# 'Thinking about Parenting' – The Role of Mind-Mindedness and Parental Cognitions in Parental Behaviour and Child Developmental Outcomes

Sarah Louise Fishburn

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University of York

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**Abstract**

This thesis aimed to investigate the proposal that *mind-mindedness* – a caregiver's proclivity to treat their child as an individual with a mind of their own (Meins, 1997) – is a quality of close relationships, by assessing mind-mindedness (a) in caregiver–child dyads where the relationship has not spanned the child's life, (b) in dyads where the relationship has been judged as dysfunctional, and (c) within an interactional context. Studies 1 and 2 showed that mind-mindedness was lower in adoptive parents ($n$s 89, 36) compared with biological parents ($n$s 54, 114); this group difference was independent of parental mental health and parents' views on child development, and could not fully be explained in terms of children's behavioural difficulties (Study 2).

Study 3 showed that mind-mindedness was also lower in foster carers ($n = 122$), and biological parents whose children either were the subject of a child protection plan ($n = 172$) or had been taken into care ($n = 92$), compared with a community sample of biological parents ($n = 128$). The group differences were independent of parental mental health, children's behavioural difficulties, and parents' reported warmth and inductive reasoning.

Study 4 developed and validated a new interaction-based assessment of mind-mindedness for use in the preschool years. The new interactional measure of mothers' mind-mindedness in relation to their 44-month-olds ($n = 151$) was positively related to the established indices of mind-mindedness: appropriate mind-related comments in the first year of life and concurrent mind-minded child descriptions.

Study 5 provided further validation of the new interactional measure by demonstrating its positive associations with known outcomes of mind-mindedness: children's mentalising abilities at age 4. However, the new interactional measure did not mediate the relation between early mind-mindedness and children's mentalising abilities. Collectively, the findings are in line with mind-mindedness being a relational construct.

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# Preface

This thesis aimed to form a distinct contribution to the literature on mind-mindedness, by two main methods; (a) investigating mind-mindedness in samples of caregivers that have not previously been investigated, and (b) by developing and validating a novel coding scheme, in order to allow researchers to assess the appropriateness of caregivers' responses to their child during live interactions in the preschool years. The current literature on mind-mindedness, which has been developing over the last twenty years, has predominantly used samples of biological mothers and fathers. By investigating mind-mindedness in alternative family structures, such as adoptive parents and foster carers, this allows for an exploration of mind-mindedness across a diverse range of groups. Also, this thesis explored mind-mindedness in biological parents of children involved with Child Protective Services, allowing for an exploration of mind-mindedness across relationships that have been independently assessed as being problematic. The assessment of mind-mindedness was also re-visited; mind-mindedness is typically assessed from actual interactions between the caregiver and child in infancy, and from an interview-based measure from the preschool years onwards. Within this thesis, the first ever interaction-based coding scheme for mind-mindedness in the preschool years was developed, and validated against existing assessments of mind-mindedness in infancy and the preschool years. The thesis thus expands the current knowledge base on mind-mindedness, and highlights the need for (a) a more thorough understanding of the construct of mind-mindedness in non-normative samples, and (b) the need to assess parent–child interactions and the relationship between the dyad over a range of contexts, to provide further validation for age-appropriate interaction-based measures of mind-mindedness beyond infancy.

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Firstly, I would like to thank my wonderful supervisor, Elizabeth Meins, for her unwavering guidance and support through this journey, and allowing me the autonomy to work in a way that suits my needs and personality. Even through several difficult patches in the recruitment process, and the subsequent changes to the scope of the thesis, you always had faith in my abilities and confidence that it would all come together coherently, even when I was beginning to waver. Working with you, and on this research, has made me even more passionate about mind-mindedness, and has made me strive to be a better researcher. I think I have generated even more research questions than I have answers, but I view that as a good thing!

I must also thank the members of my Thesis Advisory Panel, Dr Emma Hayiou-Thomas and Dr Tom Hartley, for their encouragement and constructive feedback throughout the completion of this thesis. You have helped to focus my vision and the write-up of the thesis, and to prioritise the key contributions that the research has to offer. Thank you both for your support.

I would also like to thank DFW Adoption and York City Council for their efforts and support during the difficult stages of recruitment of adoptive families, and the Department of Social Policy and Social Work at the University of York (particularly Nina Biehal and Helen Baldwin) for their collaboration on Chapter 3 of this thesis. Importantly, I would like to acknowledge all the caregivers and their children who took the time to participate in the research (even though they may never read this); without their contribution, none of this would have been possible, and for that I am eternally grateful.

To my husband Chris, thank you for your belief in me, and being my Number 1 fan. You have always intuitively known the balance of when to let me work tirelessly into the night, when I am on a roll, and when to suggest I stop, reset, and take stock of the whole situation. I appreciate your understanding and patience throughout the whole process, and providing me with coffee when it has been greatly required! I love you dearly. To all of my colleagues, thank you for your support, your humour, and your words of wisdom – it's been much appreciated, and stopped me from getting too close to the edge! To my close friends, especially my dear friend Janine… Thank you for understanding my absence when I have been too busy to be a typical "good friend", the late night phone calls of support, reminding me of the reasons I did this in the first place, and providing me with much-needed fun during the winding-down periods. You all rock my world. I'm sure you'll all join me in raising a glass, when I've reached the finish line.

# Declaration

I, Sarah Fishburn, declare that the work presented within this thesis is my own work, and has not been submitted to this or any other University for a degree or any other qualification. Where information has been derived from other sources, I confirm that this has been indicated in the thesis. This research was supported by a research studentship awarded to the candidate from the Economic and Social Research Council (award number 1370264). The data is Study 3 was completed in partnership with the Social Policy and Social Work Department at the University of York, the Born in Bradford study team, and Bradford Children's Services as part of an Economic and Social Research Council (ESRC) grant awarded to Professor Nina Biehal. The mind-mindedness measure was included in this study as part of this thesis, and although the author was not responsible for the data collection, the author was responsible for coding all of the mind-mindedness data from the care groups. The data in Studies 4 and 5 were collected as part of a larger longitudinal study funded by the Economic and Social Research Council, as part of grant RES-000-23-1073, with Professor Elizabeth Meins as the Principle Investigator. Although the author was not responsible for the data collection in Studies 4 and 5, the author was solely responsible for transcribing, coding and analysing all of the describe-your-child interviews and co-construction tasks.

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

**Publications**

Data from Studies 1, 2, and 3 are reported in the following paper, accepted for publication:

Fishburn, S., Meins, E., Greenhow, S., Jones, C., Hackett, S., Biehal, N., Baldwin, H., Cusworth, L., & Wade, J. (2017). Mind-Mindedness in Parents of Looked After Children. *Developmental Psychology, 53(10)*, 1954-1965.

**Presentations**

Fishburn, S., & Meins, E. Caregiver Mind-mindedness in Foster and At-Risk Families. Paper presented at the BPS Developmental Psychology Section Annual Conference, Belfast, September 2016.

Fishburn, S., & Meins, E. Caregiver Mind-mindedness in Parents of Children at Risk of Abuse or Neglect. Paper presented at the Society for Research in Child Development, Austin, Texas, April 2017.

Meins, E., Fishburn, S., & Fernyhough, C. Longitudinal Stability in Mothers' Mind-Mindedness. Paper presented at the Society for Research in Child Development, Austin, Texas, April 2017.

# Chapter 1: General Introduction

In the field of developmental psychology, there is a theoretical interest in how and why parental cognitive stances and beliefs "make a difference", and the processes through which they become salient for the child (Murphey, 1992). Goodnow (1988) highlighted the importance of parental thinking in shaping parents' subsequent behaviour towards their children, arguing that to "focus only on parents' overt behaviors is to treat the parents as unthinking creatures, ignoring the fact that they interpret events, with these interpretations probably influencing their actions and feelings" (p.287). As such, in recent decades there has been increasing research interest in the concept of parental *mentalisation*: caregivers' capacity to ascribe thoughts, feelings, and intentions to their children (Sharp & Fonagy, 2008; Meins, 1999).

To date, there have been several different operationalisations of the construct of parental mentalisation, however of key interest to this thesis is the construct of mind-mindedness (Meins, 1997). Mind-mindedness (MM) indexes a caregiver's capacity to see their child as an independent mental agent, and ability to accurately infer their child's thoughts, feelings, and desires. Caregivers who are highly mind-minded have the ability to consider and represent their child's cognitions and perspectives, allowing them to formulate ideas and reasoning as to why the child is behaving in such a way, and then respond in a manner that they believe to be appropriate to their child's needs. As such, mind-mindedness is a construct that focuses on how a caregiver's cognitive stance about their child can subsequently influence their behaviour when interacting with their child.

The overarching aim of this thesis is to further the understanding of the construct of mind-mindedness by testing the proposal that mind-mindedness is a

relational construct (Meins, Fernyhough, & Harris-Waller, 2014), stemming

from the caregivers' specific experiences and appraisals of the child and the

relationship they share (Meins, Fernyhough, Arnott, Turner, & Leekham, 2011).

## 1.1   The Importance of the Parent–Child Relationship

The importance of the relationship between caregivers and their children

has been of significant research interest to developmental psychologists during

the last 50 years, since the groundbreaking work of John Bowlby, Mary

Ainsworth and their colleagues. Previous research has shown that specific

aspects of parental language and behaviour when engaging with the child in the

crucial first years of life can subsequently influence the child's social, emotional,

and cognitive development. Thus, attempting to disentangle the rich and complex

trajectories through which parental language and behaviour exert their influence

is of paramount research interest and importance. Not only is it of importance for

our understanding of how the caregiving relationship and environment relate to

child development, both positively and negatively, but also to related areas, such

as parenting, education, child psychiatric services, and support and intervention

services. Mind-mindedness and other constructs assessing parental mentalisation

have their origin in Bowlby's theoretical work on attachment and Ainsworth's

empirical work on sensitivity.

### 1.1.1 Attachment Theory

Bowlby's (1969) theory describes attachment as a strong affectionate tie

binding the child to a companion or caregiver, and a behavioural system by

which humans seek proximity to another person, especially in times of distress:

"to say of a child that he… has an attachment to someone means that he is

strongly disposed to seek proximity to and contact with a specific figure and do

so in certain situations, notably when he is frightened, tired or ill" (Bowlby, 1969, p. 371). Young infants often signal their needs through attachment behaviours, such as crying, clinging, babbling, and smiling in order to elicit attention and gain proximity to any available caregiver. As the infant develops, they quickly begin to discriminate between familiar and unfamiliar caregivers; at this time, an infant's attachment behaviours become focused on a *particular* caregiver, with the aim of keeping them close. The behaviour of the infant is said to be influenced by the availability of the caregiver and their responsiveness to the infant; thus if a caregiver is more responsive to a certain signal the child adopts, the infant will persist with this behaviour to gain the attention of the caregiver.

A child's first attachment relationship is usually formed with the primary caregiver (typically the mother), and is proposed to be a biologically programmed instinct not only to have their physical needs met, such as warmth, nourishment, and protection from danger, but also their emotional needs, such as being comforted (Bowlby, 1969). It is proposed that in the presence of a responsive and available caregiver, the infant will use them as a "safe base" from which they can explore the world autonomously, safe in the knowledge that the caregiver is there to support them if required.

The relationship the infant shares with their primary caregiver is then thought to act as a prototype for the child's future social relationships: "Children are not slates from which the past can be rubbed by a duster or sponge, but human beings who carry their previous experiences with them and whose behaviour in the present is profoundly affected by what has gone before" (Bowlby, 1951, p. 114). As such, the child is said to develop internal working

models (IWMs) of close relationships; representations which shape the child's expectations, beliefs, and emotional appraisals of close relationships (Bowlby, 1969, 1973). Bowlby proposed that individuals come to form IWMs of both self and others within the context of a close relationship, allowing them to predict likely patterns of behaviour.

These IWMs are influenced by the child's relationship history, and as they are developed via dyadic interactions with a caregiver, the models of self and other are often complementary (Bowlby, 1973). For example, if the child's IWM of their caregiver is that of being responsive and sensitive, they may come to represent themselves as worthy of attention and love; thus they develop positive representations of both self and others. Conversely, if their caregiver is somewhat rejecting or dismissive of their bids for attention, the child may feel unworthy of love, which may impact on the way they behave with that caregiver and subsequent attachment figures. It has been proposed that IWMs are initially relatively malleable and adaptive in response to changes in patterns of care for the first 4 to 5 years (Bowlby, 1980). Thus, if a child experienced somewhat rejecting/dismissive behaviour from their caregiver in early infancy, but was then subject to more responsive and available caregiving style throughout late infancy and early childhood, the child's IWMs of self and other will adapt to reflect the changes in caregiver behaviour.

*1.1.2 Maternal Sensitivity*

The work of Ainsworth was influenced by the early ideas of Bowlby, attempting to uncover how specific types of caregiver behaviour may influence the quality of the relationship between caregiver and child, and ultimately the child's attachment status. Ainsworth's research was borne out of extensive home

based observations of parents and their children throughout the first year of life in Uganda, and later, Baltimore (Ainsworth, 1967; Ainsworth, Blehar, Waters, & Wall, 1978). The richness of the data collected throughout that time is unparalleled to date. Through the method of extensive observations, Ainsworth noted individual differences in the way infants responded to their caregivers, particularly in response to separations and reunions with the caregiver. As such, Ainsworth came to believe that infants' patterns of behaviour during separation and reunion with the caregiver were indicative of the quality of the attachment relationship.

Through her research, Ainsworth came to develop a paradigm that could formally assess the variation in attachment behaviours in 12- to 24-month-old infants, known as the Strange Situation Procedure (Ainsworth & Wittig, 1969). The procedure was conducted in Baltimore by observing infant behaviour over a 20-minute period, during a series of separations and reunions with their primary caregiver, aimed at activating the attachment behavioural system during increasingly stressful conditions for the infant. The observations aimed to assess infant behaviour across 4 dimensions: proximity-seeking, contact maintenance, avoidance, and resistance.

Infants were placed into one of three attachment categories, based on their behaviour during episodes of reunion with their caregivers: 1) secure attachment (Type B), whereby the infant responds positively to the caregiver on reunion, with the caregiver able to comfort the infant if he or she was distressed, 2) insecure-avoidant attachment (Type A), characterised by the child showing little distress upon separation and a lack of interest/ indifference towards the caregiver on reunion; and 3) insecure-resistant attachment (Type C), characterised by the

child becoming extremely distressed upon separation from the caregiver

(screaming, crying), but being unable to be comforted upon reunion, with the

child continuing to show signs of distress or helplessness. Insecure-resistant

infants also tend not to explore their environment independently, instead showing

signs of clinginess towards the caregiver (Ainsworth et al., 1978). The three

patterns of attachment are often referred to as 'organised' patterns of attachment,

which infants learn in order to deal with emotional distress (Benoit, 2004). Main

and Solomon (1986) later established a fourth attachment category, insecure-

disorganised (Type D), to describe infants exhibiting anxious/fearful, erratic, and

contradictory behaviours, such as freezing/disassociation, displaying fear in the

presence of the caregiver, or approaching and then avoiding the caregiver.

One of the main questions that Ainsworth strove to answer and

conceptualise was "*What is there about the behavior of this mother that is*

*important in making a difference in how the baby behaves?*" (Ainsworth &

Marvin, 1995, p. 10), as she believed caregiver behaviour influenced how infants

went on to respond to them. As such, Ainsworth came to define the concept of

maternal sensitivity; that is, the mother's "ability to perceive and interpret

accurately the signals and communications implicit in her infant's behavior, and

given this understanding, to respond to them appropriately" (Ainsworth, Bell, &

Stayton, 1974, p.127). Highly sensitive caregivers appeared attuned to their

child's point of view, and made attempts to read their child's signals and respond

appropriately to those signals. It is believed that through fostering positive

interactions and appropriate responses to their infant's needs, the infant then

feels comforted and secure; the caregiver thus increases the likelihood of

developing a secure attachment with her infant. However, other caregivers were

noted to appear less able to read their child's mental states, leading to inappropriate responses to their child's signals: "trying to socialize with the baby when he is hungry, play with him when he is tired, and feed him when he is trying to initiate social interaction" (Ainsworth et al., 1974, p. 129). If the misreading of the infant's signals on behalf of the caregiver happens with suitable frequency, the infant may not feel a sense of comfort in the presence of the caregiver, as their needs are not being appropriately met.

In light of the observational work, Ainsworth and her colleagues developed a 9-point sensitivity scale, allowing researchers to rate caregivers' behaviour on five anchor points: 1) highly insensitive, 3) insensitive, 5) inconsistently sensitive, 7) sensitive, and 9) highly sensitive. Research has consistently found associations between caregiver sensitivity and secure attachment status in infancy (e.g., Grossman, Grossman, & Waters, 2006; Isabella, 1993), however sensitivity has not been found to be predictive of finer-grained sub-categories (differentiation between secure-avoidant-resistant) of attachment (Egelund & Farber, 1984; Stifter, Couleham, & Fish, 1993). Meta-analytic studies have also confirmed the association between maternal sensitivity and infant–caregiver attachment security (Atkinson et al., 2000; Goldsmith & Alansky, 1987; de Wolff & van IJzendoorn, 1997; Lucassen et al., 2011; Verhage et al., 2016). These reviews show small to medium-to-large overall correlations (varying from .12 to .35) for the relation between sensitivity and attachment security. As such, the researchers concluded that "sensitivity cannot be considered to be the exclusive and most important factor in the development of attachment" (De Woolff & van IJzendoorn, 1997, p. 585). Subsequently, researchers have sought to identify other characteristics of the parent–child relationship that may

contribute to, or be indicative of, the quality of the relationship and facilitate positive developmental outcomes for children.

## 1.2    The Origins of Mind-Mindedness – Refinement of the Parental Sensitivity Construct

The concept of mind-mindedness (Meins, 1997) was influenced by the work of Ainsworth, and the parental sensitivity literature. Meins and her colleagues argued that maternal sensitivity has gradually become an 'umbrella concept', assessing numerous "sensitive" caregiving behaviours, with Ainsworth's emphasis on the appropriateness of parental responses being lost (Meins, 2013; Meins, Fernyhough, Fradley, & Tuckey, 2001). As such, there is a need for precision in the operationalisation of the quality of infant–caregiver interactions in early childhood so that researchers can be confident in drawing conclusions about constructs that may contribute to positive developmental outcomes in children. Some authors have emphasised the need to distinguish between sensitivity to physical and emotional needs, and sensitivity to a child's mental processes (Lundy, 2003). Mind-mindedness focuses on the cognitive aspect of sensitivity, indexing the parent's psychological attunement to the child's mental states and the appropriateness of parents' responses.

### 1.2.1 Mind-mindedness

As discussed previously, mind-mindedness describes a caregiver's proclivity to treat their child as an individual with a mind of their own, and their ability to "tune in" to their child's mental world (Meins, 1997). In order for a caregiver to be mind-minded, they must first form a representation of what they believe the infant is thinking, feeling, or experiencing, and use this representation to guide their behaviour when interacting with and responding to the child

(Meins et al., 2012). If a caregiver is better able to tap into their child's mental states, they can use this information to respond both promptly and appropriately to the child's needs (Meins, 1999). Thus, mind-mindedness can be conceptualised as the interface between parental representation and behaviour (Meins et al., 2012). Caregivers who are able to represent what their child may be thinking and feeling, and interpret their child's behaviour in terms of their underlying mental states, are more mind-minded. The early literature around mind-mindedness focused heavily on explaining attachment security in infancy and the transmission of secure attachment status between generations. In this vein, several researchers have suggested that mind-mindedness is a pre-requisite for sensitivity, with sensitivity either mediating or partially mediating the relation between mind-mindedness and attachment security (Laranjo, Bernier, & Meins, 2008; Lundy, 2003).

