-type: none"> ✓ Upper eyelids raise making the eyes appear wider. ✓ Eyes have tense appearance. | <ul style="list-style-type: none"> ✓ Lip corners are drawn straight back. ✓ Mouth is usually less than wide open. | <ul style="list-style-type: none"> ✓ Don't confuse interest brows for fear. ✓ See illusion of sadness note. |
| Sadness | <ul style="list-style-type: none"> ✓ Inner corners move upward and together resulting in bulging/furrows in middle of forehead. | <ul style="list-style-type: none"> ✓ Cheeks may look lower than usual or have a droopy appearance. ✓ Alternatively, cheeks may be raised and eyes squinted. | <ul style="list-style-type: none"> ✓ Lip corners should be drawn down. ✓ Bottom lip may be pushed up and out by the chin which may be tense or wrinkled. | |
| Joy | <ul style="list-style-type: none"> ✓ Most likely remain neutral. | <ul style="list-style-type: none"> ✓ Cheeks raise ✓ Furrow below the eyes deepens. ✓ "Crows feet" will extend from the outer corners of the eye. ✓ Eyes may appear squinted. | <ul style="list-style-type: none"> ✓ Lip corners are raised. ✓ Nasolabial fold deepens. | |
| Interest | <ul style="list-style-type: none"> ✓ Entire brow is raised. ✓ Alternatively, brows are drawn together and slightly lowered. | <ul style="list-style-type: none"> ✓ Eyes look wider than usual due to raised brows. ✓ Alternatively, eyes may be squinted and cheeks raised. | <ul style="list-style-type: none"> ✓ Mouth may open. | <ul style="list-style-type: none"> ✓ When coding infants, do not code "mouth opens" as interest unless it is in response to a stimulus |

Note on the potential for an "illusion of sadness"

There are several occasions when an illusion of sadness may appear. Sadness should not be coded in these situations:

- ✓ The first situation is when brows are drawn tightly down and together. In this case, it is common for the inner most corners of the brows to bulge up in the middle falsely giving the appearance of sadness. This is most likely due to the large amount of fat in the infant face.
- ✓ The second situation is when the outer corners of the brows are lowered falsely giving the appearance that the inner corners have raised. In this case, be sure to observe the actual movement of the brows. In sadness, the inner corners need to be raised and drawn together. Simply observing a still frame of this expression is not sufficient to distinguish between true sadness and the illusion of sadness.
- ✓ Finally, an illusion of sadness may occur when children inhale deeply during a bout of crying. In this situation, the lip corners will be drawn down by the inhaling action giving the impression of sadness.

These descriptions were adapted from C.E. Izard's *The Maximally Discriminative Facial Movement Coding System*.

Appendix 2. The Questionnaire of Cognitive and Affective Empathy (QCAE; Reniers et al., 2011)

| People differ in the way they feel in different situations. Below you are presented with a number of characteristics that may or may not apply to you. Read each characteristic and indicate how much you agree or disagree with the item by ticking the appropriate box. Answer quickly and honestly. | | Strongly agree | Slightly agree | Slightly disagree | Strongly disagree |
|--|---|----------------|----------------|-------------------|-------------------|
| 1. | I sometimes find it difficult to see things from the 'other guy's' point of view. | 1 | 2 | 3 | 4 |
| 2. | I am usually objective when I watch a film or play, and I don't often get completely caught up in it. | 1 | 2 | 3 | 4 |
| 3. | I try to look at everybody's side of a disagreement before I make a decision. | 4 | 3 | 2 | 1 |
| 4. | I sometimes try to understand my friends better by imagining how things look from their perspective. | 4 | 3 | 2 | 1 |
| 5. | When I am upset at someone, I usually try to 'put myself in his shoes' for a while. | 4 | 3 | 2 | 1 |
| 6. | Before criticising somebody, I try to imagine how I would feel if I was in their place. | 4 | 3 | 2 | 1 |
| 7. | I often get emotionally involved with my friends' problems. | 4 | 3 | 2 | 1 |
| 8. | I am inclined to get nervous when others around me seem to be nervous. | 4 | 3 | 2 | 1 |
| 9. | People I am with have a strong influence on my mood. | 4 | 3 | 2 | 1 |
| 10. | It affects me very much when one of my friends seems upset. | 4 | 3 | 2 | 1 |
| 11. | I often get deeply involved with the feelings of a character in a film, play or novel. | 4 | 3 | 2 | 1 |
| 12. | I get very upset when I see someone cry. | 4 | 3 | 2 | 1 |
| 13. | I am happy when I am with a cheerful group and sad when the others are glum. | 4 | 3 | 2 | 1 |
| 14. | It worries me when others are worrying and panicky. | 4 | 3 | 2 | 1 |
| 15. | I can easily tell if someone else wants to enter a conversation. | 4 | 3 | 2 | 1 |
| 16. | I can pick up quickly if someone says one thing but means another. | 4 | 3 | 2 | 1 |
| 17. | It is hard for me to see why some things upset people so much. | 1 | 2 | 3 | 4 |
| 18. | I find it easy to put myself in somebody else's shoes. | 4 | 3 | 2 | 1 |
| 19. | I am good at predicting how someone will feel. | 4 | 3 | 2 | 1 |
| 20. | I am quick to spot when someone in a group is feeling awkward or uncomfortable. | 4 | 3 | 2 | 1 |
| 21. | Other people tell me I am good at understanding how they are feeling and what they are thinking. | 4 | 3 | 2 | 1 |
| 22. | I can easily tell if someone else is interested or bored with what I am saying. | 4 | 3 | 2 | 1 |
| 23. | Friends talk to me about their problems as they say that I am very understanding. | 4 | 3 | 2 | 1 |
| 24. | I can sense if I am intruding, even if the other person does not tell me. | 4 | 3 | 2 | 1 |
| 25. | I can easily work out what another person might want to talk about. | 4 | 3 | 2 | 1 |

| | | Strongly agree | Slightly agree | Slightly disagree | Strongly disagree |
|-----|--|----------------|----------------|-------------------|-------------------|
| 26. | I can tell if someone is masking their true emotion. | 4 | 3 | 2 | 1 |
| 27. | I am good at predicting what someone will do. | 4 | 3 | 2 | 1 |
| 28. | I can usually appreciate the other person's viewpoint, even if I do not agree with it. | 4 | 3 | 2 | 1 |
| 29. | I usually stay emotionally detached when watching a film. | 1 | 2 | 3 | 4 |
| 30. | I always try to consider the other fellow's feelings before I do something. | 4 | 3 | 2 | 1 |
| 31. | Before I do something I try to consider how my friends will react to it. | 4 | 3 | 2 | 1 |

Appendix 3. Korean parents completed the Korean Questionnaire of Cognitive and Affective Empathy (K-QCAE; Kang, 2013)

다음 문항들을 읽고 각 문항이 자신에 대해 잘 묘사하고 있다고 여겨지는 정도에 따라 응답해주시기 바랍니다.

| | 전혀 그렇지 않다 | 그렇지 않다 | 그렇다 | 매우 그렇다 |
|--|-----------|--------|-----|--------|
| 1. 나는 때때로 상대방의 관점으로 보는 데 어려움을 느낀다 | | | | |
| 2. 나는 영화나 연극을 볼 때 대개 객관적이고, 거기에 완전히 사로잡히는 경우는 거의 없다. | | | | |
| 3. 나는 어떤 결정을 내리기 전에 다른 사람들의 반대 입장도 살펴보고 노력한다. | | | | |
| 4. 나는 때때로 친구들의 입장에서 보면 어떨지를 상상해 봄으로써 그들을 더 잘 이해하려고 노력한다. | | | | |
| 5. 누군가에게 화가 났을 때, 나는 대개 잠시 동안 그 사람의 입장이 되어 보려고 노력한다. | | | | |
| 6. 나는 누군가를 비난하기 전에 내가 그 사람의 입장이었다면 어떤 느낌일지 상상해 보려고 노력한다. | | | | |
| 7. 나는 자주 내 친구들의 문제에 감정적으로 개입하게 된다. | | | | |
| 8. 나는 주변에 있는 사람들이 불안해 하면 같이 불안해지곤 한다. | | | | |
| 9. 나는 같이 있는 사람들의 기분에 강한 영향을 받는다. | | | | |
| 10. 나는 친구들 중 한 명이 속상해보이면 아주 많이 영향을 받는다. | | | | |
| 11. 나는 자주 영화나 연극, 소설 속 등장인물의 감정에 깊이 이입하곤 한다. | | | | |
| 12. 나는 누군가가 우는 것을 보면 매우 속상하다. | | | | |
| 13. 나는 쾌활한 사람들과 함께 있을 때면 행복하고, 침울한 사람들과 함께 있을 때면 슬프다. | | | | |
| 14. 다른 사람들이 전전공공하는 모습을 보면 걱정이 된다. | | | | |