*1.2.2 The Operationalization of Mind-Mindedness*

The mind-mindedness coding scheme was developed with the aim of providing a research tool that was suitable for assessing brief, laboratory-based interactions, with clear, discrete behaviours and descriptions that could be quantified (Meins, 2013). Thus, it has the advantage of being more time-effective than in-depth interviews, and easier to quantify than rating scales based on global definitions. Additionally, in early infancy, it assesses the quality of the caregiver's responses to their infants' signals during dyadic interactions, as opposed to using narrative accounts of the caregiver–child relationship, allowing researchers to investigate the processes through which caregiver language and behaviour become salient for the child.

Caregiver mind-mindedness is operationalised in several ways, depending on the age of the child. In infancy, mind-mindedness is assessed with an interactional measure, operationalised in terms of a) caregivers' attributing meaning to infant's non-word vocalizations (Meins, 1998; Meins & Fernyhough, 1999), or b) commenting in either an appropriate or non-attuned manner on the infant's thoughts and feelings during interactions with their child (Meins et al., 2001, 2012). The system coding appropriate and non-attuned mind-related comments has become the method of choice for assessing mind-mindedness in infancy. Appropriate mind-related comments reflect a caregiver's use of internal state language that appears to accurately represent what the child may be thinking or feeling (e.g., commenting that an infant likes a toy if they spend considerable time playing with it). In contrast, non-attuned mind-related comments reflect a misinterpretation of the infant's mental state (e.g., stating the infant is grumpy, when in fact they are crying because they hurt themselves) (Meins et al., 2012). Thus, it is possible for caregivers to respond in behaviourally sensitive ways, yet misinterpret their infant's mental states.

Caregivers' use of appropriate and non-attuned mind-related comments has been found to be unrelated (Arnott & Meins, 2007). Research by Meins et al. (2012) suggests that mind-mindedness is best characterised as a multidimensional construct, due to the independent contributions appropriate and non-attuned mind-related comments make to attachment security. Longitudinal assessments have reported mind-mindedness to be relatively stable over time during infancy, with maternal mind-mindedness at 3 months positively correlated with mind-mindedness at 7 months (Meins et al., 2011). More recent research by McMahon, Camberis, Berry, and Gibson (2016) showed continuity in mothers'

use of appropriate mind-related comments when interacting with their infant between 7 and 19 months of age, while Kirk et al. (2015) reported longitudinal stability in mothers' production of appropriate mind-related comments between 10 and 12 months, 10 and 20 months, and 12 and 16 months.

Beyond infancy, mind-mindedness is measured differently, due to the advancing physical and verbal abilities of the child. Caregiver mind-mindedness from the preschool years onwards is assessed with a representational measure, operationalised in terms of a caregiver's tendency to focus on mental attributes, rather than physical, behavioural, or general characteristics, when given an open-ended invitation to describe their child (Meins, Fernyhough, Russell, & Clark-Carter, 1998). Thus, mind-mindedness can be said to tap a caregiver's representations of their child via 'online' and 'offline' measures, depending on the age of the child (Schibbor, Lotzin, Romer, Schulte-Markwort, & Ramsauer, 2013). In a longitudinal study assessing the construct validity and temporal continuity of mind-mindedness, mothers' appropriate mind-related comments when their child was 6 months old positively predicted the representational measure of mind-mindedness when the child was 48 months old (Meins et al., 2003).

However, yet to be researched is how mind-mindedness is manifested during interactions between the parent and child beyond infancy, and how any such measures relate to parents' mental representations of their child. One of the strength of interaction-based methods of assessment is that researchers can assess a parent's ability to interpret their child's mental states within the context of an ongoing interaction (Lundy, 2003). This enables the researcher to measure the appropriateness or accuracy of the parent's interpretation. Thus, investigating the

ways in which mind-mindedness may be manifested during parent–child interactions beyond infancy is of particular interest.

Given that past research has consistently reported caregivers' mind-mindedness throughout infancy and childhood being associated with a range of positive developmental outcomes for children, such as secure infant–parent attachment (Laranjo et al., 2008; Lundy, 2003; Meins et al., 1998, 2001, 2012) and superior mentalising abilities (Centifanti, Meins, & Fernyhough, 2016; Laranjo, Bernier, Meins & Carlson, 2010, 2014; Lundy, 2013; Meins et al., 1998, 2002, 2003), it is necessary for researchers to have a thorough understanding of the underlying nature of the construct of mind-mindedness.

What is striking about the research to date is that, across all assessment methods, there are considerable individual differences in mind-mindedness. This is the case not just for caregiver mind-mindedness, but also in children's descriptions of their best friend and adults' descriptions of a close friend (Meins, Fernyhough, Johnson, & Lidstone, 2006; Meins, Harris-Waller, & Lloyd, 2008). Mind-mindedness has been found to be unrelated to parent characteristics, such as socio-economic status (Meins et al., 2011), perceived social support (Meins et al., 2011), and maternal psychological health (Pawlby et al., 2010), although clinical levels of maternal mental illness are associated with lower levels of mind-mindedness (Pawlby et al., 2010; Schacht et al., 2017). Additionally, mind-mindedness has been found to be unrelated to child characteristics, such as their general cognitive ability (Meins et al., 1998, 2001), temperament (Meins et al., 2011), gender (McMahon & Meins, 2012), and behaviour, such as frequency of vocalization, change in gaze, and object-directed activity (Meins et al., 2001). Recent research has provided support for mind-mindedness specifically being a

quality of personal relationships, rather than being determined by characteristics of the individual parent or child. This theoretical stance will now be discussed in further detail, with unanswered questions being explored.

*1.3     Mind-Mindedness – a Relational Construct?*

Recent research used an innovative design to elucidate whether mind-mindedness is a relational construct or a trait-like quality, by assessing the degree of concordance in mind-mindedness across relationships of differing degrees of closeness. Meins et al. (2014) used four separate studies to investigate this theoretical stance; the first study asked mothers of 5- to 8-year-old children to describe both their child and their current romantic partner. They found that mothers' mental descriptions of their child were positively associated with their tendency to describe their partner with reference to their mental states; as this finding did not generalise to other forms of descriptions, such as behavioural, physical, or general attributes, such concordance could be interpreted as both a trait-like quality or a quality of close relationships.

The second study explored undergraduates' mind-mindedness across two relationships, varying in emotional intensity and intimacy (current romantic partner and close friend), to explore the relational construct further. Meins et al. (2014) found a positive correlation between participants' tendency to describe their romantic partner and close friend with reference to their mental states. However, individuals were more likely to describe their romantic partner with reference to their mental states, suggesting that the level of intimacy of the relationship may have an effect on mind-mindedness. Study three focussed on manipulating the personal knowledge of the individual and nature of the target being described; participants were presented with four images, two of famous

people (Barack Obama & Katie Price) and two of paintings (one abstract, one naturalistic), and were asked to describe the images. They were then asked to describe a close friend. Levels of mind-mindedness when describing a close friend were unrelated to descriptions of famous people; individuals were more likely to use mental descriptions when describing their friend, with whom they had a close relationship, than describing a famous person. Additionally, mental descriptions when describing a close friend were unrelated to descriptions of the paintings; thus it could be inferred that mind-mindedness is not a trait-like quality, as the propensity to use mental descriptions is relationship specific, and not found across all descriptions, regardless of the context. This finding was replicated in the fourth study, when participants were invited themselves to choose a famous person to describe; mental descriptions of a close friend were still unrelated to mental descriptions of the famous person. The authors argued that individuals are mind-minded about a person as they have gained knowledge of the person's likes, dislikes, interests, and feelings through being in an intimate relationship with them.

Given these findings, which have since been replicated by Hill and McMahon (2016), investigating mind-mindedness within relationships that differ in terms of how 'close' or well established they are would provide a valid test of the proposal that mind-mindedness is a relational construct. One way of investigating this is by comparing mind-mindedness within alternative family structures where the relationship has been non-continuous (not established since birth). Research to date has primarily focused on parental cognitions within birth families, and very little research has been conducted with alternative family structures, such as non-birth parents and their children. One would hypothesise

that in relationships that are less well established, or in which the closeness of the relationship has been compromised, we would see lower levels of mind-mindedness.

*1.4     Questions Addressed in this Thesis*

The aim of this thesis is to investigate the proposal that mind-mindedness is a relational construct by (a) exploring mind-mindedness in groups of caregivers that have not previously been researched, and (b) developing and validating an interaction-based assessment of mind-mindedness beyond infancy.

In order to achieve this aim, the studies reported in this thesis explore mind-mindedness not only in biological or 'birth families', but also in adoptive families, foster families, and families involved with Child Protective Services. Using this approach allows for an exploration of mind-mindedness in families where the relationship has spanned the child's entire life, those in which the relationship has been non-continuous, and relationships where the closeness of the relationship may have been compromised due to personal or social difficulties. Parent- and child-centred variables are also explored in relation to mind-mindedness in order to assess whether mind-mindedness is independent of individual characteristics within different parent groups. The current research also aims to bridge the gap between 'online' measures of mind-mindedness used in infancy, and 'offline' measures used in early childhood and beyond by developing and validating an interaction-based measure of mind-mindedness in relation to preschoolers.

*1.4.1 Mind-mindedness in Adoptive Parents and Foster Carers*

It is estimated that around 70,440 children were in the care of local authorities in England in the year ending March 2016 (Department for

Education, 2016), with around 75% of looked after children living with foster carers. The main goal of short-term foster care is reunification of the child with their birth parents (Colton & Williams, 2006); however, if this is deemed to be untenable or unachievable, children are often placed for adoption or in long-term foster care until they reach the age of maturity (Schofield, 2002). Adoptions in the UK tend to occur beyond infancy, with the average age of adoption being 3 years 5 months (Department for Education, 2016); few adoptions occur shortly after birth, in contrast to commonplace practices in other countries. Adoptions primarily occur within the UK after the local authorities have deemed it unsuitable for a child to remain in the care of their biological parents; in 62% of cases in the year ending March 2016, children were placed in the care of their local authority due to abuse or neglect, with a further 7% of cases due to absent parenting (Department for Education, 2016). Therefore children usually come to be adopted within the UK after a period of time within temporary foster care, following removal from their family home due to the dysfunctional family environment. Conducting research with adoptive and foster families allows for a comparison of mind-mindedness in caregiver relationships spanning the child's whole life, as is the case in birth families, and more recently established relationships in adoptive and foster families, where the closeness of the relationship may not yet be established or have reached a similar level. To date, there has been no published research comparing levels of mind-mindedness in adoptive parents and birth parents in the UK.

Research exploring mind-mindedness in foster families has been scant; the only published research to date focussed on whether mind-mindedness

mediated the association between maternal attachment state of mind, measured by the Adult Attachment Interview (AAI), and infant attachment security, assessed in the Strange Situation. Contrary to expectations, foster mothers' tendency to describe their child with reference to their mental characteristics was negatively related to both coherence in the AAI (that is, demonstrating a open and coherent discourse regarding their relationship with their parents that is internally consistent, and valuing attachment relationships and their influence; George, Kaplan, & Main, 1996) and security in the Strange Situation (Bernier & Dozier, 2003). The authors interpreted the counterintuitive findings as a result of using the describe-your-child measure to assess mind-mindedness, arguing that "it may be inaccurate to understand an infant of less than 30 months mostly in terms of his or her mental processes" (Bernier & Dozier, 2003, p. 361). Thus, the authors proposed that describing an infant of less than 30 months in terms of their mental states is inappropriate, indexing a lack of caregiver mind-mindedness.

However, mind-mindedness in foster carers has not been assessed when the target child is over 30 months old, nor have additional parent- and child-centred characteristics been investigated. Given that the foster carer–child relationship is said to "rely heavily on foster mother's expectations and interpretations of a foster child's behavior, which usually includes an array of emotional deficits and behavioral problems" (Lawler, 2008, p. 1131), an exploration of the construct of mind-mindedness in foster families may prove particularly useful, serving to broaden our understanding of foster carers' representations of their children.

*1.4.2 Mind-mindedness in Parents of Children involved with Child*

*Protective Services*

A further unexplored area, which would help to enhance knowledge of individual differences in mind-mindedness across a diverse range of groups, is investigating mind-mindedness in birth parents involved with Child Protective Services. In the UK, if a child is subject of a child protection plan, concerns for the child's wellbeing have been reported to the local authority, compelling them to investigate and judge whether the child is at significant risk of harm (abuse or neglect). In cases where there is risk of harm identified, children become subject of a child protection plan, allowing them to live with their parents unless it is deemed too dangerous or unsafe for them to do so. If the risk of harm is deemed too significant, the child is taken into the care of the local authority, and often placed with a foster carer until long-term decisions about the child's welfare can be assessed.

Investigating mind-mindedness in a sample of parents whose children are, or have been, the subject of a child protection plan allows for exploration of mind-mindedness across relationships that have been independently assessed as being problematic or dysfunctional. This approach provides an objective measure of difficulties experienced within the parent–child relationship, which would likely be subject to strong social desirability biases if self-report measures were used. If mind-mindedness is found to be lower in birth parents involved with child protective services, this would provide support for the notion of mind-mindedness being a quality of close relationships.

*1.4.3 An Interaction-Based Assessment of Mind-Mindedness in the*

*Preschool Years*

If mind-mindedness is a relational construct, it is arguably best assessed in a relational context. As discussed above, this is the approach taken in infancy, with mind-mindedness being assessed from actual interactions between the caregiver and child. In contrast, mind-mindedness is assessed from an interview and not caregiver–child interaction from the preschool years onwards. The study reported in this thesis describes the first ever interaction-based coding scheme for mind-mindedness in the preschool years. As well as detailing the development of the coding scheme, the thesis reports on how new interaction-based measures of mind-mindedness were validated against both the early infant observational measures of mind-mindedness and concurrent mind-minded descriptions of the child. Relations between the new measures and well-established child outcomes of mind-mindedness (children's mentalising abilities) were also investigated to provide further validation.

**Chapter 2**

**Relations between Parental Mind-Mindedness and Parent and Child**

**Factors: A Comparison of Biological and Adoptive Parents**

**2.1     Introduction**

As discussed in Chapter 1, research to date has primarily focussed on mind-mindedness within biological families, with Bernier and Dozier's (2003) study on foster carers being the only previous research conducted with alternative family structures. The aim of Studies 1 and 2 was to compare levels of mind-mindedness in adoptive and biological families in order to explore the proposal that mind-mindedness is a quality of close relationships. Investigating mind-mindedness in adoptive families addresses this proposal in two ways.

First, if mind-mindedness is a relational construct, one would hypothesise that caregivers of children where the relationship is deemed less close and more problematic would be less mind-minded. Previous research by Loehlin, Horn, and Ernst (2010) found that parents' relationships with biological children were subjectively judged as being closer than relationships with adoptive children. Likewise, adoptive children reported lower levels of closeness with their parents compared to biological counterparts. However, retrospective accounts from midlife adoptees and non-adoptees were used in the study, so the measurement of closeness was not a reflection of the current representation of the relationship.

Rueter, Keyes, Iacono, and McGue (2009) investigated differences in relationship quality between adoptive and biological dyads using self-report and independent observer methods; some of the parents in this study had both adopted and biological children, enabling comparisons to be made between the parent's relationship with each child. They found that adoptive families reported

more conflict compared with their biological counterparts, and families with adopted and biological children reported more conflict in the relationship with the adopted than with the biological child. The adopted children's behaviour was additionally rated as being less warm and more conflictual than that of biological children. Adoptive mothers also reported having more disagreements and conflict with their child (Lansford, Ceballo, Abbey, & Stewart, 2001). More recent research by Walkner and Reutner (2014) lends support to adoptive relationships being more challenging that biological relationships, with higher self-reported and observed conflict amongst adopted children and their parents, and lower reported closeness between adopted children and their adopted mothers. The reasons why adoptive relationships are deemed more challenging remains unclear within the literature; some authors argue that differences in family interactions and communication, e.g., less warmth, less supportive communication and more parent-child-conflict, as outlined above, are said to be influential in determining the quality of the relationship. Other authors have argued that adoptee temperament may play a role in evoking higher levels of parent-child conflict (Shiner & Caspi, 2003), or that adoption-specific factors, such as identity development, may be particularly stressful for adoptees, which could increase negative behaviour and interactions with adoptive parents (Bimmel, Juffer, van IJzendoorn, & Bakermans-Kranenburg, 2003; Grotevant, Wrobel, van Dulmen, & McRoy, 2001).

Second, the relationship between the caregiver and child in adoptive families will have been established for less time in comparison to biological families, for whom the relationship spans the child's entire life. This is particularly true in the case of UK adoptions, which tend to occur beyond

infancy, with the average age of adoption being 3 years 5 months (Department for Education, 2016). This may be significant, as research has suggested that mind-mindedness in biological parents begins to develop before their baby is born; parents who predicted more about their unborn child's characteristics during the third trimester of pregnancy were more likely to comment appropriately on their infant's mental states at 6 months (Arnott & Meins, 2008).

It could be that throughout pregnancy, parents have an extended period of time to reflect upon impending parenthood, and what they believe or hope their unborn child will be like. However, adoptive parents are not granted the same opportunity. Instead, they must embark on a lengthy assessment period before being approved to be an adopter, and then the information they acquire about the child prior to their placement is often heavily focused on the child's pre-adoption history. Having not experienced caring for the child from birth, and having to demonstrate to professionals that they are suitable for adoption, parents undergoing the adoption process may feel less knowledgeable about the child.

Despite there being no formal research to date into whether adoptive parents feel less knowledgeable about the child they are adopting in comparison to biological parents, factsheets for adoptees published by the Child Welfare Information Gate (2015a) highlight that reliable information about the child's family history, placement history and development is sometimes unavailable. The uncertainty and unknowns about a child's experiences prior to placement are a common aspect of adoption (Child Welfare Information Gateway, 2015a), and may leave some adoptive parents feeling less knowledgeable about their child, and thus less able to speculate upon and represent their child's mental states.

If mind-mindedness is a relational construct, given that the relationship between the adoptive parent and child has been non-continuous, and due to previous research suggesting adoptive relationships are rated as less close and more problematic, one would hypothesise that mind-mindedness will be lower in adoptive parents in comparison with biological parents. Additionally, it could be that mind-mindedness may vary as a result of the age at which the child was adopted and the length of the adoption. Parents of children who were adopted at a younger age, or who have been adopted for longer period of time, will have had more opportunities to learn about and attune to the child's ways of thinking and feeling.

Alternatively, it may be that adoptive parents are trying especially hard during the early stages of the placement to tune in to the mental states of their children, given their keenness for the adoption placement to be a success. All adoptive parents will have encountered the experience of having to adapt to a new child. Often adoptive parents will come equipped with information about the child's history, and will have been encouraged to reflect on how those past experiences may come to influence the child's behaviour throughout the adoption process. In addition, many adoptive parents have come to adopt due to fertility issues that have prevented them from conceiving a biological child. As such, due to the personal motivation to become parents, and the information given to them about the child and their history, adoptive parents may be particularly conscious of attuning to the child's mental states and trying to forge a positive relationship in the early stages of the placement. If this is the case, mind-mindedness and the length of adoption would be unrelated.