| | 전혀 그렇지 않다 | 그렇지 않다 | 그렇다 | 매우 그렇다 |
|--|--------------|--------|-----|--------|
| 15. 나는 다른 사람이 대화에 참여하고 싶어할 때 그것을 쉽게 알 수 있다. | | | | |
| 16. 나는 상대방이 말하는 것이 실제로 뜻하는 것과 다를 때 재빨리 알아챌 수 있다. | | | | |
| 17. 나는 어째서 어떤 것들은 사람들을 그렇게 속상하게 만드는 지 이해하기 어렵다. | | | | |
| 18. 나는 다른 누군가의 입장이 되어보는 것이 쉽다. | | | | |
| 19. 나는 다른 사람이 어떻게 느낄 지 잘 예측한다. | | | | |
| 20. 나는 집단의 어떤 사람이 어색해하거나 불편해 할 때 금방 알아챌 수 있다. | | | | |
| 21. 사람들은 내가 그들이 어떻게 느끼고 무엇을 생각하는 지 잘 이해한다고 말한다. | | | | |
| 22. 나는 다른 사람이 내가 말하고 있는 것을 재미있어하는 지 지루해하는 지 쉽게 알아챌 수 있다. | | | | |
| 23. 친구들은 내가 이해심이 많다고 여겨 자신들의 문제를 이야기한다. | | | | |
| 24. 나는 누군가에게 방해가 될 때, 다른 사람이 말해 주지 않아도 그것을 느낄 수 있다. | | | | |
| 25. 나는 다른 사람이 무엇을 말하고자 하는 지 쉽게 파악할 수 있다. | | | | |
| 26. 나는 누군가가 자신의 진짜 감정을 숨길 때 그것을 알아차릴 수 있다. | | | | |
| 27. 나는 다른 사람이 무엇을 할 지 잘 예측한다. | | | | |
| 28. 나는 비록 내가 거기 동의하지 않더라도 다른 사람의 견해를 인정할 수 있다. | | | | |
| 29. 나는 영화를 볼 때 대개 별다른 감정을 느끼지 않는다. | | | | |
| 30. 나는 항상 무언가를 하기 전에 동료들이 어떻게 느낄지 생각해 보려고 노력한다. | | | | |
| 31. 어떤 일을 하기 전에, 나는 내 친구들이 어떤 반응을 보일 지 생각해 보려고 노력한다. | | | | |

Appendix 4. The Revised Parents as Social Context Questionnaire (R-PSCQ; Egeli et al., 2015; Skinner et al., 2005)

Response scale for all items is:

| | | | |
|--------------------|------------------|-----------------|---------------|
| A) Not at all true | B) Not very true | C) Sort of true | D) Very true |
| (scored as 1) | (scored as 2) | (scored as 3) | (scored as 4) |

Warmth

1. I know a lot about what goes on for my child.
2. I really know how my child feels about things.
3. I do special things with my child.
4. I set aside time to talk to my child about what is important to him/her.
5. I let my child know I love him/her.

Rejection

6. I don't understand my child very well.
7. Sometimes my child is hard to like.
8. At times, the demands that my child makes feel like a burden.
9. My child needs more than I have time to give him/her.
10. Sometimes I feel like I can't be there for my child when he/she needs me.

Structure

11. I make it clear what will happen if my child does not follow our rules.
12. I make it clear to my child what I expect from him/her.
13. I expect my child to follow our family rules.
14. When I tell my child I'll do something, I do it.
15. If my child has a problem, I help him/her figure out what to do about it.

Chaos

16. I let my child get away with things I really shouldn't allow.
17. When my child gets in trouble, my reaction is not very predictable.
18. My child doesn't seem to know what I expect from him/her.
19. I change the rules a lot at home.
20. I can get mad at my child with no warning.

Autonomy Support

21. I encourage my child to express his/her feelings even when they're hard to hear.
22. I encourage my child to express his/her opinions even when I don't agree with them.

23. I trust my child.
24. I encourage my child to be true to her/himself.
25. I expect my child to say what he/she really thinks.

Coercion

26. My child fights me at every turn.
27. To get my child to do something, I have to yell at him/her.
28. I can't afford to let my child decide too many things on his or her own.
29. I sometimes feel that I have to push my child to do things.
30. I find getting into power struggles with my child.

Appendix 5. Korean version of the PSCQ (Egeli et al., 2015; Jeong & Shin, 2011; Skinner et al., 2005)

다음 질문은 어머니가 평소 자녀에게 어떻게 행동하시는 지에 관한 내용입니다. 최근 어머니께서 일상생활에 실제로 자녀에게 해주시는 행동과 가장 가까운 것을 하나만 골라서 표시해주시기 바랍니다. 어떤 질문들은 자녀의 현재 연령에 적합하지 않을 수 있으므로, 이때는 자녀가 성장했을 때를 상상하여 대답해주시기 바랍니다.