The two studies reported in this chapter also investigated whether the mind-mindedness coding scheme developed for biological parents was suitable for coding descriptions of adopted children. Adoptive parents may describe their children in terms of their experiences prior to the adoption, as they are given such a wealth of information on the child's history prior to the child's placement with them; if so, the existing coding scheme may need to be adapted to account for such descriptions. If descriptions that refer to pre-adoption experiences occur with reasonable frequency, they may be informative about the ways in which adoptive parents represent their adopted children.

To summarise, the main aim of Studies 1 and 2 was to investigate relations between mind-mindedness and adoption status. If Meins et al.'s (2014) argument that mind-mindedness is a relational construct holds, it can be hypothesised that compared with their biological counterparts, adoptive parents will be less likely to describe their children with reference to mental characteristics. In the adoptive sample, relations between mind-mindedness and age at and length of adoption were explored, along with the relation between mind-minded descriptions and descriptions that referred to the child's pre-adoption history.

**Study 1**

## 2.2    Method

### 2.2.1    Participants

Participants were adoptive parents ($n = 89$, 8 fathers) and biological parents ($n = 54$, 6 fathers), and their children (adopted children, 41 girls, 31 boys, 17 declined to answer; biological children, 29 girls, 22 boys, 3 declined to

answer). All children were aged 3–17 years; the mean age of adopted children was $M = 108.09$ months ($SD = 50.16$ months, range 3–17 years), and $M = 86.89$ months for biological children ($SD = 33.12$ months, range 3–11 years). Adoptive parent age was $M = 44.78$ years ($SD = 6.58$, range 30–62), and biological parent age was $M = 37.85$ years ($SD = 6.78$, range 25–50). Mean child age at placement for adoption was 40 months (range 3 days–108 months), and all children had been with the adoptive family for a minimum of 6 months ($M = 71$ months, range 6–187 months). The sample of biological families did not have children who had been taken into care, nor had there been any suspicions of abuse or neglect in the families.

The groups of adoptive and biological parents were broadly comparable in terms of occupational status as assessed using the Office for National Statistics National Standard Occupational Classification 2010 Index, which codes occupations on a 1 to 10 scale, with higher scores indicating less professional occupations. In the adoptive group, 39% of parents were in managerial or professional occupations and 24% were not in employment; in the biological group, 31% of parents were in managerial or professional occupations and 31% were not in employment. The project was approved by the relevant university ethics committees and adhered to British Psychological Society guidelines for Internet-mediated research (2013).

### 2.2.2 Materials and Methods

Both adoptive parents and biological parents completed the study online. A link to the online questionnaire was circulated to adoptive parents via several channels; advertisements on a host adoption agency's social media pages, direct approach to participants by the adoption agency, a national adoption charity

message board, and word of mouth between adopters. Biological parents were recruited via a link on a national online parenting forum, circulation of the link through several Universities, and word of mouth. When participants in both groups clicked on the link, they arrived at a participant information screen which gave details of the study and requested consent for participation. All parents were informed that they provided information anonymously, that they could withdraw from the study at any point, and that their data would be destroyed upon withdrawal. All parents were asked to provide demographic information on their age, gender, and occupation, and their children's age and gender. Adoptive parents also completed a section giving details of their children's age at placement with the family, and the date of the child's placement with the family (allowing length of placement to be calculated), and the reason for adoption (if known). This was then followed by completion of the mind-mindedness measure.

**2.2.2.1 Mind-mindedness.** After completing the above demographic questions, parents were instructed: "Think of your child. Please use the space below to tell us a little about him or her. There are no right or wrong answers; you can describe your child any way you wish".

For both adoptive and biological parents, descriptions were divided into discrete attributes that were coded into exhaustive and exclusive categories according to criteria in mind-mindedness coding manual (Meins & Fernyhough, 2015): (a) mental, referring to the child's mental life, including emotions, personality, intelligence, knowledge, and intellectual activities (e.g., 'loving', 'anxious', 'clever', 'knows what she wants', 'high achiever', 'loves reading'); (b) behavioural, including activities and interactions/social relationships with

others (e.g., 'friendly', 'outgoing', 'loves playing', 'gets on well with people');
(c) physical, including age, birth order, and appearance; or (d) general, including
non-specific value judgements (e.g., 'nice', 'lovely', 'quirky' 'unique') and
descriptions that did not fit into the other three categories.

Higher scores for mental descriptions indicate higher levels of mind-
mindedness. Since no specific hypotheses were made with regard to the other
individual types of description, behavioural, physical, and general scores were
summed to create a non-mental description category. Scores for mental and non-
mental descriptions were expressed as a proportion of the total number of
descriptions, to control for level of verbosity in the caregivers (Meins et al.,
1998).

Adoptive parents' descriptions of their children were recoded to
investigate whether the coding scheme needed to be adapted for adoptive
parents. Of the 89 adoptive parents, 41 included at least one comment relating to
the reason for their child being adopted or pre-adoption experiences (e.g., 'taken
into care age 18 months', 'five foster care placements before us', 'in care for too
long before adoption plan made', 'did not deserve the treatment that he had',
'birth family wanted to keep him'). A *Placement* category was therefore created
for these descriptions. In the original coding scheme, such descriptions were
coded in the general category.

All transcripts were coded by a researcher who was blind to all other
data, and a randomly selected 25% of transcripts was coded by a second, blind
coder (note that it was impossible for coders to be blind to adoption status in
cases where parents mentioned adoption-related experiences in their child
descriptions); inter-rater reliability: $\kappa = 0.86$.

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## 2.3    Results

### 2.3.1    Descriptive Statistics and Preliminary Analyses

Child gender was unrelated to the proportion of mental characteristics in parents' descriptions (boys $M = 0.38$, $SD = 0.23$; girls $M = 0.41$, $SD = 0.24$), $t(249) = 1.02$, $p = .311$. Child age was unrelated to the proportion of mental characteristics in parents' descriptions, $r(268) = -.01$, $p = .878$; parent age was negatively correlated with the proportion of mental characteristics, $r(266) = -.14$, $p = .022$, but the effect was small. Parental occupation was negatively correlated with the proportion of mental characteristics, $r(266) = -.17$, $p = .006$, indicating that parents who had more professional occupations were more likely to describe their children with reference to mental characteristics, however the effect was small. As shown in Table 2.1, adoptive parents were older than biological parents, and adoptive children were older than biological children. Adoptive parents had more professional occupations than their biological counterparts (6 parents did not provide data on occupational status).

### 2.3.2    Relations between Adoption Status and Parents' Child Descriptions

Relations between adoption status and parents' descriptions of their children were investigated using MANCOVA. Scores for mental and non-mental child descriptions were entered as dependent variables, adoption status (adoptive, biological) was entered as a fixed factor, and parent age, parental occupation, and child age were added as covariates. There was a main effect of adoption status, $F(1, 134) = 6.97$, $p = .001$, $\eta^2 = .060$: biological parents scored more highly than adoptive parents for mental descriptions, $F(1, 134) = 7.52$, $p = .007$, $\eta^2 = .059$, and adoptive parents scores more highly than biological parents for non-mental

**Table 2.1: Descriptive Statistics for Study 1 as a Function of Adoption Status**

|  | Adoptive Mean (SD) | Adoptive Range | Biological Mean (SD) | Biological Range | Group Difference $t$ | Effect size $d$ |
|---|---|---|---|---|---|---|
| Child age in months | 108.09 (50.16) | 36–204 | 86.89 (33.12) | 36–132 | 2.76** | .51 |
| Parent age in years | 44.78 (6.58) | 30–62 | 37.85 (6.78) | 25–50 | 5.99*** | .97 |
| Parent occupation status | 4.96 (3.32) | 1–10 | 3.68 (2.47) | 1–10 | 2.42* | .44 |
| Mental descriptions (proportion) | 0.33 (0.23) | 0–1 | 0.47 (0.21) | 0–1 | 3.75*** | .63 |
| Non-mental descriptions (proportion) | 0.66 (0.23) | 0–1 | 0.52 (0.20) | 0–1 | 3.74*** | .65 |

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

descriptions, $F(1, 134) = 8.77$, $p = .004$, $\eta^2 = .068$ (see Table 2.1).

### 2.3.3. Child Descriptions in the Adoptive Group

Table 2.2 shows the descriptive statistics for the different types of child description parents used. Placement description scores were non-normally distributed; non-parametric correlations are therefore reported. Adoptive parents' scores for placement descriptions were negatively correlated with those for mental descriptions, $\rho(87) = -.50$, $p < .001$, but placement description scores were unrelated to non-mental description scores, $\rho(87) = -.13$, $p = .234$.

**Table 2.2: Parents' Proportional Scores for the Child Description Categories as a Function of Adoption Status (Study 1)**

|  | Adoptive | | Biological | |
|---|---|---|---|---|
|  | Mean (SD) | Range | Mean (SD) | Range |
| Mental Descriptions | 0.33 (0.23) | 0–1 | 0.47 (0.21) | 0.08–1 |
| Behavioural Description | 0.12 (0.13) | 0–0.50 | 0.39 (0.19) | 0–0.83 |
| Physical Descriptions | 0.17 (0.16) | 0–1 | 0.07 (0.13) | 0–0.57 |
| General Descriptions | 0.28 (0.19) | 0–1 | 0.07 (0.09) | 0–0.40 |
| Placement Descriptions | 0.11 (0.15) | 0–0.67 | - | - |

### 2.3.4 Relations between Adoptive Parents' Mind-Mindedness, Children's Age at Placement, and Length of Adoption

Correlational analyses were used to investigate relations between children's age at placement and length of adoption and the scores for parents' descriptions of their children. Only 8 of the 89 adopted children had been

adopted for less than a year (ranging between 6 and 10 months). Mental

description scores were unrelated to length of placement, $r(87) = .05$, $p = .497$,

and children's age at placement, $r(87) = .14$, $p = .211$. Placement description

scores were positively correlated with children's age at placement, $\rho(87) = .22$, $p$

$= .039$, but were unrelated to length of adoption, $\rho(87) = -.15$, $p = .159$.

In this sample, only two children were placed for adoption very soon after

birth (at 3 and 5 days); they were included in all analyses, but no meaningful

comparisons between those adopted shortly after birth and those adopted later in

development could be conducted, due to the sample size. For information, the

mean mental description score for parents who had adopted at birth was 0.47 ($n$

$= 2$, $SD = 0.04$), compared with 0.26 ($SD = 0.19$) for parents ($n = 29$) who had

adopted children aged between 3 and 24 months, and 0.38 ($SD = 0.24$) for

parents ($n = 58$) who had adopted children over age 2. Thus, it appears that

parents who adopted at birth used a higher proportion of mental descriptions

when describing their child compared to parents who adopted their child between

3 and 24 months, and parents who adopted their child when they were over 2

years old.

## 2.4    Discussion

The main aim of Study 1 was to explore differences in mind-mindedness

between adoptive and biological parents. Compared with their biological

counterparts, adoptive parents were less likely to describe their children using

mental-state terms, and more likely to describe them in non-mental terms. Given

that adoptive relationships are characterised by lower levels of reported closeness

(Loehlin et al., 2010; Walkner & Rueter, 2014), this group difference is

consistent with the proposal that mind-mindedness is a quality of close

relationships (Meins et al., 2014). Mind-mindedness was unrelated to length of adoption or the age at which the children were adopted; however, all children had been adopted for at least 6 months, and only 2 were adopted shortly after birth. As such, there may not have been enough variability in adoption placement length to detect significant associations between placement length and mind-mindedness.

Study 1 demonstrated that the scheme developed for coding biological parents' descriptions of their children needed to be adapted for adoptive parents. A new category was added to index adoptive parents' tendency to mention pre-placement experiences, such as the reason for the child being taken into care, experiences in care, or relationships with biological relatives; almost half of the adoptive parents mentioned such experiences when describing their children. Moreover, adoptive parents' tendency to reference their child's pre-placement experiences was negatively related to their tendency to describe their children in mentalistic terms, showing that a focus on pre-placement experiences was associated with parents being less willing or able to describe their children in terms of their mental qualities.

However, before drawing strong conclusions about adoptive parents being less mind-minded than biological parents, it is necessary to consider alternative factors that might explain the observed group difference. For example, adoptive and biological families may differ from one another in ways other than their adoption status, and such differences may explain why adoptive parents were found to be less mind-minded than biological parents in Study 1. For example, it may be that adoptive and biological parents differ in relation to

parent and child-centred characteristics, which could all impact on how parents think about and interact with their child, and affect the closeness of the relationship. To explore this possibility, Study 2 assessed the flexibility of parents' representations of children and childrearing, and investigated for the first time whether adoptive and biological parents differed in their tendency to take into consideration the dynamic, reciprocal nature of the parent–child relationship in determining children's development.

Additionally, Study 2 investigated parents' self-reported mental wellbeing. Up to 15% of adoptive parents may experience post-adoption depression (Foli, South, Lim, & Hebdon, 2012), which is similar to levels reported in biological motherhood (O'Hare & Swain, 1996; Vesga-Lopez et al., 2008). However, research suggests that adoptive parents face unique obstacles to parenthood in comparison to biological parents, including difficulties with infertility (Daniluk & Hurtig-Mitchell, 2003), fear and anxiety associated with new responsibilities and lack of social support (McKay & Ross, 2010), and unrealistic expectations for their children and of themselves as new parents (Foli, 2010; Foli et al., 2012). McKay and Ross (2010) reported that many adoptive parents exhibit greater anxiety than that experienced by biological parents, due to self-imposed higher parenting standards, as they feel they have been 'chosen' to raise someone else's child and thus have more to prove. Study 2 therefore assessed parents' reports of depression and anxiety, to explore whether differences in mental wellbeing between adoptive and biological parents could account for the group differences in mind-mindedness.

Research investigating child behavioural difficulties in adoptive and non-

adoptive children frequently reports that adopted children exhibit higher levels of behavioural difficulties (Cohen, Coyne, & Duvall, 1993; Juffer & van IJzendoorn, 2005; Lansford et al., 2001; Wierzbicki, 1993), and parenting stress is higher in parents of children exhibiting behavioural difficulties (Anthony et al., 2005; Farr, Forsell & Patterson, 2010). The literature exploring the extent of parenting stress within adoptive families is mixed, with some studies reporting higher levels of self-reported stress is comparison to biological parents (e.g., McGlone, Santos, Kazama, Fong, & Mueller, 2002, Rijk, Hoksbergen, ter Laak, van Dijkum, & Robbroeckx, 2006), and several other studies reporting lower levels of stress in adoptive parents compared to biological parents (Ceballo, Lansford, Abbey, & Stewart, 2004; Judge, 2003; Palacios & Sanchez-Sandoval,, 2006). However, what has been reported is that adoptive parents' perception of behavioural difficulties is positively related to reported parenting stress (Judge, 2003; McGlone et al., 2002), and reported closeness between adoptive parents and children has been postulated to be affected by the greater prevalence of child behavioural difficulties in this group (Loehlin et al., 2010). If a child's behaviour is seen as difficult and challenging, this may impede parents' ability to take the child's perspective and represent their children with reference to their internal states. Thus in Study 2, parents reported on their children's behaviour in order to investigate whether differences in mind-mindedness between adoptive and biological parents remained once children's behaviour was controlled.

In summary, Study 2 attempted to replicate Study 1's finding that adoptive parents' mind-mindedness is lower than that of biological parents. In addition, Study 2 assessed parents' views about children and childrearing,

parental mental health, and children's reported behavioural difficulties to investigate whether these factors might account for differences in mind-mindedness between adoptive and biological parents. Finally, Study 2 also attempted to replicate Study 1's finding that describing adopted children with reference to their pre-placement experiences is negatively related to describing them with reference to their mental states, and that children's age at placement and length of adoption are unrelated to mind-mindedness.

## Study 2

### 2.5 Method

#### 2.5.1 Participants

Participants were adoptive parents ($n = 36$, 4 fathers) and biological parents ($n = 114$, 12 fathers), and their children (adopted children, 12 girls, 24 boys; biological children, 61 girls, 53 boys). All children were aged 3- to 17-years; the mean child age was 110.44 months for adopted children ($SD = 48.24$, range 37–200 months) and 100.32 months for biological children ($SD = 41.45$, range 35–198 months). The mean age of adoptive parents was 45 years ($SD = 6.70$, range 27 to 56 years), and 39 years for biological parents ($SD = 6.41$, range 25 to 55 years). The majority of the parents were mothers (adoptive group, $n = 32$, biological group, $n = 102$), White British (adoptive group, $n = 34$, biological group, $n = 103$), married or cohabiting (adoptive group, $n = 30$, biological group, $n = 98$), and held higher educational qualifications (adoptive group, $n = 22$, biological group, $n = 93$), which was measured on a scale of 0 (no formal qualifications) to 5 (higher University degree).

Mean child age at placement for adoption was 41.65 months ($SD = 34.90$ months, range 10 days to 165 months, 1 parent refused to answer), and all

children had been with the adoptive family for a minimum of 5 months ($M =$ 64.26 months, $SD = 43.18$ months, range 5 to 194 months, 2 parents refused to answer). The sample of biological parents had children who had never been taken into care or been the subject of a child protection plan.

In terms of occupational status, using the Office for National Statistics National Standard Occupational Classification 2010 Index, as described in Study 1, in the adoptive group 43% of parents were in managerial or professional occupations and 9% were not in employment; in the biological group, 56% of parents were in managerial or professional occupations and 12% were not in employment.

### 2.5.2 Materials and Methods

All parents completed the study online. The procedure for recruiting adoptive and biological parents replicated the details described in Study 1. All participants were asked to provide demographic information on their age, gender, ethnicity, occupation (using the occupation classification codes described in Study 1), and highest level of educational attainment: from 0 (no formal qualifications) to 5 (higher university degree). Participants also provided the age, ethnicity, and gender of the child (the eldest of their children if they had more than one within the age bracket of 3 to 16 years), as well as the ages of any other children. Adoptive parents also completed questions detailing the date their child was placed with them, the child's age when they were placed with them, and a brief reason for the child being placed for adoption (if known). Participants then went on to complete further measures, in the order described below.

### 2.5.3    Measures

**2.5.3.1 Mind-mindedness.** Data were collected and coded as described in

Study 1. All transcripts were coded by a trained researcher who was blind to all

other data. A randomly selected 20% of transcripts were coded by a second,

blind coder (note that it was impossible to blind coders to adoption status in

cases where parents mentioned adoption-related experiences in their child

descriptions); inter-rater reliability: $\kappa = .90$.

**2.5.3.2 Parents' Views on Children and Childrearing.** Parents

completed the Parental Concepts of Development Questionnaire (CODQ;

Sameroff & Feil, 1985; see Appendix 1), which assesses parental attitudes and

values towards the behaviour/development of their child. The work of Sameroff

highlights the importance of parental thinking about children and their

development; in particular the degree of richness and complexity with which

they consider the roles of themselves as parents, the child, and the developmental

and situational contexts in which they are embedded, to explain their child's

behaviour. Sameroff and Feil (1985) argue that the degree of complexity of

parental thought regarding child development and behaviour will influence the

degree to which they can deal with complexity in general. For example, parents'

who have a simplistic view of the determinants of child development and child

behaviour, and are unable to consider two variables within the same context, will

be unable to have an interactional view of development, which limits their

cognitive capacity to understand developmental theories (Sameroff & Feil,

1985). Thus the degree to which parents' can understand and reason about the

determinants of child behaviour will ultimately influence the cognitive

complexity with which they regard their child, and the importance of the

parenting role.

The questionnaire is comprised of 20 items, tapping two different levels/forms of parental thinking. Ten items represent the categorical level, whereby parents view themselves and their child as separate entities, and child development as resulting from their child's character, independent of the dyadic relationship and parental actions. Thus, single explanations of behaviour are usually agreed with. For example, parents may believe that behaviour is based on environment alone ('parents have to be strict with their child or else they'll turn out badly'), or role-stereotypes ('boy babies are more active than girl babies').

The remaining 10 items represent the perspectivist/compensating level. The *compensating* level represents parents as being able to appreciate that outcomes have multiple causes; a broader context is used when evaluating the child ('children have to be treated differently as they grow older'). Finally, at the *perspectivist* level, parents can represent child behaviour as being a product of individual experiences within a particular environment/context; that is, multiple causes can interact and be transformed over time to produce outcomes ('children's problems never have a single cause'). The latter level takes into consideration the dynamic, reciprocal relationship between parent and child. Thus, at this level, parents' views of child behaviour are less rigid and take into account the effect of dynamic reciprocal relationships. Categorical item clusters have been found to be negatively correlated with compensating-perspectivist clusters (Sameroff & Feil, 1985).

Participants were required to read each statement, and rate their level of agreement with the 20 statements on a four-point scale (strongly agree, agree, disagree, strongly disagree). Three scores were produced: a Categorical Score

total of the 10 categorical items, ranging from 0–40), a Perspective Score (total

of the 10 compensating/perspectivist items, ranging from 0–40), and CODQ

Total Score (amount of agreement to compensating-perspective items, plus the

amount of disagreement to the categorical items, range 20–70).

**2.5.3.3 Parental Mental Health.** Parental mental health was assessed

using the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith,

1983; see Appendix 2), a self-report measure used to assess mood and emotional

symptoms. It is comprised of 14 items; seven items describing symptoms of

anxiety, and seven items describing symptoms of depression. Participants were

asked to rate how much they had been affected by each particular symptom/how

frequently they had experienced it in the last month on a 4-point scale (0–3). For

both the depression and anxiety items, scores ranged from 0–21; higher scores

were indicative of more frequent/severe symptoms. The thresholds for

depression and anxiety items were as follows: 0–7 normal, 8–10 borderline

abnormal, 11–21 abnormal. The HADS has been found to have good

discriminant validity, internal consistency, and concurrent validity (Bjelland,

Dahl, Tangen Haug, & Neckelmann, 2002).

**2.5.3.4 Child Behavioural Difficulties.** Parents reported on their

children's behavioural difficulties, assessed using the Strengths and Difficulties

Questionnaire (SDQ; Goodman, 1997). The SDQ is a screening questionnaire for

a range of behavioural difficulties, suitable for use with children aged between 3

and 16 years.

The questionnaire consists of 25 items that are each rated on a 3-point

scale, yielding scores of behavioural difficulties in four main areas: (a) emotional

symptoms, (b) conduct problems, (c) hyperactivity/inattentiveness, and (d) peer

problems. The four sub-scales can be totalled to give a Total Difficulties score, ranging from 0–40. Higher scores are indicative of a greater number of behavioural difficulties, with scores between 14 and 16 indicating borderline clinical difficulties, and scores between 17 and 40 being classed as 'abnormal', indicating clinical level difficulties. There is also a prosocial sub-scale, measuring positive child behaviour towards others. However for the purposes of the current study, due to a primary focus on aspects of child behaviour that may be deemed 'difficult' and have a subsequent impact on the closeness of the relationship, this scale was not analysed.

It has been shown that children with higher total difficulties scores have greater rates of psychopathology, as judged by the prevalence of a clinical disorder (Goodman & Goodman, 2009). Satisfactory reliability and validity of the SDQ has been found; internal consistency, test-retest reliability after 4 to 6 months, and inter-rater agreement are shown to be satisfactory (Goodman, 2001). The SDQ has been deemed an appropriate screening tool for detection of emotional, behavioural, and concentration problems among looked after children (Goodman, Ford, Corbin, & Meltzer, 2004).

**2.6     Results**

**2.6.1     Descriptive Statistics and Preliminary Analyses**

Child gender was unrelated to the proportion of mental descriptions (boys $M = 0.45$, $SD = 0.19$; girls $M = 0.50$, $SD = 0.24$), $t(148) = -1.26$, $p = .209$. Child age was unrelated to mental description scores, $r(148) = .06$, $p = .496$. Parent age was negatively correlated with mental description scores, $r(148) = -.19$, $p = .017$. Parental education was unrelated to mental description scores, $r(148) = .12$, $p = .138$. Adoptive parents were older than their biological counterparts, $t(148) =$

5.14, $p < .001$, but there was no difference in age between adoptive and

biological children, $t(148) = 1.22$, $p = .222$. There were no differences between

the adoptive and biological groups with respect to parent gender, marital status,

and parent or child ethnicity, $\chi^2 < 2.19$, $ps > .139$. Adoptive parents were more

highly educated than biological parents, $t(148) = 2.94$, $p = .004$. Reported child

behavioural difficulties were positive correlated with parental anxiety, $r(148) = $

.59, $p < .001$, and depression, $r(148) = .42$, $p < .001$. Parents' CODQ scores were

unrelated to children's behavioural difficulties and parental anxiety and

depression ($rs < .10$, $ps > .227$).

Compared with biological parents, adoptive parents reported higher levels

of behavioural difficulties in their children. In terms of thresholds, 7 children

(19%) in the adoption group were classified in the borderline clinical range, and

11 children (31%) fell into the 'abnormal' category, indicating clinical levels of

difficulty. In contrast, only 4 children (3.5%) in the biological group were within

the borderline clinical range, and 9 children (8%) were in the abnormal category.

There were no group differences in parents' CODQ scores.

There were also no overall group differences in parents' self-reported

mental health. However, when looking at the threshold measures of parents'

mental health, 2 parents (5%) in the adoptive group were classified in the

borderline range for depression, as measured by the HADS, and 6 parents (17%)

were classified in the abnormal range; in the biological group, 11 parents (10%)

were in the borderline range, and 2 (2%) were within the abnormal range. Using

chi-square analysis, significant group differences were found, $\chi^2 = 12.31$, $p = $

.002, thus it appears that compared to adoptive parents, a higher percentage of

biological parents report difficulties in the borderline range for depression, and

a higher percentage of adoptive parents reported difficulties within the abnormal range compared with biological parents. When looking at anxiety scores, 6 parents (17%) in the adoption group were classified in the borderline range, and 4 parents (11%) were classified in the abnormal range; in the biological group, 18 parents (16%) and 18 parents (16%) were classified in the abnormal range. Using chi-square analysis, no significant group differences were found, $\chi^2 = .48$, $p = .787$.

**Table 2.3: Descriptive Statistics for Study 2 as a Function of Adoption Status**

| | Adoptive Mean (SD) | Adoptive Range | Biological Mean (SD) | Biological Range | Group difference t | Effect size d |
|---|---|---|---|---|---|---|
| Child age in months | 110.44 (48.24) | 37–200 | 100.32 (41.45) | 35–198 | 1.22 | .23 |
| Parent age in years | 45.11 (6.70) | 27–56 | 38.75 (6.41) | 25–55 | 5.14*** | .97 |
| Parent education | 4.06 (1.24) | 1–5 | 3.33 (1.47) | 1–5 | 2.94** | .54 |
| Mental descriptions (prop) | 0.38 (0.18) | 0–0.83 | 0.51 (0.22) | 0.08–1 | 3.24*** | .65 |
| Non-mental descriptions (prop) | 0.63 (0.19) | 0.17–1 | 0.49 (0.22) | 0–0.92 | 3.27*** | .68 |
| CODQ scores | 53.03 (3.60) | 46–63 | 52.82 (4.06) | 42–61 | 0.27 | .05 |
| HADS Anxiety scores | 5.97 (3.89) | 0–17 | 6.55 (3.69) | 1–18 | 0.81 | .15 |
| HADS Depression scores | 4.97 (4.21) | 0–14 | 3.82 (3.02) | 0–15 | 1.81 | .32 |
| SDQ Total Score | 14.61 (6.45) | 5–29 | 8.33 (4.98) | 0–25 | 6.13*** | 1.10 |

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

*Note*: *CODQ* Concepts of Development Questionnaire; *HADS* Hospital Anxiety and Depression Scale; *SDQ* Strengths and Difficulties Questionnaire

Inter-correlations between mental descriptions and the other questionnaire
measures collectively are shown in Table 2.4.

**Table 2.4: Intercorrelations between Study 2 measures**

|  | 1. | 2. | 3. | 4. | 5. |
|---|---|---|---|---|---|
| 1. Mental description (proportion) | - | | | | |
| 2. CODQ scores | .08 | - | | | |
| 3. HADS Anxiety scores | -.18* | -.02 | - | | |
| 4. HADS Depression score | -.15 | -.01 | .59*** | - | |
| 5. SDQ Total scores | -.18* | .002 | .30*** | .42*** | - |

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

### 2.6.2 Relations between Mind-Mindedness and Parents' Views about Children, Parental Mental Health, and Child Behavioural Difficulties

Mental description scores were negatively correlated with HADS anxiety,
$r(148) = -.18$, $p = .032$, and children's reported behavioural difficulties, $r(148) =$
$-.18$, $p = .031$, and the negative correlation with HADS depression approached
significance, $r(148) = -.15$, $p = .071$. Parents' CODQ scores were unrelated to
mental and description scores, $r(148) = .08$, $p = .312$.

### 2.6.3 Relations between Adoption Status and Parents' Child Descriptions

Child description scores for adoptive and biological parents are shown in
Table 2.3. Replicating the results of Study 1, with parent age and education

added as covariates, there was a main effect of adoption status, $F(1, 146) = 6.19$,

$p = .014$, $\eta = .042$; biological parents scored more highly than adoptive parents

for mental descriptions, $F(1, 146) = 4.72$, $p =.032$, $\eta = .031$, and adoptive parents

scored more highly than biological parents for non-mental descriptions $F(1, 146)$

$= 4.75$, $p =.031$, $\eta = .033$ (see Figure 2.1).



**Figure 2.1: Parents' proportion of mental and non-mental descriptions as a funtion of adoption status**
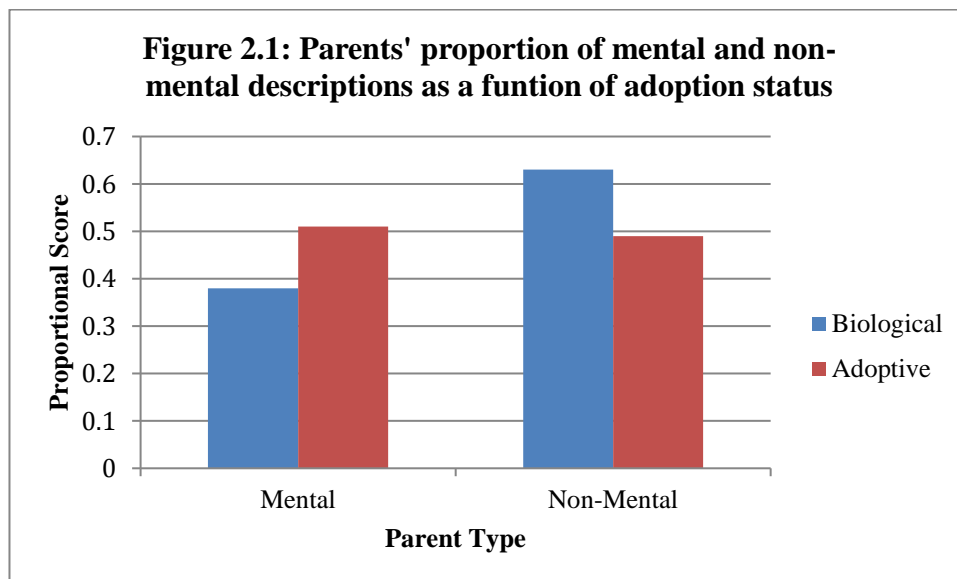
The MANCOVA was then re-run, with parents' HADS anxiety and

depression scores and children's behavioural difficulties scores added as

additional covariates. Controlling for parental mental health, the main effect of

adoption status was maintained: for mental description scores, $F(1, 144) = 5.46$,

$p = .021$; for non-mental descriptions, $F(1, 144) = 5.51$, $p = .020$.

But when SDQ scores were additionally included, the main effect of

adoption status was reduced to trend level: for mental description scores, $F(1,$

$143) = 3.83$, $p = .052$; for non-mental description scores, $F(1, 143) = 3.79$, $p =$

.054.

### 2.6.4   Child Descriptions in the Adoptive Group

Table 2.5 shows the descriptive statistics for the different types of child descriptions produced by adoptive parents and biological parents. In the adoptive group, 13 (36%) of parents included at least once placement description. As placement descriptions were non-normally distributed, non-parametric correlations are reported. Adoptive parents' scores for placement descriptions were negatively correlated with mental description scores, $\rho(36) = -.23$, $p = .004$, but placement description scores were unrelated to non-mental description scores, $\rho(36) = -.05$, $p = .559$, replicating the findings of Study 1. The relation between placement descriptions and mental descriptions remained significant when controlling for reported child behavioural difficulties, $\rho(33) = -.18$, $p = .022$, however the effect was small.

**Table 2.5: Parents' Proportional Scores for the Child Descriptions as a Function of Adoption Status (Studies 1 and 2)**

| | Study 1 | | | | Study 2 | | | |
| | Adoptive | | Biological | | Adoptive | | Biological | |
| | Mean (SD) | Range | Mean (SD) | Range | Mean (SD) | Range | Mean (SD) | Range |
|---|---|---|---|---|---|---|---|---|
| **Mental Descriptions** | 0.38 (0.18) | 0–0.83 | 0.51 (0.22) | 0.08–1 | 0.33 (0.23) | 0–1 | 0.47 (0.21) | 0.08–1 |
| **Behavioural Descriptions** | 0.34 (0.20) | 0–0.70 | 0.36 (0.20) | 0–0.89 | 0.12 (0.13) | 0–0.50 | 0.39 (0.19) | 0–0.83 |
| **Physical Descriptions** | 0.07 (0.11) | 0–0.50 | 0.05 (0.09) | 0–0.38 | 0.17 (0.16) | 0–1 | 0.07 (0.13) | 0–0.57 |
| **General Descriptions** | 0.15 (0.16) | 0–0.60 | 0.08 (0.11) | 0–0.60 | 0.28 (0.19) | 0–1 | 0.07 (0.13) | 0–0.40 |
| **Placement Descriptions** | 0.07 (0.11) | 0–0.47 | - | - | 0.11 (0.15) | 0–0.67 | - | - |

### 2.6.5 Children's Age at Placement and Length of Adoption: Relations with Parental Mind-Mindedness, Parents' Views about Children, Parental Mental Health, and Child Behavioural Difficulties

Correlational analyses investigated relations between children's age at placement and length of adoption and parents' child description scores. Parents' proportions of mental and non-mental descriptions were unrelated to length of adoption and to children's age at placement ($r$s < .09, $p$s > .618), as were proportional placement scores ($\rho$s < .21, $p$s > .247). Only one child had been adopted shortly after birth (at 10 days); only 4 children had been adopted for less than 1 year (for 5 or 6 months).

Total CODQ scores, HADS anxiety scores, and Total SDQ scores were all unrelated to length of adoption and children's age at placement (all $p$s > .05, see table 2.6). HADS depression scores were unrelated to children's length of placement, but positively correlated with children's age at placement, $r(35) = .44$, $p = .008$; parents of children who had been placed at an older age were likely to report higher depression scores.

**Table 2.6: Correlations (Pearson's *r*) between Adoptive Parents' Child Descriptions and Parent and Child Measures in Relation to Placement Length and Child Age at Placement**

|  | Length of Placement | Age at Placement |
| --- | --- | --- |
| Mental descriptions | -.07 | -.09 |
| Non-mental descriptions | .06 | .08 |
| Placement descriptions | .31 | .09 |
| CODQ Total | -.25 | -.05 |
| HADS Anxiety | -.05 | .26 |
| HADS Depression | -.12 | .44* |
| SDQ Total | .03 | .21 |

*p < .05

**2.7     General Discussion**

The main aim of the studies reported in this chapter was to investigate the proposal that mind-mindedness is a relational construct by comparing differences in mind-mindedness between adoptive and biological parents, and exploring relations between mind-mindedness and parent and child-centred variables. In both studies it was found that adoptive parents were less likely to describe their children with reference to their mental characteristics compared to biological parents. These findings fit with the proposal that one gains an insight into a person's interests, opinions, emotions, and knowledge states through being in an intimate relationship with them (Meins et al., 2014).

The main aim of Study 2 was to investigate whether the observed differences in mind-mindedness between adoptive and biological parents could be explained in terms of parents' representations of child development and childrearing, parental mental health, and children's behavioural difficulties. There were no differences between the groups with regard to their reported mental health, or their views on child development and child rearing. Once controlling for parental mental wellbeing, the group difference in mind-mindedness was maintained, meaning that group differences in mind-mindedness could not be explained in terms of parental mental health.

However, the group difference in mind-mindedness was reduced to a non-significant trend when children's behavioural difficulties were additionally controlled. Adoptive parents reported significantly more behavioural difficulties in their children compared to biological parents, in line with previous research (Hawk & McCall, 2011; Merz & McCall, 2010; Wierzbicki, 1993). On average, adoptive parents reported difficulties within the borderline clinical range,

highlighting the severity of the difficult behaviour perceived by these parents. However, it should be noted that some adoptees were well within the 'normal' range of adjustment, as has been documented in previous research (Brodzinsky, 1993). Mental descriptions were negatively correlated with behavioural difficulties. The fact that this correlation represented a small effect serves to explain why the difference in mind-mindedness between the adoptive and biological groups was maintained at trend level rather than being reduced to non-significance when behavioural difficulties were controlled. Thus, the more parents perceive their children's behaviour to be difficult, the less they may focus on their children's mental characteristics. Perceiving the child's behaviour to be difficult is likely to have a negative impact on the quality of the parent–child relationship, and the observed negative association between mind-mindedness and behavioural difficulties is therefore consistent with the proposal that mind-mindedness is a relational construct.

At first glance, the finding that length of adoption was also unrelated to mind-mindedness may seem at odds with the proposal that mind-mindedness is a relational construct. One would assume that mind-mindedness would vary as a function of how well-established the relationship is if it is a relational construct—indeed, previous research has suggested that one gains knowledge of a person and their thoughts, emotions, and interests through being in an intimate relationship with them (Meins et al., 2014). However, all of the adoptions were at least 5 months in length, with the vast majority being considerably longer; the average lengths of adoption were 40 months and 64 months in Studies 1 and 2, respectively. Moreover, there is a lengthy process whereby the child lives with the adoptive parents for a substantial period of time prior to the final adoption

order being granted. The null findings may thus have arisen because all of the adoptive relationships were long standing.