| | 전혀 그렇지 않다 | 약간 그렇지 않다 | 약간 그렇다 | 매우 그렇다 |
|--|--------------|--------------|--------|--------|
| 1. 나는 내 아이의 삶에 어떤 일이 일어나고 있는지 잘 알고 있다 | | | | |
| 2. 나는 벌어지는 일에 대해 내 아이가 어떻게 느끼는지 잘 알고 있다 | | | | |
| 3. 나는 내 아이와 특별한 것들을 한다 | | | | |
| 4. 나는 시간을 내서 내 아이와 중요하다고 여기는 것에 대해 대화를 나눈다 | | | | |
| 5. 나는 내 아이가 나의 사랑을 느끼도록 한다 | | | | |
| 6. 나는 내 아이를 잘 이해하지 못한다 | | | | |
| 7. 나는 종종 내 아이를 좋아하기가 힘들다 | | | | |
| 8. 이따끔 나는 내 아이의 요구가 부담스럽다 | | | | |
| 9. 내 아이는 내가 줄 수 있는 이상의 시간을 필요로 한다 | | | | |
| 10. 때때로 나는 내 아이가 나를 필요로 할 때 그곳에 함께 할수 없을 거라고 생각한다 | | | | |
| 11. 나는 부모의 규칙을 따르지 않으면 무슨 일이 일어날 지에 대해 아이에게 분명히 한다 | | | | |
| 12. 나는 내 아이에게 내가 무엇을 기대하는 지 분명히 한다 | | | | |
| 13. 나는 내 아이가 가족의 규칙을 잘 따를 것이라고 기대한다 | | | | |

| | 전혀 그렇지 않다 | 약간 그렇지 않다 | 약간 그렇다 | 매우 그렇다 |
|---|--------------|--------------|--------|--------|
| 14. 내 아이에게 무엇을 할 것이라고 말하면, 나는 그대로 한다. | | | | |
| 15. 내 아이에게 문제가 생기면, 나는 아이 스스로 해결 방법을 찾도록 도와준다. | | | | |
| 16. 나는 내가 허락해서는 안되는 것도 내 아이가 하도록 내버려 둔다. | | | | |
| 17. 내 아이에게 문제가 생겼을 때 내 반응은 정말 종잡을 수 없다 | | | | |
| 18. 내 아이는 내가 무엇을 기대하는 지 잘 모르는 것 같다 | | | | |
| 19. 나는 집안에서 규칙을 자주 바꾼다 | | | | |
| 20. 나는 경고 없이 내 아이에게 화를 낼 수 있다 | | | | |
| 21. 나는 내 아이의 감정을 듣기 힘들 때조차도, 아이에게 자신의 감정을 표현하도록 격려한다 | | | | |
| 22. 나는 내 아이의 의견에 동의하지 않을 때조차도, 아이에게 자신의 의견을 표현하도록 격려한다 | | | | |
| 23. 나는 내 아이를 믿는다 | | | | |
| 24. 나는 내 아이가 어떤 상황에서도 스스로에게 솔직할 수 있도록 격려한다 (예: 생각이나 감정을 표현하도록 격려한다) | | | | |
| 25. 나는 내 아이가 나에게 진짜 자기 생각을 말할 것이라고 기대한다 | | | | |
| 26. 내 아이는 매번 나와 싸운다 | | | | |
| 27. 내 아이에게 뭔가 하게 하려면, 나는 아이에게 소리를 질러야 한다 | | | | |
| 28. 나는 내 아이가 많은 것을 스스로 결정하도록 내버려 둘 여유가 없다 | | | | |
| 29. 나는 때때로 아이에게 뭔가를 하도록 독촉해야 한다고 느낀다 | | | | |
| 30. 나는 내 아이와 힘겨루기를 하고 있는 나 자신을 보곤 한다 | | | | |

Note. Adapted from an earlier version of Korean Parents as Social Context Questionnaire (; Jeong & Shin, 2011).

Appendix 6. the Parenting Stress Index-Short Form (PSI-SF; Abidin, 1990)

The questions below ask you to mark an answer which best describes your feelings. While you may not find an answer which exactly states your feelings, please mark the answer which comes closest to describing how you feel. Your First Reaction to each question should be your answer. Please mark the degree to which you agree or disagree with the following statements by filling in the number which best matches how you feel. If you are not sure, please fill in "Not Sure" .

Q1. I often have the feeling that I cannot handle things very well.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q2. I find myself giving up more of my life to meet my child's needs than I ever expected.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q3. I feel trapped by my responsibilities as a parent.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q4. Since having my child, I have been unable to try new and different things.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q5. Since having my child, I feel that I am almost never able to do things that I like to do.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q6. I am unhappy with the last purchase of clothing I made for myself.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q7. There are quite a few things that bother me about my life.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q8. Having a child has caused more problems that I expected in my relationship whit my spouse(male/female friend)

- Strongly agree

- Agree
- Not sure
- Disagree
- Strongly disagree

Q9. I feel alone and without friends.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q10. When I go to a party I usually expect not to enjoy myself.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q11. I am not as interested in people as I used to be.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q12. I don't enjoy things as I used to.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q13. My child rarely does things for me that make me feel good.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q14. Most times I feel that my child likes me and wants to be close to me.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q15. My child smiles at me much less than I expected.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q16. When I do things for my child, I get the feeling that my efforts are not appreciated very much.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q17. When playing, my child doesn't often giggle or laugh.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q18. My child doesn't seem to learn as much as most children.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q19. My child doesn't seem to smile as much as most children.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q20. My child is not able to do as much as I expected.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q21. It takes a long time and it is really hard for my child to get used to new things.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q22. I feel that I am :

- A very good parent
- A better than average parent
- An average parent
- A person who has some trouble being a parent
- Not very good at being a parent

Q23. I expected to have closer and warmer feeling for my child than I do and this bothers me.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q24. Sometimes my child does things that bother me just to be mean.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q25. My child seems to cry more often than most children.