Alternatively, the fact that all adoptive parents will have encountered the same experience of adapting to a new child and attempting to learn about their likes, dislikes, and interests may explain the lack of association between length of adoption and mind-mindedness. Also, it may be that, instead of the length of the relationship being crucial, it is the closeness of the relationship that is important; adoptive parents and children may struggle to gain the same degree of closeness, or it may take a much longer period of time to develop. Children must be willing to signal or communicate their mental states, and parents must have the capacity to interpret those mental states and represent them spontaneously in order to be highly mind-minded. It may be that adopted children take much longer to signal their needs openly to their caregivers, or that adoptive parents have a tendency to focus on overt behaviour, rather than the mental states underlying the behaviour. Both would explain why mind-mindedness was found to be lower in adoptive parents. Future research should focus on exploring mind-mindedness before and after the adoption process, to investigate whether levels of mind-mindedness change as the parent–child relationship becomes more intimate and well established.

The finding that adoptive parents' tendency to describe their children with reference to pre-placement experiences was negatively related to mind-mindedness was replicated across Studies 1 and 2. The association between mind-mindedness and placement descriptions also remained significant controlling for child behavioural difficulties; thus, it was independent of the current difficulties the child was displaying. This is particularly interesting given

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that the average duration of adoption placement was 40 months and 64 months in Study 1 and Study 2 respectively. Thus it appears that some adoptive parents' spontaneous representations of their child are still rooted in their pre-adoption history, despite having been part of the adoptive family for a significant length of time. This suggests that automatically representing the child in terms of their history may impede caregivers' ability to see the child in terms of their thoughts and feelings in the here-and-now. While professionals working with adoptive parents emphasise the importance of acknowledging the child's history and respecting the child's existing identity, dwelling on the child's past and representing the child predominantly in terms of his or her pre-adoption experiences may not be ideal.

It is important for adoptive parents to understand that all children go through periods of difficult and challenging behaviour, and that such behaviour does not necessarily stem from the child's past history. Typical development entails children at times being anxious, shy, happy to approach new people, independent, overly-sensitive, argumentative, verbally challenging, and so on. If parents view their children's behaviour as being pre-determined by their pre-adoption experiences, it is likely that they will be less able to think about alternative reasons for their child's behaviour and feel less effective in their parenting; in turn, this may lead to greater parenting stress and parent–child conflict. Thus, some adoptive parents may be more likely to pathologise normal child behaviour and development, or pre-empt future difficulties, due to a focus on the child's pre-adoption experiences, which was evident in the studies reported here: "a lot of emotional issues related to his birth family and early life experiences" (age 12), "learning and school have been hard. He was so

vulnerable when he started that it has taken a long time to catch up" (age 16), "she has not been impacted by being adopted – so far" (age 3). Also, some adoptive parents used technical psychological terms to describe their relationships with their adopted children: "insecure-avoidant attachment causing great difficulties" (age 9), "he has an ambivilant (*sic*) disinhibited attachment style" (age 13), "although she presents as 'normal', her attachment style is chaotic" (age 15). It seems unlikely that adoptive parent–child attachment will have been formally assessed. Adoptive parents' tendency to focus on their children's attachment difficulties appears to reflect practitioners' heavy emphasis on attachment in working with adoptive parents. Several researchers have highlighted how this emphasis is neither evidence-based nor helpful. For example, Barth, Crea, John, Thoburn, and Quinton (2005) called for child and family services to consider alternative perspectives on and explanations for problem behaviours, observing that "professionals who would convince parents that their children may have attachment impairments—and that these will vex their children and families forever—are not reading the caveats from developmental scholars" (p. 259).

Recognising that the adopted child cannot be defined purely in terms of their pre-adoption experiences may be especially important for adoptive parents who are attempting to form a life-long relationship with the child. Brodzinsky (1987, 1990) highlighted how certain views about the adopted child's differences may hinder forming a lasting relationship. Brodzinsky (1990) argued that "insistence on difference" is ineffective as a coping strategy, and likely to lead to family disharmony and over-reliance on genetic explanations of children's behavioural and emotional problems. Assessing parents' descriptions of their

children may be a resource-effective way to provide professionals with additional information on parents and carers who may need more support.

Studies 1 and 2 both assessed mind-mindedness in relation to the same types of parent–child relationship (biological versus adoptive). The aim of Study 3 was to establish whether lower levels of mind-mindedness generalised to other types of relationships by including different comparison groups, including foster carers. Often foster placements are characterised by a large variability in length, and by nature are intended to be a temporary caregiving solution. Care is therefore likely to be less continuous compared to that of adoptive families, as placement instability is common in foster placements (Sinclair, Wilson, & Gibbs, 2005). As foster carers are likely to have been responsible for the child's care for shorter periods of time, in many cases with an expectation that the placement is not permanent, one could hypothesise that mind-mindedness will be lower in foster carers compared to biological parents from the general population.

Also, neither Study 1 nor Study 2 had any measure of the quality of the biological parent–child relationships. Assessing how mind-mindedness varies across relationships that are known to differ in quality is an obvious way to test the proposal that mind-mindedness is a relational construct. Study 3 included a sample of caregivers whose children have been the subject of a child protection plan as a result of the child having been judged to be at risk of harm. Relationships in these families are likely to have been dysfunctional and problematic, rather than loving and warm. Thus, Study 3 will test the proposal that mind-mindedness is a quality of close relationships by assessing mind-mindedness in caregiver-child dyads where the relationship has not spanned the child's entire life, or where the relationship has been judged as dysfunctional.

**Chapter 3**

**Mind-Mindedness in Birth Parents and Parents Involved with the Child**

**Welfare System**

**3.1      Introduction**

The results reported in Chapter 2 provide initial evidence of mind-mindedness being lower in adoptive families compared with biological families. Investigating mind-mindedness in other non-birth family structures, such as foster carers and their children, will allow for further exploration of the notion of mind-mindedness being a relational construct, and help to establish whether lower levels of mind-mindedness can be generalised to other types of non-birth relationships.

In the year ending 31 March 2016, a total of 70,440 children were in the care of local authorities in England (Department for Education, 2016), a rate of 60 per 10,000 children under the age of 18 years. Under the Children Act 1989, a 'looked after' child can include those who are subject to a care order by the local authority, or those subject to a placement order, where plans for adoption are made. From the 2016 statistics, 74% of looked after children were living with foster carers (Department for Education, 2016), constituting a large percentage of children who are cared for by caregivers other than their birth parents. The primary reason for social services engaging with looked after children and their families in the UK is problems with the family environment and relationships; 62% of cases cite abuse or neglect of the child, with family-related issues making up the majority of the rest of the cases e.g., family dysfunction, family acute stress, absent parenting (Department for Education, 2016). Many children experience several placement changes throughout their time in foster

care, with one study reporting that children made 'planned moves' as frequently as three times within the first year of entering foster care (Ward & Skuse, 2001). Also, children often have periods spent at home interspersed with periods in care. Research reports that upon leaving care, children have experienced an average of four periods at home during their childhood (Biehal, Clayden, Stein, & Wade, 1995).

Within foster placements, there is likely to be a wide spread of placement lengths, given that placements can range from a few weeks/months up to years (Clark, 2009), allowing for a more in-depth exploration of the relation between mind-mindedness and length of the carer–child relationship. As such, the experience of children in foster care, and that of their caregivers, is different to the experience of birth parents and adoptive parents, whereby the overall aim is the prospect of a long-term, lifelong relationship between caregiver and child. Short-term foster care usually lasts up to a few years, with the ultimate goal being reunification of the child with their birth parents (Colton & Williams, 2006). However, if this is deemed to be untenable or unachievable, children are either placed for adoption, or in long-term foster care until they reach the age of maturity (Schofield, 2002; Child Welfare Information Gateway, 2015b). As such, foster carers are in the unique predicament of knowing that the placement is likely to be a temporary solution, something that biological parents and adoptive parents seldom experience. This may leave foster caregivers uncertain about how long the placement will last, and thus how much to invest in the relationship (Kinsey & Schlosser, 2012).

Due to the temporary nature of foster placements, foster carers' willingness to engage in a close relationship with the child may be compromised.

Previous research has also shown that factors such as child age at placement may affect a foster carers commitment to the child, and the ability to engage in a close relationship. Children who are placed in foster care before the age of 12 months typically behave in ways that seek to elicit nurturing care from the foster carer within a week or two, whereas children placed at an older age tend to display more avoidant or resistant behaviours (Stovall & Dozier, 2000), which is said to affect foster carers' ability and willingness to engage in a close relationship with the child (Dozier & Lindhiem, 2006). Also, foster carers who have fostered a higher number of children previously typically show lower levels of commitment compared to foster carers who have fostered fewer children (Dozier & Lindhiem, 2006). Given that mind-mindedness is proposed to be a quality of close relationships, the foster carers' ability or willingness to represent their child in terms of their mental states may subsequently be reduced.

A further way to investigate whether mind-mindedness can be considered a relational construct is to explore mind-mindedness in families where the parent–child relationship is known to be sub-optimal or dysfunctional. Assessing mind-mindedness in families involved with child protective services allows for exploration of mind-mindedness across relationships that may vary in the quality or closeness of the relationship. In the UK, if a child is the subject of a child protection plan, concerns for the child's wellbeing have been reported to the local authority, compelling them to investigate and judge whether the child is at significant risk of harm (typically abuse or neglect). In cases where a risk of harm is identified, children become the subject of a child protection plan, allowing them to live with their parents unless it is deemed too unsafe for them to do so. If the risk of harm is deemed too significant, the child is taken into the

care of the local authority, and often placed with a foster carer until long-term decisions about the child's welfare can be assessed.

Thus, parent–child relationships in families involved with child protective services have been judged as problematic or dysfunctional; this provides an objective measure of difficulties in the parent–child relationship, rather than relying on parental report, which is often subject to strong social desirability bias. Similarly, in parents of children who have spent a period of time in care, the local authority will have had grave concerns about the child's welfare; enough concern to remove them from the care of their parents, until sufficient changes have been made to deem the child safe to live with them once again. As such, the quality and closeness of the relationship will have been compromised not only due to the child being removed from their biological parents, but also due to the time spent away from the parent in a temporary placement. One can hypothesise that in families where the quality of the parent–child relationship has been compromised, parents' ability to represent the mental states of their child may be impaired or affected, thus mind-mindedness would be lower in families where the parent–child relationship has been judged to be sub-optimal.

The aim of Study 3 was to compare levels of mind-mindedness between foster carers, parents of children who have spent one or more periods of time in care but who are currently living at home, and parents of children who have been the subject of a child protection plan, in comparison with a community sample of biological parents (whose children have never been the subject of a child protection plan or been placed in foster care). The design allows for further exploration of mind-mindedness as a relational construct by assessing mind-mindedness in caregivers where the relationship has been non–continuous and is

likely to have been established for a relatively shorter period of time in comparison to biological parents, as is the case for foster carers, or where the quality and closeness of the relationship has been compromised, which is the case in biological parents of children who have been deemed at risk of abuse or neglect at some point in their life.

Given the findings of Study 2, highlighting the potential role of children's behavioural difficulties in explaining the difference in mind-mindedness between biological and adoptive parents, a further aim of Study 3 was to explore how behavioural difficulties related to mind-mindedness in these new groups of caregivers. If mind-mindedness is shown to be lower in relationships that have not spanned the child's entire life (foster carers), or those in which the quality of the relationship has been compromised (families where there is involvement of child protective services), it is necessary to consider alternative factors which may explain the group differences. For example, differences may exist with respect to the child's behaviour. Research has consistently reported that children in foster care display higher rates of externalising behaviour problems, with an average prevalence rate of 42%, compared to a prevalence rate of 7–20% in the community (Keil & Price, 2006). Also, placement in foster care has been associated with the likelihood of children having depression (Anctil, McCubbin, O'Brien, & Pecora, 2007; Shin, 2005).

Research by Egelund and Lausten (2009) explored child behavioural difficulties in children placed in foster care, children placed with parents at home but who were subject to a child protection intervention, and a cohort of non-welfare children in a Danish sample. Using parent or carer report of behavioural difficulties, they found that children placed in care were highly overrepresented

in the 'abnormal' category of behavioural difficulties, as measured by the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). Nearly half (48%) experienced abnormal scores in their Total Difficulties score, or the four problem categories (emotional problems, conduct problems, hyperactivity and peer problems). Moreover, significantly more children in the 'home group', who were subject to child protection interventions, scored in the abnormal range (31%) in comparison to non-welfare children (5%); however they were less likely to score in the abnormal range compared to children in foster care.

Similarly, research comparing the emotional and behavioural functioning of children reunified with their birth families with those who stay in care reports elevated levels of difficulties in reunified children. In a prospective cohort design, it was found that after controlling for functioning and symptoms at entry to foster care, youths who were reunified with their birth families after placement in foster care had more emotional and behavioural problems than those who remained in care (Taussig, Clyman, & Landsverk, 2001). The results were based on youths' reports of emotional and behavioural difficulties; research has shown that youths report significantly fewer difficulties than do parents (Jee et al., 2011), potentially due to social desirability or to deny their challenging life circumstances. Thus it may be the case that when using parent report, stronger patterns of association are found. Given these previous findings, we expected high levels of behavioural difficulties to be reported for children in the three 'care groups' compared with children in a community sample. Study 3 also investigated whether differences in children's reported behavioural difficulties could explain any observed group differences in caregivers' mind-mindedness.

Given that parents of children in the 'care' groups may offer a unique

insight into the construct of mind-mindedness in non-birth parents, and families

in which the relationship is considered dysfunctional, it is also important to

further explore parent–centred variables in these groups, to see if there are any

unique associations with mind-mindedness. For example, there may be

differences between the 'care' groups in terms of their parenting style. Biological

families who have come to be involved with child protective services have

predominantly been highlighted as 'at risk' of abusing or neglecting their child;

thus it can be inferred that, at some stage, the relationship between the parent and

child may have been lacking in warmth, nurturance and appropriate stimulation.

Conversely, perceptions of foster placement success often include a nurturing,

safe environment, recognition and understanding of the child's situation, and

showing the child necessary care and attention (Brown & Campbell, 2007). As

such, exploring parental warmth and inductive reasoning—that is, explaining the

reasons for rules and standards of behaviour/consequences—between parent

groups may shed light on the observed differences in mind-mindedness.

Parents in these different groups may also differ in their personal

wellbeing, such as their mental health, which could impact on the closeness of

the relationship with their child. It has been suggested that levels of depression

are low in foster carers, possibly due to the statutory screening and training that

foster carers must complete before becoming a foster carer (Cole & Eamon,

2007). Often, parents of children who are at risk of abuse or neglect and placed

in care live in impoverished and chaotic environments, and have problems with

substance abuse and their mental health (Oswald, Heil, & Goldbeck, 2010).

Thus, it may be that measures of parental mental health differ between the parent

groups. Although no historical information is available for the biological parents of reunified children and biological parents of children who have been the subject of a child protection plan regarding their social-environmental risk and mental health at the time when concerns were raised, concurrent measures of mind-mindedness and parental mental health were assessed.

In summary, Study 3 aims to investigate the relations between mind-mindedness in foster carers, biological parents of reunified children, biological parents of children who have been the subject of a child protection plan, and a community sample of biological parents. Given that mind-mindedness is proposed to be a quality of close relationships, it was hypothesised that mind-mindedness will be lower in parents of children in the 'care' groups (foster, reunified, child protection plan) compared with their community counterparts. Relations between mind-mindedness and child behavioural difficulties were also investigated, in order to ascertain whether any differences in levels of mind-mindedness between parent groups can be explained by children's reported behaviour.

Additional analyses are also conducted with data on the three 'care' groups. In line with the suggestion that mind-mindedness will be unrelated to parent–centred characteristics, it is hypothesised there will be no significant relations between self-reported parenting practices (warmth, inductive reasoning) and mind-mindedness, nor between parental mental health and mind-mindedness. Study 3 aims to replicate the negative association found between mental and placement descriptions in Studies 1 and 2 in a sample of foster carers. Additionally, Study 3 also aims to explore whether the child's age at placement, the number of placement changes, the duration of the current placement, and the

total duration of time they have spent in care is related to caregivers' mind-mindedness. Due to the lack of literature available, the relations between mind-mindedness and child age at placement, duration of placement, number of placement changes and total duration in care remained exploratory.

**Study 3**

### 3.2    Method

#### 3.2.1    Participants

Participants were 516 caregivers, falling into one of four groups: (a) 'foster' group, comprised of foster carers and their children ($n = 122$, 64 boys, 58 girls), (b) 'reunified' group, comprised of biological parents whose children are living at home, but who have spent one or more periods of time in care ($n = 92$, 48 boys, 44 girls), (c) 'never in care' group, comprised of biological parents of children who are living at home and have never been in care, but who have been the subject of a child protection plan ($n = 172$, 88 boys, 86 girls), and (d) a community sample of biological parents, none of whom had ever been involved with children protective services ($n = 128$, 62 boys, 66 girls).

Children of foster carers were aged $M = 85.02$ months ($SD = 23.35$, range 32–117 months); children in the reunified group were $M = 77.79$ months ($SD = 24.79$, range 31–118 months); children in the never in care group were aged $M = 77.90$ months ($SD = 20.21$, range 30–114 months), and the community sample of children were $M = 61.38$ months ($SD = 1.06$, range 59–64 months).

Parent age in the reunified group was 32.19 years ($SD = 5.65$, range 20–47 years, 28 declined to answer), and parents of children who have been the subject of a child protection plan were 33.26 years ($SD = 6.32$, range 19–50 years, 29 declined to answer). Parent age in the community sample was 33.09

years (*SD* = 5.43, range 21–43). There were no data on parent age available for the foster carers.

The participants in the three 'care' groups were part of the 'Born in Bradford' cohort study. The research involving the care groups was completed in partnership with the Social Policy and Social Work Department at the University of York, the Born in Bradford study team, and Bradford Children's Services as part of an Economic and Social Research Council (ESRC) grant awarded to Professor Nina Biehal. The mind-mindedness measure was included in this study as part of this thesis, and the author was responsible for coding all of the mind-mindedness data from the care groups, but not the data collection. Children in the community sample were part of Professor Elizabeth Meins' ESRC-funded study, and measures were taken at the age-5 testing phase; as such, the age range of the children is smaller than those in the other three groups. Again, the author was responsible for coding all of the mind-mindedness data from this group. The study was approved by the relevant university ethics committee.

### 3.2.2   Materials and Methods

All participants completed the describe-your-child measure as part of a face-to-face interview; those in the 'care' groups were completed in caregivers' homes, the community sample completed the interview at the University's developmental laboratories. Participants in all groups completed the describe-your-child measure as part of a longer interview focused on the child and family functioning. All participants completed questionnaire measures assessing child behavioural difficulties, using the parent-report version of the SDQ. Parents in the three 'care' groups also completed self-report measures of warmth, inductive reasoning, and mental wellbeing.

### 3.2.3 Measures

All measures from participants in the 'care' groups were collected as part of a broader interview, conducted by a professional agency, in collaboration with the Social Policy and Social Work Department at the University of York. Interviews began with an explanation of the purpose of the interview ('We want to find out how your child is getting on, so I'll mainly be asking about the child's health, development, and general behaviour'), and gaining informed consent from the participant. Parents began by giving details of their child's date-of-birth, gender, ethnicity, and their relationship to the child. Foster carers gave details of the date their child was placed with them and the child's age when they were placed with them. Participants then completed the describe-your-child measure immediately following completion of demographic questions. Measures from the community sample were also collected as part of a broader interview; initial demographic information was collected before moving on to the mind-mindedness interview. All participants in groups (b), (c), and (d) were asked to provide demographic information on their age and highest level of educational attainment: from 0 (no formal qualifications/unknown/refused to answer) to 5 (higher university degree). Foster carers were asked the age of the child's birth mother, rather than their own age, so foster carer age could not be reported; foster carers did, however, provide information on their own educational attainment.