- Strongly agree
- Agree

- Not sure
- Disagree
- Strongly disagree

Q26. My child generally wakes up in a bad mood.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q27. I feel that my child is very moody and easily upset.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q28. My child does a few things that bother me a great deal.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q29. My child reacts very strongly when something happens that my child doesn't like.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q30. My child gets upset easily over the smallest thing.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q31. My child's sleeping and eating schedule was much harder to establish than I expected.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

Q32. I have found that getting my child to do something is:

- Much harder than I expected
- Somewhat harder than I expected
- About as hard as I expected
- Somewhat harder than I expected
- Much easier than I expected

Q33. Think carefully and count the number of things which your child does that bothers you. For example: refuse to listen, cries, interrupts, fights, whines, etc. Please fill in the number that includes the number of things you counted:

- 1-3
- 4-5
- 6-7
- 8-9

- o 10+

Q34. There are some things my child does that really bother me a lot.

- o Strongly agree
- o Agree
- o Not sure
- o Disagree
- o Strongly disagree

Q35. My child turned out to be more of a problem than I expected.

- o Strongly agree
- o Agree
- o Not sure
- o Disagree
- o Strongly disagree

Q 36. My child makes more demands on me than most children.

- o Strongly agree
- o Agree
- o Not sure
- o Disagree
- o Strongly disagree

Appendix 7. the Korean Parenting Stress Index-Short Form (K-PSI-SF; Lee et al., 2008)

다음의 문항들을 답할 때, 실험에 참여하는 유아를 생각해주시기 바랍니다. 문항을 읽고 내가 느끼는 정도와 가장 일치하는 것을 골라주시고, 느낌을 정확히 표현해 주는 답이 없을 경우에는 가장 가깝다고 생각되는 것을 골라주시면 됩니다.

어떤 질문들은 자녀의 현재 연령에 적합하지 않을 수 있으므로, 이때는 자녀가 성장했을 때를 상상하여 대답해주시기 바랍니다.

1. 나는 가끔 어떤 일들을 잘 다룰 수 없다고 느낀다.
 - 전혀 그렇지 않다
 - 그렇지 않다
 - 잘 모르겠다.
 - 그렇다
 - 매우 그렇다
2. 나는 예상했던 것보다 아이의 요구에 맞추기 위해 내 생활의 많은 부분을 포기하고 있다고 느낀다.
 - 전혀 그렇지 않다
 - 그렇지 않다
 - 잘 모르겠다.
 - 그렇다
 - 매우 그렇다
3. 나는 부모로서의 책임감에 사로잡혀 있는 것 같다.
 - 전혀 그렇지 않다
 - 그렇지 않다
 - 잘 모르겠다.
 - 그렇다
 - 매우 그렇다
4. 이 아이가 생긴 이후로 나는 새롭고 특별한 일을 할 수 없었다.
 - 전혀 그렇지 않다
 - 그렇지 않다
 - 잘 모르겠다.
 - 그렇다
 - 매우 그렇다
5. 아이가 생긴 이후로 내가 하고 싶은 일을 거의 할 수 없다고 느낀다.
 - 전혀 그렇지 않다
 - 그렇지 않다
 - 잘 모르겠다.
 - 그렇다
 - 매우 그렇다
6. 최근에 내가 구입한 옷 때문에 기분이 짹짹하다.
 - 전혀 그렇지 않다
 - 그렇지 않다
 - 잘 모르겠다.
 - 그렇다
 - 매우 그렇다
7. 내 생활에는 나를 괴롭히는 일들이 꽤 있다.
 - 전혀 그렇지 않다
 - 그렇지 않다

- o 잘 모르겠다.
 - o 그렇다
 - o 매우 그렇다
8. 아이가 있다는 사실이 생각보다 배우자와의 관계에 많은 문제를 야기시킨다.
- o 전혀 그렇지 않다
 - o 그렇지 않다
 - o 잘 모르겠다.
 - o 그렇다
 - o 매우 그렇다
9. 나는 혼자이고 친구도 없다는 느낌이 든다.
- o 전혀 그렇지 않다
 - o 그렇지 않다
 - o 잘 모르겠다.
 - o 그렇다
 - o 매우 그렇다
10. 모임에 갈 때, 나는 즐거울 것이라고 기대하지 않는다.
- o 전혀 그렇지 않다
 - o 그렇지 않다
 - o 잘 모르겠다.
 - o 그렇다
 - o 매우 그렇다
11. 예전만큼 사람들에게 대해 관심이 없다.
- o 전혀 그렇지 않다
 - o 그렇지 않다
 - o 잘 모르겠다.
 - o 그렇다
 - o 매우 그렇다
12. 예전만큼 일을 즐기지 않는다.
- o 전혀 그렇지 않다
 - o 그렇지 않다
 - o 잘 모르겠다.
 - o 그렇다
 - o 매우 그렇다
13. 우리 아이는 내가 기뻐할 만한 일을 거의 하지 않는다.
- o 전혀 그렇지 않다
 - o 그렇지 않다
 - o 잘 모르겠다.
 - o 그렇다
 - o 매우 그렇다
14. 대체로 우리 아이는 나를 좋아하지 않고 나에게 가까이 오려하지 않는다는 느낌이 든다.
- o 전혀 그렇지 않다
 - o 그렇지 않다
 - o 잘 모르겠다.
 - o 그렇다
 - o 매우 그렇다
15. 우리 아이는 내가 바라는 것 만큼 나를 보고 잘 웃지 않는다.

- o 전혀 그렇지 않다
- o 그렇지 않다
- o 잘 모르겠다.
- o 그렇다
- o 매우 그렇다

16. 내가 우리 아이를 위해 무언가를 했을 때, 그런 노력이 크게 인정받지 못하는 것 같다.

- o 전혀 그렇지 않다
- o 그렇지 않다
- o 잘 모르겠다.
- o 그렇다
- o 매우 그렇다

17. 우리 아이는 놀 때 보통 소리내어 웃거나 즐거게 웃지 않는다.

- o 전혀 그렇지 않다
- o 그렇지 않다
- o 잘 모르겠다.
- o 그렇다
- o 매우 그렇다

18. 우리 아이는 또래 아이들에 비해 배우는 속도가 빠르지 않은 것 같다.

- o 전혀 그렇지 않다
- o 그렇지 않다
- o 잘 모르겠다.
- o 그렇다
- o 매우 그렇다

19. 우리 아이는 다른 아이들만큼 웃는 것 같지 않다.

- o 전혀 그렇지 않다
- o 그렇지 않다
- o 잘 모르겠다.
- o 그렇다
- o 매우 그렇다

20. 우리 아이는 내 기대만큼 어떤 일을 잘 해내지 못한다.

- o 전혀 그렇지 않다
- o 그렇지 않다
- o 잘 모르겠다.
- o 그렇다
- o 매우 그렇다

21. 우리 아이는 새로운 것에 익숙해지는 데 오랜 시간이 걸리고 또한 매우 어려워한다.

- o 전혀 그렇지 않다
- o 그렇지 않다
- o 잘 모르겠다.
- o 그렇다
- o 매우 그렇다

22. 내가 느끼기에 나는:

- o 부모가 되기에는 확실히 부족하다
- o 부모가 되기에는 약간 문제가 있다
- o 보통 부모이다
- o 보통 부모보다 조금 낫다
- o 매우 좋은 부모이다

23. 현재 내가 하고 있는 것보다 아이와 더 친밀한 관계를 유지하고 따뜻하게 대하려고 했는데 뜻대로 되지 않아 괴롭다.

- 전혀 그렇지 않다
- 그렇지 않다
- 잘 모르겠다.
- 그렇다
- 매우 그렇다

24. 가끔씩 아이는 나를 괴롭힐 목적으로 어떤 일을 한다.

- 전혀 그렇지 않다
- 그렇지 않다
- 잘 모르겠다.
- 그렇다
- 매우 그렇다

25. 우리 아이는 다른 아이들보다 더 자주 보채는 것 같다.

- 전혀 그렇지 않다
- 그렇지 않다
- 잘 모르겠다.
- 그렇다
- 매우 그렇다

26. 우리 아이는 대체로 잠에서 깨어나면 기분이 좋지 않다.

- 전혀 그렇지 않다
- 그렇지 않다
- 잘 모르겠다.
- 그렇다
- 매우 그렇다

27. 우리 아이는 매우 감정의 기복이 심하며 쉽게 화를 내는 것 같다.

- 전혀 그렇지 않다
- 그렇지 않다
- 잘 모르겠다.
- 그렇다
- 매우 그렇다

28. 우리 아이는 가끔 나를 무척 속상하게 한다.

- 전혀 그렇지 않다
- 그렇지 않다
- 잘 모르겠다.
- 그렇다
- 매우 그렇다

29. 우리 아이는 자신이 좋아하지 않는 어떤 일이 생기면 매우 민감하게 반응한다.

- 전혀 그렇지 않다
- 그렇지 않다
- 잘 모르겠다.
- 그렇다
- 매우 그렇다

30. 우리 아이는 아주 사소한 일에도 감정을 쉽게 폭발시킨다.

- 전혀 그렇지 않다
- 그렇지 않다

- 잘 모르겠다.
- 그렇다
- 매우 그렇다

31. 우리 아이의 수면습관과 식사습관을 길들이는 것은 내가 생각한 것보다 훨씬 어려웠다.