**3.2.3.1 Mind-Mindedness.** Following consent to interview, and providing demographic information, caregivers were asked the following question: 'can you describe [child's name] for me please? There are no right or wrong answers to this question and feel free to answer as freely as possible'. If

the caregiver sought guidance on how to answer the question, the researcher

reiterated that no specific type of description was required, and that the caregiver

should talk about whatever comes into his/her head. For the 'care' groups, the

interviewer entered the caregiver's reply verbatim into an excel file. Responses

in the community group were audiotaped and later transcribed verbatim.

Parents' descriptions of their children were sectioned into individual

attributes and coded into exclusive and exhaustive categories in accordance with

the mind-mindedness coding manual, as described in Chapter 2 (Meins &

Fernyhough, 2015): (a) mental, (b) behavioural, (c) physical, or (d) general.

Again, behavioural, physical, and general attribute scores were summed to create

a non-mental description category. Mental and non-mental categories were

expressed as a proportion of the total number of attributes, to control for level of

verbosity in the caregivers (Meins et al., 1998). Higher proportions of mental

attributes indicate higher levels of mind-mindedness.

As the findings of Chapter 2 suggest the need for adaptations to the mind-

mindedness coding scheme for specific sub-groups of caregivers, foster carers'

descriptions were further investigated to explore the use of *Placement*-related

descriptions as described in Chapter 2. The *Placement* category including

comments relating to the child's pre-placement experiences, reasons for the child

being taken into care, or current functioning within the family (e.g., 'happily

enough hasn't been scarred by her past', 'she is absolutely at home with us', 'he

had no structure before coming here', 'gets angry because he can't see

mummy'). Please note that when conducting statistical analyses in comparison to

other groups, *Placement* descriptions were included in the non-mental category.

All transcripts were coded by a trained researcher who was blind to all

other data, and a randomly selected 20% of transcripts was coded by a second, blind coder (note that it was impossible for coders to be blind to care group status in cases where caregivers mentioned foster placement related experiences in their child descriptions); inter-rater reliability: $\kappa = 0.94$

**3.2.3.2 Child Behavioural Difficulties.** Child behavioural difficulties were assessed using the Strengths & Difficulties questionnaire (SDQ; Goodman, 1997), as described in Chapter 2. Parent report was used, and total difficulties scores, ranging from 0–40, were calculated based on the responses given, with higher scores indicative of a greater number of perceived difficulties.

**3.2.3.3 Parenting Practices**. For parents in the three 'care' groups, parental warmth and inductive reasoning was assessed via questions taken from the parental warmth and inductive reasoning factors of the *Child Rearing Questionnaire* (CRQ; Paterson & Sanson, 1999; see Appendix 3). The parental warmth measure comprised of six questions, assessing positive affect and emotional tone during interactions with the child, perceived closeness, and demonstration of affection, e.g. 'I tell my child how happy he/she makes me', 'I feel close to him/her both when he/she is happy, or when he/she is upset', 'I express affection by hugging, kissing and holding him/her'. The inductive reasoning measure comprised of five items, assessing parents' tendency to discuss reasons for rules and limitations with their children, e.g. 'I explain to him/her the consequences of his/her behaviour', 'I give him/her reasons why rules should be obeyed'. Parents were asked to rate each item on a 5-point frequency scale (1 'never/almost never' to 5 'always/almost always'), and total scores comprised the mean of item ratings. Higher scores were indicative of higher levels of warmth, or more frequent use of inductive reasoning, within the

parent–child relationship.

**3.2.3.4 Parental Mental Health.** Caregivers' mental health was assessed using the 12-Item General Health Questionnaire (GHQ-12; Goldberg & Williams, 1988; see appendix 4), comprised of 12 questions assessing mental difficulties faced in the last few weeks. Caregivers were asked to rate on a 4-point Likert scale how often they had experienced a particular difficulty; positive items were scored 0 (always) to 3 (never), and negative items had the opposite scoring, 3 (always) to 0 (never). Total scores ranged from 0–36, with higher scores indicating more severe difficulties.

## 3.3 Results

### 3.3.1 Descriptive Statistics and Preliminary Analyses

Descriptive statistics for all variables are displayed in Table 3.1. Child gender was related to the proportion of mental characteristics in caregivers' descriptions, with caregivers of girls using a higher proportion of mental characteristics compared to caregivers of boys (boys $M = 0.33$, $SD = 0.24$; girls $M = 0.41$, $SD = 0.27$), $t(512) = -3.39$, $p = .001$. Child age was unrelated to caregivers' mental description scores, $r(514) = .03$, $p = .455$. Parent age was unrelated to caregivers' mental description scores, $r(333) = -.01$, $p = .886$. Parental education was unrelated to mental description scores, $r(516) = .04$, $p = .347$.

There was a significant difference in child age between the four groups, $F(3, 512) = 33.70$, $p < .001$. Post-hoc tests showed that foster children were significantly older than children who have been the subject of a child protection plan ($p = .034$) and community children ($p < .001$), but not reunified children ($p = .137$). Community children were also significantly younger than reunified

children ($p < .001$), and children who have been the subject of a child protection

plan ($p < .001$). There were no differences in child age between reunified

children, and children who have been the subject of a child protection plan ($p =$

1.00). There was no difference in parent age between parents of reunified

children, parents of children who have been the subject of a child protection plan,

and the community group, $F(2, 332) = .77$, $p = .466$. There was a significant

difference in parent education level, $F(3, 512) = 7.42$, $p < .001$. Post-hoc tests

showed that the community group of parents were more highly educated in

comparison to foster carers ($p < .001$), parents of reunified children ($p = .031$),

and parents of children who have been the subject of child protection plan ($p <$

.001).

When exploring child behavioural difficulties thresholds, using chi-

square analysis, significant group differences were found, $\chi^6 = 23.74$, $p = .001$.

58 children (48%) in the foster group fell into the 'normal' range, compared to

63 children (69%) in the reunified group, 110 children (63%) who have been the

subject of a child protection plan, and 95 children (75%) in the community

group. There was higher than expected percentage of children in the community

group falling into the 'normal' range, and a lower percentage of children within

the foster care group. There were 16 children (13%) in the foster group that fell

into the 'borderline' clinical range, along with 8 children (9%) from the reunified

group, 21 children (12%) who have been the subject of a child protection plan,

and 11 children (9%) in the community group. There was a higher percentage of

children within the foster care group falling into the 'abnormal' category,

indicating clinical levels of difficulty, compared to the other three groups; 48

children (39%) in the foster group fell into the 'abnormal' category, compared

**Table 3.1: Descriptive Statistics as a Function of Caregiver Group**

| | Foster Group (Currently in Care) | | Biological Reunified | | Biological Child Protection Plan | | Biological Community | |
|---|---|---|---|---|---|---|---|---|
| | Mean (SD) | Range | Mean (SD) | Range | Mean (SD) | Range | Mean (SD) | Range |
| Child age months | 85.02 (23.35) | 32–117 | 77.79 (24.79) | 31–118 | 77.90 (20.22) | 30–114 | 61.38 (1.06) | 59–64 |
| Parent age years | - | - | 32.19 (5.65) | 20–47 | 33.26 (6.32) | 19–50 | 33.09 (5.43) | 21–43 |
| Parent education | 2.07 (1.54) | 0–6 | 2.24 (2.05) | 0–6 | 2.01 (2.08) | 0–6 | 2.95 (1.63) | 0–6 |
| Mental prop | 0.35 (0.26) | 0–1 | 0.36 (0.25) | 0–1 | 0.35 (0.26) | 0–1 | 0.42 (0.25) | 0–1 |
| Non-mental prop | 0.65 (0.26) | 0–1 | 0.64 (0.25) | 0–1 | 0.65 (0.26) | 0–1 | 0.58 (0.25) | 0–1 |
| SDQ Total score | 14.52 (8.03) | 0–32 | 11.73 (7.32) | 1–33 | 11.97 (6.92) | 0–34 | 10.91 (5.81) | 0–31 |
| CRQ Warmth | 4.38 (0.72) | 2–5 | 4.55 (0.66) | 2–5 | 4.48 (0.69) | 1–5 | - | - |
| CRQ Inductive reasoning | 4.40 (0.72) | 2–5 | 4.27 (0.91) | 1–5 | 4.29 (0.80) | 1–5 | - | - |
| GHQ Score | 9.28 (4.24) | 1–23 | 10.05 (5.93) | 0–36 | 11.39 (7.41) | 0–36 | - | - |

*Note*: *CPP* Child Protection Plan; *SDQ* Strengths and Difficulties Questionnaire; *CRQ* Child Rearing Questionnaire; *GHQ* General Health Questionnaire

with 21 children (32%) in the reunified group, 43 children (25%) who have been the subject of a child protection plan, and 20 children (16%) in the community group.

Intercorrelations between mental descriptions and the other questionnaire measures collectively are shown in Table 3.2.

Table 3.2: Intercorrelations between Study 3 Measures

|  | 1. | 2. | 3. | 4. | 5. |
|---|---|---|---|---|---|
| 1. Mental prop | - |  |  |  |  |
| 2. SDQ Total Scores | -.18** | - |  |  |  |
| 3. CRQ Warmth Scores | -.01 | -.20** | - |  |  |
| 4. CRQ Inductive Reasoning Scores | -.003 | -.01 | .51** | - |  |
| 5. GHQ Total Scores | .05 | .16** | -.10* | -.03 | - |

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

### 3.3.2 Relations between Parent Type and Children's Behavioural Difficulties

The relation between parent type and children's SDQ scores was investigated in a one-way ANCOVA, with children's SDQ scores entered as the dependent variable, parent type (foster, reunified, child protection plan, community) added as a fixed variable, and child age and parental education added as covariates. There was a main effect of parent type for children's behavioural difficulties, $F(3, 508) = 4.27$, $p = .005$ $\eta^2 = .025$. Post-hoc tests

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showed that foster carers reported higher levels of behavioural difficulties in their children compared with parents of reunified children ($p = .043$), parents of children who have been the subject of a child protection plan ($p = .025$), and parents in the community group ($p < .001$). There were no significant differences in parents' reports of child behavioural difficulties between the other groups of parents ($p$s $> .483$).

### 3.3.3 Relations between Parent Type and Child Descriptions

Child description scores as a function of parent group are shown in Table 3.1. Relations between parent group and parents' descriptions of their children were investigated using MANCOVA, with mental and non-mental description scores added as dependent variables, parent type (foster, reunified, child protection plan, community) entered as a fixed factor, and child age and parent education added as covariates. There was a main effect of parent type on proportion of mental descriptions, $F(3, 508) = 2.97$, $p = .031$, $\eta^2 = .017$, see Figure 3.1. A post-hoc ANOVA revealed a marginally significant result, $F(3, 510) = 2.20$, $p = .087$. When looking at the descriptive statistics, they are suggestive of parents in the community group producing a higher proportion of mental descriptions ($M = 0.42$) compared to the three 'care' groups, whose mental description scores are virtually identical. The MANCOVA was then re-run, with children's SDQ scores added as an additional covariate. The main effect of parent type for mental descriptions remained significant when controlling for child behavioural difficulties, $F(3, 505) = 2.63$, $p = .049$, $\eta^2 = .015$.

There was also a main effect of parent type on proportion of non-mental descriptions, $F(3, 508) = 2.84$, $p = .037$, $\eta^2 = .017$. A post-hoc ANOVA revealed a non-significant result, $F(3, 510) = 2.09$, $p = .101$. Descriptive statistics suggest that parents in the community group produced a lower proportion of non-mental descriptions compared to the three 'care' groups.

**Figure 3.1: Proportion of mental and non-mental descriptions as a function of parent group**
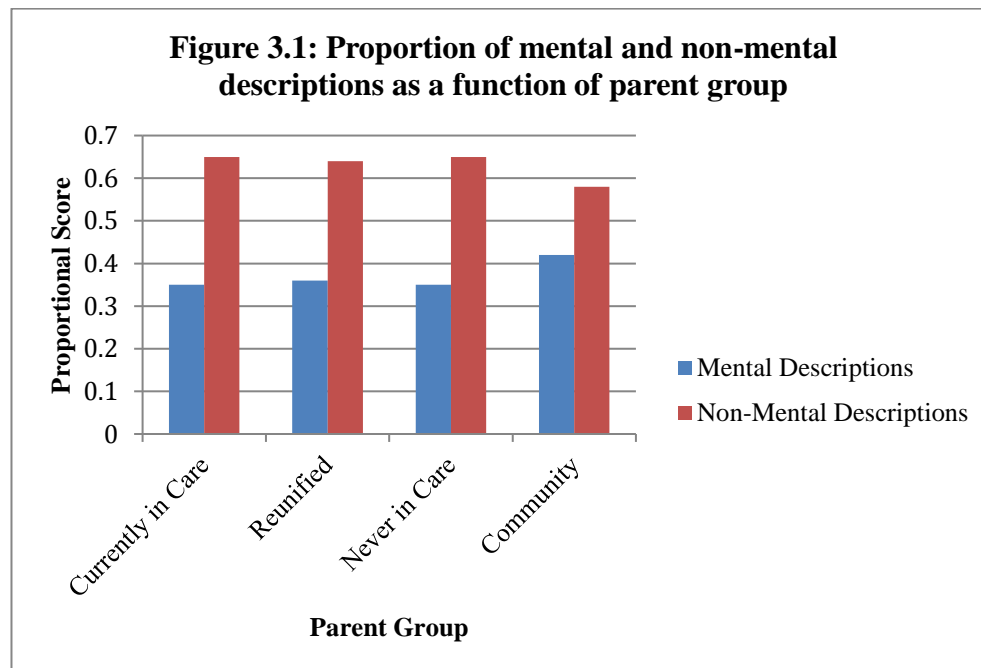


The variance of scores within the three care groups are close to identical; as such, this may explain why testing for significant differences between group means led to a marginally significant result. As such, the analysis was re-run, by pooling all of the care groups data together and comparing this against the community sample of parents. Parent group was related to mental description scores, with parents in the community group using a higher proportion of mental descriptions compared to caregivers in the care groups (Community $M = 0.42$, $SD = 0.25$; Care $M = 0.35$, $SD = 0.26$), $t(514) = -2.59$, $p = .010$.

### 3.3.4 Relations between Mind-Mindedness, Parental Warmth and Inductive Reasoning, and Parental Mental Health in the 'Care' Groups

CRQ Warmth scores were unrelated to mental description scores for all parents ($r$s < .11, $p$s > .319), as were CRQ Inductive Reasoning scores ($r$s < .05, $p$s > .512). There was a trend for parents' GHQ Total scores to be correlated with mental description scores in parents of children who have been the subject of a child protection plan, $r(156) = .15$, $p = .063$, but there was no relation in foster carers or parents of reunified children ($r$s < -.10, $p$s > .393).

### 3.3.5 Relations between Parent Group and Parenting Measures

The relation between CRQ Warmth and parent group was investigated using ANCOVA, with CRQ Warmth scores added as the dependent variable, parent group (foster carer, reunified, child protection plan) added as a fixed factor, and child age added as a covariate. There was no main effect of parent group on parents' CRQ Warmth scores, $F(2, 384) = 1.28$, $p = .279$. Using the same model but with CRQ Inductive Reasoning as the dependent variable, there was no main effect of parent group on parents' CRQ Inductive Reasoning scores, $F(2, 381) = .79$, $p = .454$.

The relation between GHQ scores and parent group was investigated using ANCOVA, with parents GHQ scores added as the dependent variable, parent group (foster carer, reunified, child protection plan) added as a fixed factor, and child age added as a covariate. There was a main effect of parent group, $F(2, 359) = 4.61$, $p = .011$, $\eta^2 = .025$. Post-hoc tests revealed that parents of children who have been the subject of a child protection plan had higher GHQ

scores compared to foster carers $t(275) = 2.78$, $p = .006$, thus were more likely to report difficulties with their mental wellbeing. There were no differences between parents of reunified children and foster carers ($p = .280$), or parents of reunified children and parents of children who have been the subject of a child protection plan ($p = .150$).

### 3.3.6    Child Descriptions in the Foster Group

In the foster care group, 24 (20%) of carers included at least one placement description. Placement description scores were non-normally distributed; as such, non-parametric correlations are reported. As was the case for the adoptive parents in Chapter 2, placement descriptions were negatively correlated with mental descriptions, $\rho(122) = -.27$, $p = .002$. Placement descriptions were not significantly correlated with non-mental descriptions, $\rho(122), = -.18$, $p = .053$.

### 3.3.7    Relations between Caregiver Mind-Mindedness, Children's Age at Placement, Length of Placement, and Total Number of Placements

In the group of foster carers, average child placement length was $M = 1410$ days (range 173–3432 days). Mind-mindedness was found to be unrelated to the length of the child's current episode in care, $r(122) = .01$, $p = .887$. Mind-mindedness was also unrelated to the total number of placement moves the child had experienced, $r(122) < .001$, $p = .996$, the age of the child at the point of their first looked-after care episode, $r(122) = -.02$, $p = .792$, and the total duration of the child's looked-after episodes, $r(122) = .03$, $p = .776$.

Within the reunified group, parental mind-mindedness was unrelated to the total number of placement moves the child had experienced, $r(92) = -.01$, $p =$

.896, the age at which the child became the subject of a child protection plan or looked-after care episode, $r(92) = .10$, $p = .368$, and the total duration of the child's looked-after care episodes, $r(92) = -.09$, $p = .419$.

## 3.4    Discussion

The main aim of Study 3 was to explore differences in mind-mindedness between foster carers, parents involved with child protective services (reunified families and families where children have been the subject of a child protection plan), and a community sample of biological parents. As was hypothesised, mind-mindedness was lower in parents in the 'care' groups compared to their community counterparts. There were no significant differences in mind-mindedness between foster carers, parents of reunified children, and parents of children who have been the subject of a child protection plan. In fact, levels of mind-mindedness were near identical in the three 'care' groups. Thus, mind-mindedness was lower in caregivers where the relationships were non-continuous (foster carers), as well as in parents where the quality and closeness of the relationship had been compromised by concerns over abuse or neglect. Differences in mind-mindedness between the 'care' groups and the community group remained once controlling for child behavioural difficulties. The results of Study 3 therefore show that child behavioural difficulties cannot account for the lower levels of mind-mindedness in the 'care' groups compared to the their community counterparts. The observed lower levels of mind-mindedness are thus in line with the proposal that mind-mindedness is a relational construct.

The results of Study 3 also highlight the role of children's reported behavioural difficulties. Levels of reported behavioural difficulties were higher

in the foster group than in the child protection group, the reunified group and the community group, consistent with research that has found elevated behavioural difficulties in foster children (Keil & Price, 2006). Reported child behavioural difficulties were negatively correlated with parents' mind-mindedness; the more parents perceive their children's behaviour to be difficult, the less they may focus on their children's mental characteristics. Perceiving the child's behaviour to be difficult is likely to have a negative impact on the quality of the parent–child relationship, and the observed negative association between mind-mindedness and behavioural difficulties is therefore consistent with the proposal that mind-mindedness is a relational construct. On average, the reported level of behavioural difficulties in the foster group was in the borderline clinical range, highlighting the severity of problem behaviour perceived by these caregivers.

Reported child behavioural difficulties cannot, however, explain the lower level of mind-mindedness in parents whose children have been the subject of a child protection plan and reunified children, compared with typical biological parents. There was no difference between these groups in parents' report of difficult behaviour in their children, and the group difference in mind-mindedness was maintained when behavioural difficulties were controlled. Future research should explore whether parental factors associated with the risk of abuse or neglect may help further explain the observed lower level of mind-mindedness in parents in the child protection and reunified group, as is discussed further in Chapter 6.

Foster carers' placement description scores were negatively correlated with mental descriptions, as was hypothesised. Thus, across Studies 2 and 3, a negative association was found between non-birth caregivers' mind-minded

descriptions and their tendency to describe their children with reference to pre-adoption and placement-related experiences. This suggests that automatically representing the child in terms of their history in the care system or involvement with the birth family may impede caregivers' ability to see the child in the here-and-now and appreciate their current thoughts, feelings, intentions, motivations, and so on. Study 3 also showed that mind-mindedness was unrelated to the length of the child's current placement in foster care, and the number of placement moves they had experienced, echoing the lack of association between adoption length and mind-mindedness in Study 2. However, as was the case for the adoptive families, all foster placement lengths were a minimum of 5 months, with an average length of around 3 years 9 months. Despite the larger spread of placement lengths, ranging up to 9 years, it may be that there were not enough short placement lengths to detect a significant association between placement length and mind-mindedness. Mind-mindedness was also unrelated to the age of the child at the point of their first care episode, and the total duration of the child's looked-after care episodes, for both children currently in foster care, and those who had been reunified with their parents. Thus mind-mindedness was unrelated to characteristics specific to the child, which is in line with the notion of mind-mindedness being a relational construct.

Given that all of the foster placements were relatively long standing and the lack of association between the nature of the foster placement and mind-mindedness, what other factors might explain the observed lower level of mind-mindedness? As foster care is often temporary, it may be emotionally challenging for foster carers to really 'commit' to the child and forge a

meaningful relationship with them, knowing that it will end (Lindhiem & Dozier, 2007). It has been suggested that the belief that foster care is temporary may hinder the development of a strong foster carer–child relationship (Marcus, 1991). Foster carers often experience grief and fear due to the potentially transient nature of foster care, and once a child is removed, can reportedly experience feelings similar to bereavement (Blythe, Wilkes, & Halcomb, 2014). Interestingly, experienced foster carers who have cared for many foster children in the past exhibit lower levels of commitment compared to caregivers who have cared for fewer foster children (Dozier & Lindhiem, 2006). Thus, foster carers may be less willing to engage in close relationships with the children placed with them. As mind-mindedness is proposed to be a quality of close relationships, this would explain the lower levels of mind-mindedness found in foster carers.

A further aim of Study 3 was to explore parent–centred characteristics within the three 'care' groups. Mind-mindedness was found to be unrelated to parent age and parent education level, parental mental health, and reported levels of warmth and inductive reasoning, supporting the proposal that mind-mindedness is relationship-specific as opposed to dictated by parent–centred characteristics (Meins et al., 2014). No group differences were found with regards to parental warmth and inductive reasoning; in fact, scores for all group tended to be high, suggesting that most parents tend to report a high degree of warmth and inductive reasoning with their child. Given that 'care' groups all have involvement with child protective services, by nature of the sample it means the results could be subject to social desirability bias. It is possible that parents in the care groups feel as though they are subject to judgement, either as a professional service provider, or a parent who has been deemed 'at risk' to their

child; thus this may affect the answers given during interview. It may be of importance for such parents to portray a positive representation of their relationship with their child, given the previous concerns for the child's welfare and the difficulties in their relationships with their parents.

Studies 1–3 thus support the proposal that mind-mindedness is a relational construct, by exploring mind-mindedness in groups of caregivers that have not previously been researched, and finding mind-mindedness to be lower in non-continuous relationships, and those where the relationship has been judged as problematic or dysfunctional. Studies 1–3 all assessed mind-mindedness using the describe-your-child measure, which is typically how mind-mindedness is assessed from the preschool years onwards. What is yet to be explored is how mind-mindedness may be manifested in interactions between the caregiver and child beyond infancy. If mind-mindedness is a relational construct, one could argue that it is best assessed in a relational context, such as real interactions between the caregiver and child. Study 4 will describe the first ever interaction-based coding scheme for mind-mindedness in the preschool years, and validate the new scheme against both the early infant observational measures of mind-mindedness and concurrent mind-minded descriptions of the child.

**Chapter 4**

**Exploring the use of an interaction-based measure of mind-mindedness**

**beyond infancy**

## 4.1      Introduction

Over the last two decades, the importance of parental mentalisation in fostering positive developmental outcomes for infants and children, such as secure attachment and emerging theory-of-mind abilities, has been widely accepted (Schibbor et al., 2013). As described in Chapter 1, mind-mindedness was developed as a refinement or re-evaluation of maternal sensitivity, by highlighting the importance of the *appropriateness* of a mother's responses to her child's cues, which Meins (2013) has argued is a critical component and often lost due to the global and interpretative nature of the sensitivity construct. Through being able to represent their child's mental states, and accurately interpret their child's cues, a caregiver can then respond promptly and appropriately.

The measurement of mind-mindedness has undergone several refinements since its original conceptualisation. Early research exploring the construct of mind-mindedness measured five main dimensions during free-play interactions between mothers and their 6-month-old infants: maternal responsiveness to a change in the infant's direction of gaze, maternal responsiveness to the infant's object-directed action, imitation of the infant's vocalisations, encouragement of autonomy, and appropriate mind-related comments (Meins et al., 2001). It was found that only one dimension, appropriate mind-related comments, was a significant predictor of attachment security, which was the focus of the study; mind-related comments accounted

for 12.7% of the variance in security, with maternal sensitivity, coded using

Ainsworth et al's (1974) scale, accounting for 6.5% (Meins et al., 2001). As

such, appropriate mind-related comments made by the parent during interactions

with their child, particularly the parents' proclivity to comment on their infant's

putative internal states, has been proposed to be an important aspect of parent–

child interactions, as well as a predictor of positive developmental outcomes for

children.

     Meins et al.'s. (2001) original study on mind-mindedness in the first year

of life considered only appropriate mind-related comments, but more recent

studies have investigated both appropriate and non-attuned mind-related

comments and their contribution to predicting children's later development.

Appropriate mind-related comments and non-attuned mind-related comments

have been found to be unrelated to each other, and thus argued to be separate

facets of parental behaviour (Meins et al., 2012). Appropriate mind-related

comments are thought to represent sensitivity to the child's mental states,

responsiveness to the child's stance and needs, and being engaged with the child

during interactions. However, non-attuned comments could be said to represent a

'misreading' of the child's signals and underlying mental states, a lack of

responsiveness or engagement with the child, or being concerned with fulfilling

one's own needs during the interaction, leading to the parent imposing their own

agenda on their child instead of responding appropriately to their child's bids.

Assessing mind-mindedness in an interactional context allows researchers to

capture a parent's awareness of their child's mental states during on-going

interactions with them, and thus measure the accuracy of those representations

and the appropriateness of their subsequent response. As such, it is unique

among measures of parental mentalisation in being coded from parent–child interaction rather than from an interview.

Mind-mindedness is measured via different methods at different ages in order to accommodate the advancing physical and mental abilities of the child, and the need to use age-appropriate measurements. For example, it may not be appropriate to measure mind-mindedness via the use of appropriate mind-related comments ("oh, you like that toy?") beyond infancy, as children become increasingly more verbal and will be able to communicate their preferences. Likewise, due to the child's increasingly sophisticated motor skills, they will be more likely to signal preference through orientation towards specific play items, meaning there is less need for interpretation on behalf of the parent. Consequently, from the preschool years onwards, mind-mindedness is assessed by focussing on a parent's tendency spontaneously to focus on mental attributes when given an open-ended invitation to describe their child (Meins et al., 1998). A parent's representation of their child is formed over the course of their entire relationship, so child descriptions are a good way to assess a parent's perception of their child and their interpretations of the child's patterns of behaviour over extended periods of time.

Several studies have now investigated stability in parental mind-mindedness during infancy, as noted in the introductory chapter. Meins et al. (2011) found that mothers' production of both appropriate and non-attuned mind-related comments was higher when children were 7 months old, and positive correlations found between age 3 and 7 months for both forms of mind-related comments, indicating temporal stability over a 4-month period in infancy. The findings of McMahon et al. (2016) and Kirk et al. (2015) have also

supported the notion of temporal stability of mind-mindedness in infancy, of periods up to 12 months in their testing procedures. With regard to longitudinal stability in the describe-your-child measure, Illingworth, MacLean, and Wiggs (2016) reported stability in mothers' mind-minded descriptions of their children over a 9-month period. Collectively, the results suggest temporal continuity in mind-mindedness.

But what of stability of mind-mindedness from infancy into later childhood, or between interaction-based and interview-based measurements of mind-mindedness? Research by Meins et al. (2003) found that mothers were more likely to describe their child in mental-state terms at 48 months if they had tended to comment appropriately, and refrained from commenting in a non-attuned manner, on their child's mental states at 6 months. Recent research by McMahon et al. (2016) also found congruence between mothers' use of mental state discourse when interacting with their infant, and their mental-state comments when describing their child. In contrast, Illingworth et al. (2016) found no significant relations between interactional measures of mind-mindedness and mothers' mental descriptions of their child, both concurrently and longitudinally.

Illingworth et al.'s (2016) anomalous findings may have been due to the way in which mind-mindedness was measured. The infant interaction-based method was used, with mind-related comments being identified during free-play interactions between the parent and child, and then coded as appropriate or non-attuned. However, the children in this sample were aged between 2 and 9 years, and the interaction-based measure is only considered appropriate for use during infancy (Meins & Fernyhough, 2015). The lack of concurrent association

between the interaction-based measure of mind-mindedness and mothers' mind-minded descriptions of their children further suggests that the former measure may not be valid in Illingworth et al.'s study.

The main aim of Study 4 was to extend existing research by developing and validating an interaction-based measure of mind-mindedness that is suitable for use with preschoolers in order to bridge the gap between interaction-based measures of mind-mindedness used in infancy, and interview-based measures of mind-mindedness used in childhood. There has been very limited research investigating how mind-mindedness is manifested during interactions between the parent and child beyond infancy, and how any such measures would relate to parents' mental representations of their child. Lundy (2013) provided initial evidence using an observational approach to measuring mind-mindedness in relation to 4-year-olds. Concordance between parents' mental descriptions of their child, and the use of mind-related comments during interactions with their child was found, suggesting that maternal use of mental-state language during interactions with their child may be an important feature to consider post-infancy. The study reported in this chapter aimed to build upon Lundy's findings, exploring the ways in which mind-mindedness may be manifested during parent–child interactions beyond infancy.

One of the strengths of interaction-based methods of assessment is that researchers can assess a parent's ability to interpret their child's mental states in the context of an ongoing interaction (Lundy, 2003). In infancy, interaction-based assessments of mind-mindedness have been shown to relate to positive parenting behaviours, such as parental sensitivity (Laranjo et al., 2008; Meins et al., 2001, 2012). Research has also found relations between mind-mindedness

in infancy and interactional synchrony, which is based on the premise that parents respond appropriately to their infant's signals, and both parent and child vocalise in response to their interactional partner (Isabella, Belsky, & von Eye, 1989; Lundy, 2002, 2003). Between 18 and 24 months, a child's vocabulary increases dramatically meaning children have the ability to become an increasingly responsive verbal interactional partner. Harrist and Waugh (2002) state that interaction style – namely 'dyadic synchrony' as they term it – is achieved primarily via attunement on the part of the parent, who must initially drive the process of conversational synchrony. However, synchrony beyond infancy is more complex, as the child becomes increasingly verbal, and exchanges begin to resemble equal dialogues (Harrist & Waugh, 2002). During childhood, it has been suggested that parents must use their more advanced interactive skills to adapt themselves to the child's current capacities and cognitive and social needs (Maccoby, 1992).

It is suggested that during the early years, it is particularly important for parents to drive the process of conversational synchrony, and be responsive to their child's speech, in a manner that is appropriate. If a parent acknowledges their child's comments during interaction, this may help the child to feel validated, that their input is valued, and that the parent is attuned to their needs throughout ongoing interactions. As mind-mindedness is thought to index a parents' appreciation of the child as a mental agent and the ability to respond to their child in an appropriate manner, one could speculate that highly mind-minded parents will respond in a timely and appropriate manner to their child's bids. This may include acknowledging their child's input during play interactions and signaling that they have listened to and are attuned to their child's cues. In

contrast, if a parent ignores or rejects their child's bids, this may signal to the child that the parent lacks appreciation or understanding of their cognitive stance and input, which could undermine the child's sense of autonomy and discourage the child from making further suggestions. As such, parental responsiveness to their child's speech and actions appears to be an important way in which a parent can demonstrate their mind-mindedness when interacting with their child. Study 4 thus evaluated whether such responsiveness (termed *collaborative communication*) indexed mind-mindedness.

Additionally, the form of the parent's comments during interactions with their child may be indicative of the quality of the relationship between parent and child. Research by Rosenblum, McDonough, Sameroff, and Muzik (2008) found that parents' mind-minded comments were related to several factors of observed parenting behaviour during interactions with their 7-month-old infants. For example, mind-mindedness was positively associated with parental education and parental reflectivity (degree to which parents were able to perceive/understand their own and their child's mind in terms of mental states). Negative associations between mind-mindedness and parental intrusiveness (defined as the parent being controlling over over-stimulating) and parental rejection (rejecting the child's bids, negative comments) were also found.

As the child develops and has the ability to be an increasingly verbal interactional partner, parental intrusiveness may take the form of over-direction and the frequent use of commands in order to control the behaviour of the child and fulfill the agenda of the parent. Indeed, parental use of direct commands during parent–child interactions has been deemed a "negative" parenting quality

(Brophy & Dunn, 2002). Such punitive behaviour may serve to undermine the child's autonomy, ideas, and input and indicates a parent's failure to treat their child as an individual with a mind of their own. Parental directiveness during interactions with their child may thus index a lack of mind-mindedness.

Conversely, parental speech that aims to stimulate or scaffold the child's thought processes and ideas and create a richer dialogue could be considered a marker of a mind-minded parent. Research into parenting practices has suggested that "positive parenting" involves appropriate scaffolding, including providing structuring during games and play, in order to bring meaning to their shared activities (Brophy and Dunn, 2002). Parents who make suggestions or pose questions to their child during play scenarios may do so in an effort to create further dialogue with their child, and welcome input from them, making the interaction more collaborative. Additionally, parental questions and suggestions may serve to stimulate their child's mental capacities and ideas during the interaction. As such, this mode of communication appears to indicate that the parent is treating the child as an individual with a mind of their own. Study 4 therefore sought the evaluate parents' use of questions and suggestions versus directives (termed *solicited child involvement*) as an index of mind-mindedness.

Interactional mind-mindedness in the preschool years is also likely to involve higher levels of internal state talk. In describing their children, mind-minded parents spontaneously focus on mental and emotional characteristics, and we therefore reasoned that this emphasis on internal states would also be observed during parent–child interaction. If solicited child involvement, collaborative communication and internal state talk are all tapping into the same construct, these three variables should be highly positively intercorrelated.

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In order to provide convincing evidence that solicited child involvement, collaborative communication, and internal state talk are actually assessing mind-mindedness, it was important additionally to validate them against the established measures of mind-mindedness. Study 4 therefore investigated whether the three variables proposed to index interaction-based mind-mindedness in the preschool years related to measures of appropriate and non-attuned mind-related comments in the first year of life and to concurrent mind-mindedness as assessed using the describe-your-child measure. Positive correlations between the new observation-based variables (solicited child involvement, collaborative communication, and internal state talk) and appropriate mind-related comments in infancy and concurrent mind-minded descriptions would provide validation of these variables as measures of mind-mindedness.

Finally, Study 4 included a measure of children's reported behavioural difficulties in order to control for their potential influence on mother–child interaction. If mothers perceive their preschoolers to be behaviourally difficult, they may be more likely to use directives and commands and less likely to engage in the types of interaction that we have hypothesised to characterise mothers' interactional mind-mindedness with their preschoolers. In addition, a measure of maternal depression was included to control for the potential negative influence of depressive symptoms on the quality of mother–preschooler interaction.

In summary, Study 4 aimed to validate a new observational assessment of mind-mindedness for use in the preschool years. If the measures of solicited

child involvement, collaborative communication, and internal state talk are valid indices of mind-mindedness, one should observe (a) high positive intercorrelations among the three measures, (b) positive associations with mothers' appropriate mind-related comments in the first year of life, and (c) a positive association with concurrent mind-minded child descriptions. We also expected to replicate previous findings of longitudinal continuity between the infant observational and preschool describe-your-child measures of mind-mindedness. We investigated whether mothers' reported level of behavioural difficulties in the child and self-reported depressive symptoms influenced any observed relations.

**Study 4**

## 4.2    Method

### 4.2.1    Participants

Participants were 206 mothers and children (108 girls, 98 boys), who were recruited through local mother-and-baby groups and via healthcare professionals as part of Professor Elizabeth Meins' ESRC-funded longitudinal study. Mothers were primarily from White British backgrounds ($n = 203$). Participants came from a wide range of socioeconomic backgrounds, with close to half of the sample ($n = 90$) falling into the lowest two categories on the Hollingshead Index (Hollingshead, 1975), indicative of those with no post-16 education, unemployed, or in menial or semi-skilled manual occupations. Maternal age at Phase 1 of the study was $M = 28.08$ years, $SD = 5.48$, range = 16-41.

Infants were 8 months old during phase 1 of testing ($M = 8.52$ months, $SD = .048$, range = 7.0-10.2 months) and 44 months at phase 2 ($M = 44.06$

months, *SD* = 0.83, range = 42-46 months). All 206 infants participated at 8

months, with 171 followed-up at 44 months. Attrition was due to the children

experiencing health difficulties, families moving out of the local area, or being

unable to attend appropriate testing times. Due to technical difficulties with

video recording and audio equipment, data were not available for all tasks in

each age range (*n* = 166 for Phase 2 interview-based mind-mindedness; *n* = 151

for Phase 2 interaction-based mind-mindedness). Those families who failed to

complete Phase 2 testing did not differ with respect to their scores of any of the

measures compared to those who were retained throughout the study, but

families who dropped out of the study had lower socio-economic status (SES)

scores, $t(204) = 4.17$, $p < .001$, $d = 0.77$.

### 4.2.2 Overview of Testing Procedures

All of the testing phases were conducted at the university developmental

laboratories. Maternal mind-mindedness at 8 months was assessed during a free-

play scenario between mother and infant. Mind-mindedness was assessed via the

'describe-your-child' interview at 44 months, as part of a wider interview

relating to the child's behaviour and functioning. Interaction-based measures of

mind-mindedness at 44 months were explored during a semi-structured play task

involving mother–child dyads. The author was not responsible for the data

collection in Phases 1 and 2, or the coding of Phase 1 mind-mindedness data.

The author was responsible for transcribing and coding all of the mind-

mindedness data from Phase 2 (both interaction and interview-based measures),

and for devising the interaction-based coding scheme at Phase 2.