- 전혀 그렇지 않다
- 그렇지 않다
- 잘 모르겠다.
- 그렇다
- 매우 그렇다

32. 나는 우리 아이에게 어떤 일을 하거나 그만두게 하는 것이

- 생각보다 훨씬 더 어렵다고 느낀다
- 생각보다 다소 어렵다고 느낀다
- 생각한 만큼 어렵다고 느낀다
- 생각보다 다소 쉽다고 느낀다
- 생각보다 훨씬 쉽다고 느낀다

33. 아이가 당신을 괴롭히는 일들 (예를 들면, 게으르다, 말을 들으려 하지 않는다, 과잉활동적이다, 운다, 방해한다, 싸운다 등)이 몇가지가 있는 지 잘 세어보십시오. 그 수를 골라 표시하십시오.

- 01-3 개
- 04-5 개
- 06-7 개
- 08-9 개
- 010 개 이상

34. 우리 아이는 나를 몹시 괴롭히는 일들을 한다.

- 전혀 그렇지 않다
- 그렇지 않다
- 잘 모르겠다.
- 그렇다
- 매우 그렇다

35. 우리 아이는 생각과는 달리 한 가지 이상의 문제를 가지고 있는 것으로 나타났다.

- 전혀 그렇지 않다
- 그렇지 않다
- 잘 모르겠다.
- 그렇다
- 매우 그렇다

36. 우리 아이는 보통의 다른 아이들보다 내게 더 많은 요구를 한다.

- 전혀 그렇지 않다
- 그렇지 않다
- 잘 모르겠다.
- 그렇다
- 매우 그렇다

Appendix 8. The Hospital Anxiety and Depression Scale (HADS; Bjelland et al., 2002)

After reading each of the statements below, circle the answer that is most appropriate to you.

Q1. I feel tense or wound up:

Most of the time (3)

A lot of the time (2)

From time to time, occasionally (1)

Not at all (0)

Q2. I still enjoy the things I used to enjoy:

Definitely as much (0)

Not quite so much (1)

Only a little (2)

Hardly at all (3)

Q3. I get a sort of frightened feeling as if something awful is about to happen:

Very definitely and quite badly (3)

Yes, but not too badly (2)

A little but it doesn't worry me (1)

Not at all (0)

Q4. I can laugh and see the funny side of things:

As much as I always could (0)

Not quite so much now (1)

Definitely not so much now (2)

Not at all (3)

Q5. Worrying thoughts go through my mind:

A great deal of the time (3)

A lot of the time (2)

From time to time, but not too often (1)

Only occasionally (0)

Q 6. I feel cheerful:

Not at all (3)

Not often (2)

Sometimes (1)

Most of the time (0)

Q7. I can sit at ease and feel relaxed:

Definitely (0)

Usually (1)

Not often (2)

Not at all (3)

Q8. I feel as if I am slowed down:

Nearly all the time (3)

Very often (2)

Sometimes (1)

Not at all (0)

Q9. I get a sort of frightened feeling like 'butterflies' in the stomach:

Not at all (0)

Occasionally (1)

Quite often (2)

Very often (3)

Q 10. I have lost interest in my appearance:

Definitely (3)

I don't take as much care as I should (2)

I may not take quite as much care (1)

I take just as much as ever (0)

Q11. I feel restless as I have to be in the move:

Very much indeed (3)

Quite a lot (2)

Not very much (1)

Not at all (0)

Q12. I look forward with enjoyment to things:

As much as I ever did (0)

Rather less than I used to (1)

Definitely less than I used to (2)

Hardly at all (3)

Q 13. I get sudden feelings of panic:

Very often indeed (3)

Quite often (2)

Not very often (1)

Not at all (0)

Q14. I can enjoy a good book or radio or TV programme:

Often (0)

Sometimes (1)

Not often (2)

Very seldom (3)

Appendix 9. The Korean Hospital Anxiety and Depression Scale (K-HADS; Oh et al., 1999, see Appendix 9)

다음 글을 읽고 자신의 상태를 가장 잘 나타낸다고 생각되는 문항을 골라 체크해주시기 바랍니다.

1. 나는 긴장감 또는 정신적 고통을 느낀다

- 전혀 아니다
- 가끔 그렇다
- 자주 그렇다
- 거의 그렇다

2. 나는 즐겨오던 것들을 현재도 즐기고 있다

- 똑같이 즐긴다
- 많이 즐기지 못한다
- 단지 조금만 즐긴다
- 거의 즐기지 못한다

3. 나는 무언가 무서운 일이 일어날 것 같은 느낌이 든다

- 전혀 아니다
- 조금 있지만 걱정하지 않는다
- 있지만 그렇게 나쁘지는 않다
- 매우 분명하고 기분이 나쁘다

4. 나는 사물을 긍정적으로 보고 잘 웃는다

- 나는 항상 그렇다
- 현재는 그다지 그렇지 않다
- 거의 그렇지 않다
- 전혀 아니다

5. 마음 속에 걱정스러운 생각이 든다

- 거의 그렇지 않다
- 가끔 그렇다
- 자주 그렇다
- 항상 그렇다

6. 나는 기분이 좋다

- 항상 그렇다
- 자주 그렇다
- 가끔 그렇다
- 전혀 그렇지 않다

7. 나는 편하게 긴장을 풀 수 있다

- 항상 그렇다
- 대부분 그렇다
- 대부분 그렇지 않다
- 전혀 그렇지 않다

8. 나는 기력이 떨어진 것 같다

- 전혀 아니다
- 가끔 그렇다
- 자주 그렇다
- 거의 항상 그렇다

9. 나는 초조하고 두렵다

- 전혀 아니다
- 가끔 그렇다
- 자주 그렇다
- 매우 자주 그렇다

10. 나는 나의 외모에 관심을 잃었다

- 여전히 관심이 있다
- 전과 같지는 않다
- 이전보다 확실히 관심이 적다
- 확실히 잃었다

11. 나는 가만히 있지 못하고 안절부절 한다

- 전혀 그렇지 않다
- 가끔 그렇다
- 자주 그렇다
- 매우 그렇다

12. 나는 일들을 즐거운 마음으로 기대한다

- 내가 전에 그랬던 것처럼 그렇다
- 전보다 조금 덜 그렇다
- 전보다 확실히 덜 그렇다
- 전혀 그렇지 않다

13. 나는 갑자기 당황스럽고 두려움을 느낀다

- 전혀 그렇지 않다
- 가끔 그렇다
- 꽤 자주 그렇다
- 거의 항상 그렇다

14. 나는 좋은 책 또는 라디오, 텔레비전을 즐길 수 있다

- 자주 즐긴다
- 가끔 즐긴다
- 거의 못 즐긴다
- 전혀 못 즐긴다

Appendix 10. The Parental Reflective Functioning Questionnaire (PRFQ; Luyten et al., 2017)

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.

Appendix 11. the Korean version of the Parenting Reflective Functioning Questionnaire
(Lee et al., 2021).

아래 문장들은 당신과 당신의 자녀에 대해 기술한 것들입니다. 읽어보시고 어느정도 해당 문장에 동의하시는 지 체크해주시기 바랍니다. 예를 들어, 1에 가까울수록 매우 동의하지 않는 것이고, 7에 가까울수록 매우 동의하는 정도입니다. 혹시 중립적인 입장이거나 입장을 결정하지 못하셨다면 4로 체크해주시기 바랍니다.

어떤 질문들은 자녀의 현재 연령에 적합하지 않을 수 있으므로, 이때는 자녀가 성장했을 때를 상상하여 대답해주시기 바랍니다.

1 (매우 동의하지 않음) 2 3 4(중립) 5 6 7 (매우 동의함)

1. 나는 내 아이가 나에게 미소지어 줄 때만 나를 사랑한다고 확신한다.
2. 나는 내 아이가 무엇을 원하는 지에 대해 언제나 알고 있다.
3. 나는 내 아이가 행동하고 느끼는 것 이면의 이유에 대해 생각해보는 것을 좋아한다.
4. 내 아이는 나를 곤란하게 만들려고 낯선 사람들이 주변에 있을 때 운다.
5. 나는 내 아이의 마음을 완전히 읽을 수 있다.
6. 나는 내 아이가 생각하고 느끼는 것에 대해 많이 궁금하다.
7. 나는 내 아이와 가장 놀이(예:역할 놀이, 소꿉 놀이 등)를 적극적으로 하는 것이 어렵다.
8. 나는 내 아이가 무엇을 할지 언제나 예측할 수 있다.
9. 나는 종종 내 아이가 어떤 기분일 지 궁금하다.
10. 내 아이는 가끔 일부러 아프다고 해서 내가 하고 싶은 것을 못하게 한다.
11. 나는 종종 내 아이의 반응을 오해한다.
12. 나는 내 아이의 시선에서 상황을 보려고 노력한다.
13. 내 아이가 징징거리는 것은 단지 나를 짜증나게/귀찮게 하려고 하는 것이다.
14. 나는 내가 아이에게 어떤 행동을 하고, 그 행동을 왜 하는 지를 언제나 알고 있다.
15. 나는 내 아이가 왜 잘못된 행동을 하는 지 이해하려고 노력한다.
16. 가끔 아이의 행동이 너무 혼란스러워서 왜 그러는 지 이해하기 어렵다.
17. 나는 언제나 내 아이가 왜 그런 방식으로 행동을 하는 지 알고 있다.

18. 나는 내 아이의 감정에 대해 추측하려고 애써봤자 소용없다고 생각한다.

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