### 4.2.3 Measures

### 4.2.3.1 Phase 1: Interaction-Based Assessment of Mind-Mindedness

Assessments of mind-mindedness formed part of a battery of measures taken at 8 months, totalling around 1 hour. Mothers and their infants were filmed for a 20-minute period in a free-play scenario. The only guidance mothers were given was to play with their infants as they would do at home. The testing room included a range of age-appropriate toys, and mothers were able to move around the room freely. Mind-mindedness was coded using procedures outlined by Meins and Fernyhough (2015). Mothers' speech throughout the interaction was transcribed verbatim, and all comments referring to the mind or internal states of the infant were identified. Mind-related comments included any reference to the child's mental states (knowledge, thoughts, preferences), wishes or desires, mental processing (recognising, remembering, deciding), and emotions. Comments where the mother spoke on behalf of the infant, 'putting words into their mouths' in order to mimic dialogue, were also classified as mind-related comments.

All mind-related comments were then classified as appropriate or non-attuned by a trained researcher, who was blind to all other measures. Comments were classified as appropriate if: 1) the coder believed that the mother's reading of the infant's mental states was accurate (e.g. if a mother commented that the infant wanted a particular item, the coder agreed that the infant's behaviour was consistent with this attribution); 2) the comment linked the infant's current activity with similar events from the past or future; 3) the mother was suggesting a new activity after a lull in the interaction (e.g. "you'll like this new toy").

Comments were classified as non-attuned if: 1) the coder disagreed with the mother's reading of the infant's mental states (e.g. the mother stating the child is bored with an object or activity, despite being actively engaged in it); 2) the comment referred to past or future events with no obvious relation to the infant's current activity; 3) the referent of the mother's comment was unclear; 4) the mother queried what the infant wished to do, or commented that the infant wanted or preferred a different object or activity, when the infant was actively engaged in play or showing clear preference for a particular object. A second research, blind to all measures and the research hypotheses, coded a randomly selected 25% of the interactions. Interrater agreement was $\kappa = .70$.

To control for maternal verbosity, scores for appropriate and non-attuned mind-related comments were calculated as a percentage of the mother's total number of comments made during the 20-min interaction. The 8-month mind-mindedness data have been previously reported in the following papers: Centifanti et al. (2016), Meins et al. (2011, 2012, 2017), Meins, Fernyhough et al. (2013), Meins, Centifanti et al. (2013).

### 4.2.3.2 Phase 2: Interview-Based Measure of Mind-Mindedness

Mothers took part in a short interview, based on Meins et al.'s (1998) maternal mind-mindedness interview, as part of a broader set of questions and tasks when their children were 44 months. Mothers were asked to describe their child; no specific guidance was given, and each participant was asked to answer as freely as possible. If the mother sought guidance on how to answer the question, the researcher encouraged the mother to talk about whatever came into their head.

Mothers' descriptions were audiotaped and transcribed verbatim. All descriptions were sectioned into discrete attributes, and in accordance with the mind-mindedness coding scheme (Meins & Fernyhough, 2015), each description was placed into one of four exhaustive and exclusive categories, as described in Chapters 2 and 3: a) mental, b) behavioural, c) physical, or d) general. Behavioural, physical, and general scores were summed to create a non-mental description category. Mental and non-mental description scores were expressed as a proportion of the total number of attributes, to control for level of verbosity in the parents (Meins et al., 1998). Interrater agreement was $\kappa = .90$.

**4.2.3.3 Phase 2: Interaction-Based Coding of Mind-Mindedness at 44 Months**

Mother–child dyads took part in a play interaction when children were 44 months old, as part of a wider range of activities, which was video and audio-recorded. The loosely-scripted interaction was based on Haden, Ornstein, Eckerman, and Didow's (2001) procedure. The mother–child dyads were introduced to a range of props relating to a camping trip, laid out in a set sequence, and mothers were given a brief set of instructions to indicate the tasks and activities they were required to complete: load the backpack with the food, follow the path to the pond, catch a fish, follow the footprints to the campsite, cook and eat a meal, go to sleep. Mothers were not given any further instructions, and they were informed that there was no time limit for the task. Mothers and their children started the task sitting on a sofa, with a collection of food items and a backpack close to their feet; a yellow path led from the sofa to a fish pond close by, from which there was a set of footsteps leading to a toy barbeque and a sleeping bag.

All of the interactions were transcribed verbatim, and divided into discrete utterances. An utterance was defined as a word or string of words identified by a significant pause (> 2 seconds) or grammatical completeness (Golinkoff & Ames, 1979). Transcripts were then coded using a scheme formulated specifically for the data (see Table 4.1), in order to assess the content and frequency of particular features of maternal speech and behaviour.

The definition of maternal collaborative communication, namely a mother's tendency to acknowledge her child's comments and behaviour, was influenced by global rating schemes which have been formulated for use during parent–child interactions in childhood (Deater-Deckard, Pylas, & Petrill, 1997; Humber & Moss, 2005; Patterson, Elder, Gulsrud, & Kasari, 2013). However, rather than rely on global ratings, the current research chose to code maternal responses to all of her child's conversational turns in order specifically to represent the mother's level of involvement throughout the interaction. Other forms of maternal behaviour, including the form and content of the mother's speech, were influenced by and modified from Parpal and Maccoby's (1985) coding scheme.

As shown in Table 4.1, mothers' responses specifically to the child's utterances or actions were coded as (a) acknowledge, (b) ignore, or (c) reject. These responses were usually verbal, but could also be non-verbal (e.g., a nod of the head, taking, refusing, or failing to notice an object offered by the child).

All maternal speech was coded to indicate 'form', which fell into one of the four following exhaustive and exclusive categories: (a) questions, (b) suggestions, (c) directives, or (d) statements. As shown in Table 4.1, the *questions* category included only genuine questions that were phrased to elicit a

response from the child. Comments that were simple descriptive statements followed with "isn't it", "don't you", etc. were coded as *statements* and not *questions*; comments that were directives framed in question format (e.g., "Put the food in the backpack, will you?") were coded as *directives* rather than *questions*.

Comments in the *suggestions* category could be formulated as questions, but unlike genuine questions, required no answer or only a simple yes/no answer from the child (see Table 4.1). As well as being less command-like than *directives, suggestions* are distinguished by the fact that they focus on the child's ongoing activity or speech (e.g., 'Shall we put the fish on? while the child is cooking food on the barbeque;' 'Do you want to put that on the bed?' when the child picks up the teddy bear), whereas *directives* tend to be unrelated to the child (e.g., 'Let's go and cook the food now' while the child is still fishing in the pond).

Comments that did not fall into the *questions, suggestions,* or *directives* categories were coded as *statements*. As shown in Table 4.1, the *statement* category included affect expressions (e.g., 'Uh-oh').

Finally, the content of mothers' speech was coded for frequency of mental-state talk. As shown in Table 4.1, mental-state talk was divided into four categories: (a) talk referring to the child's mental states, (b) talk referring to the mother's mental states, (c) talk referring to the mental states of both mother and child, and (d) talk referring to other people's mental states (e.g., father, sibling). All other comments were placed into the non-mental talk category.

In summary, every comment made by the mother was coded at least twice (for form and content). For example, 'How many fish can you see?" would be

coded as *question* (form) and non-mental (content); "You like sweetcorn" would be coded as *statement* (form) and mental-state (content).

Comments immediately following an input from the child were additionally coded for response. For example, if the child said "Here's the sweetcorn", and the mother said, "Yes, you like sweetcorn", it was coded as *acknowledge* (response), *statement* (form), and mental-state child (content). If the mother responded with, "Yes, shall we put that on the barbeque?" it was coded as acknowledge, suggestion, and non-mental. If she responded, "Pass me the burger" it was coded as reject, directive, and non-mental.

Mothers received frequency scores for the response, form, and content categories. Frequencies were used, as opposed to proportions, to assess the goal of the parent's speech across the entire task; it was thought that this would provide the most accurate assessment of the extent to which the interaction would make the child feel that their perspective was recognised and validated. For example, directives are not inherently bad, and can be used to scaffold the child's behaviour (e.g., "Pick up the rod so you can catch a fish"). However, if the goal of a large number of comments is to command and instruct the child, it is unlikely that they will feel validated or that the interaction is collaborative. Similarly, whilst on occasion it may be appropriate to ignore or even reject a child's suggestion is the parent feels it is not appropriate within the task context (e.g., "No, let's not pretend the pond is a lawn so we can mow it"), repeatedly ignoring or rejecting a child's input will not make them feel that their perspective is recognised or valued.

These scores for response and form were then used to calculate the summary scores to index mind-mindedness: *collaborative communication* was

calculated by subtracting the sum of ignore and reject from the number of acknowledgements in the response category; *solicited child involvement* was calculated by subtracting the number of directives from the sum of questions and suggestions in the form category.

All of the observations were coded by the author, with a randomly selected 20% coded for a second time by Professor Elizabeth Meins; interrater agreement for maternal collaboration was $\kappa = .92$, form of maternal speech was $\kappa = .97$, and mental state talk total was $\kappa = .99$.

**4.2.3.4 Phase 2: Child Behavioural Difficulties**

Child behavioural difficulties were assessed using the Strengths & Difficulties questionnaire (SDQ; Goodman, 1997), as described in Chapters 2 and 3. Parent report was used, and total difficulties scores, ranging from 0-40, were calculated based on the responses given, with higher scores indicative of a greater number of perceived difficulties. Cronbach's $\alpha$ for the SDQ (maternal report) was 0.80 for externalising behaviours and 0.73 for internalising behaviours.

**4.2.3.5 Phase 2: Maternal Depression**. Maternal depression was assessed using the Beck Depression Inventory (BDI: Beck, Ward, Mendelsohn, Mock & Erbaugh, 1961). The BDI comprises 21 items, each rated on a scale ranging from 0 to 3. Participants were asked to complete the questionnaire to indicate their mood in the past 2 weeks. Potential scores range from 0 to 63, with higher scores signifying higher levels of depression. Scores between 0 and 13 indicate minimal levels of depression, between 14 and 19 indicate mild levels of depression, between 20 and 28 scores designate moderate depression, and scores of 29 and above indicate severe depression.

**Table 4.1: Description of the interaction-based coding scheme of mind-mindedness at 44 months**

|  | Description |
| --- | --- |
| *General Features* |  |
| Total number of maternal utterances | The sum of all maternal utterances related to the play scenario |
| Total number of child utterances | The sum of all child utterances related to the play scenario |
| Total number of conversational turns | A conversational turn was defined as all of one speaker's utterances, bounded by the utterance of another speaker (taken from Brophy & Dunn, 2002). |
| *Collaboration:* | Maternal involvement was coded by assessing mothers' responses to their child's conversational turn and/or action. One of the following three exhaustive and exclusive codes was assigned for every maternal response to their child. |
| Acknowledge | The mother acknowledges the child's comment/behaviour during a conversational turn, or provides a response for the question they have asked, e.g. 'C: Mummy, what is this?' 'M: that's a burger, darling'. |
| Ignore | Comments that are not responses to the child's utterance or action, or where there has been a sufficient lull in conversation prior to the mother suggesting a new topic or focus. |
| Reject | Comments that reject the child's suggestion or input, e.g. 'C: let's have a barbeque, mam' 'M: No, I'm catching some fish for dad', or 'C: I don't like sausages' 'M: Yes, you do'. |
| *Form*: |  |
| Question | An utterance that required an appropriate verbal response from the child, e.g. 'How many fish have we got?' 'What is that?' 'What do you want, fish or burger?' Questions that were rhetorical in nature, or a description phrased as a question, e.g. that's a burger, isn't it? were not included in the 'questions' category. |
| Suggestion | The mother makes a suggestion to influence or scaffold the current play scenario, or stimulate associated play in a non-directive nature, e.g. 'We can cook them for our tea, can't we?' 'Shall we put the fish on?' 'Do you want to put that on the bed?' |

| Directive | Directive questions, clearly stated requests, commands, orders, rules, and suggestions of which there is no option, e.g. 'Put that in your bag' 'Get me that fish' 'Careful, that's hot, don't touch!' |
|---|---|
| Statement | Comments relating to ongoing activity, general remarks, narrative related to instructions for play, what is happening or will happen during the play scenario, talking to self, or minimal content, e.g. 'So we need to load the backpack with food and go on a picnic' 'we'll pop that in there' 'here's the path, look' 'uh oh' |
| *Content* | |
| Mental-state talk | Comments relating to mental state activity, metacognition, emotions, thoughts, knowledge, desires (e.g. remember, think, know, want, like, love, clever). Comments referencing mental states were divided into one of four exclusive categories: a) mental states of the child, e.g. 'you like torches, don't you?' 'what do you want?' 'what do you think we will need?'; b) mental states of the mother, e.g. 'I thought we were going to make up the tent' 'I'd like a nice cup of tea'; c) mental states of both child and mother, e.g. 'a spoon, we mustn't forget that' 'we forgot to light the fire'; d) mental state other, e.g. 'that fish doesn't want to be caught' 'your brother doesn't like tomato sauce, does he?' |
| Non-mental | All other comments not containing mental state terms. This category included descriptions of objects or events (e.g., 'That's to flip the burgers with', 'You're good at catching the fish'), comments relating to pretence (e.g., do we need the torch, is it dark out here? Can you see the stars? 'I can hear a sound, maybe there are bears in the woods'), the child's everyday life or past experiences (e.g., 'It's just like when we went to Centre Parcs' 'It's like your backpack that you wear for school'), affect expressions and feedback on the child's activity (e.g., 'Excellent, good girl' 'That's it, well done' 'Oh this is lovely', 'You're not a very good fisherman, are you?', 'You don't put cake on the barbeque'), bids for the child's attention (e.g., 'Look, are you watching?') |

**4.3    Results**

**4.3.1    Descriptive Statistics and Preliminary Analyses**

The mean scores for all measures (excluding the new interaction-based coding scheme at 44 months) are shown in Table 4.2. There were no gender differences with respect to mothers' use of appropriate and non-attuned mind-related comments at 8 months, mind-mindedness at 44 months, maternal depression scores, or reports of children's behavioural difficulties, as measured by the SDQ ($t$s < 1.81, $p$s > .073). SES was positively correlated with mothers' use of appropriate mind-related comments at 8 months, $r(205) = .16$, $p = .025$, and mental descriptions at 44 months, $r(166) = .29$, $p < .001$, and was negatively correlated with maternal depression scores, $r(165) = -.17$, $p = .028$, and children's reported behavioural difficulties, $r(170) = -.34$, $p < .001$. As such, maternal SES was controlled for in subsequent analyses.

Appropriate mind-related comments at 8 months was negatively correlated with maternal depression scores at 44 months, $r(165) = -.17$, $p = .033$, and children's reported behavioural difficulties at 44 months, $r(170) = -.21$, $p = .005$. However, maternal depression scores and children's reported behavioural difficulties were unrelated to non-attuned mind-related comments at 8 months and mind-mindedness at 44 months ($p$s < .14, $p$s > .068).

All variables were non-normally distributed ($p$s < .007); however, non-parametric tests revealed equivalent results, so for ease of interpretation, parametric statistics are reported.

**Table 4.2: Descriptive Statistics for Parent and Child variables**

|  | M | SD | Range |
|---|---|---|---|
| **Maternal variables** | | | |
| Hollingshead Index (SES) | 34.00 | 14.03 | 11–66 |
| Maternal Depression (BDI total) | 6.38 | 6.53 | 0–35 |
| Appropriate mind-related comments 8m (%) | 5.34 | 3.64 | 0–18.67 |
| Non-attuned mind-related comments 8m (%) | 1.58 | 1.88 | 0–8.94 |
| Mind-mindedness 44m (prop) | 0.41 | 0.26 | 0–1 |
| **Child variables** | | | |
| Behavioural Difficulties (SDQ total) | 10.15 | 5.20 | 1–30 |

### 4.3.2 Convergent validity of mind-mindedness measures

Mothers' tendency to comment appropriately on their infant's mental states at 8 months was positively correlated with mothers' tendency to describe their child in mental-state terms at age 44 months, $r(164) = .22$, $p = .007$. However, non-attuned mind-related comments at 8 months were unrelated to mind-minded descriptions at 44 months, $r(164) = -.08$, $p = .294$.

### 4.3.3 Interaction-based assessment of mind-mindedness at 44 months: an exploration of the scheme

Descriptive statistics for all of the interaction-based coding scheme variable frequencies at 44 months are presented in Table 4.3. As Table 4.3 shows, comments in all of the categories were frequent and had good variance, with the exception of comments on mental states of both mother and child,

comments on the mental states of others, and (to a lesser extent) rejections of the

child's bids. Due to the low frequencies in these two mental-state talk categories,

and the fact that hypotheses were not made in relation to the specific sub-

categories of mental-state talk, comments in the four sub-categories were

summed to give a total mental-state talk score.

**Table 4.3: Descriptive statistics for the new interaction-based coding scheme**

|  | Measure (frequency) | M | SD | Range |
|---|---|---|---|---|
| *General* | Total maternal utterances | 188.32 | 66.24 | 54–356 |
|  | Total child utterances | 85.75 | 50.67 | 1–371 |
| *Responsive* | Acknowledge child's bids | 51.39 | 31.99 | 1–200 |
|  | Ignore bids | 22.14 | 11.56 | 1–61 |
|  | Reject bids | 1.66 | 2.09 | 0–9 |
| *Form* | Question | 51.80 | 28.42 | 2–138 |
|  | Suggestion | 25.11 | 12.25 | 0–74 |
|  | Directive | 28.89 | 15.11 | 3–85 |
|  | Statement | 82.44 | 32.98 | 21–184 |
| *Content* | Mental state (child) | 13.65 | 7.94 | 1–38 |
|  | Mental state (mother) | 5.18 | 5.12 | 0–23 |
|  | Mental state (both) | 0.67 | 1.01 | 0–5 |
|  | Mental state (other) | 0.49 | 1.00 | 0–6 |
|  | Mental state (total) | 19.99 | 11.75 | 1–54 |
|  | Non-mental (total) | 82.28 | 34.06 | 19–180 |

Table 4.4 shows the scores for the variables hypothesised to be

interaction-based measures of mind-mindedness in the preschool years: (a)

collaborative communication (acknowledge – [ignore + reject]), (b) solicited

child involvement ([question + suggestion] – directive), and (c) total mental-state

talk.

**Table 4.4: Descriptive statistics for the proposed interaction-based measures of mind-mindedness in the preschool years**

|  | M | SD | Range |
|---|---|---|---|
| Collaborative Communication | 26.66 | 26.97 | 19–163 |
| Solicited Child Involvement | 48.21 | 42.58 | 61–169 |
| Mental State Talk (Total) | 19.99 | 11.75 | 1–54 |

As shown in Table 4.5, these three variables were highly positively intercorrelated, with large effect sizes for all correlations, providing support for the proposal that they are all tapping into the same construct.

**Table 4.5: Intercorrelations between interaction-based measures of mind-mindedness**

|  | 1. | 2. |
|---|---|---|
| 1. Solicited child involvement | - |  |
| 2. Collaborative communication | .73** | - |
| 3. Mental state talk | .71** | .62** |

** $p < .001$

SES was positively correlated with collaborative communication, solicited child involvement, and total mental-state talk ($r$s > .34, $p$s < .001), but child gender was unrelated to all three of these variables ($t$s < 0.67, $p$s > .503).

Collaborative communication, solicited child involvement, and total mental-state talk were all negatively correlated with children's reported behavioural difficulties ($r$s > -.24, $p$s < .003). Due to the highly intercorrelated nature of the three variables and the fact that they showed to same pattern of findings in relation to SES, child gender, and reported behavioural difficulties, a overall summary score was created to index interactional mind-mindedness at age 44 months, summing the scores for collaborative communication, solicited child involvement, and total mental-state talk. Descriptive statistics for the interactional mind-mindedness index were as follows: $M = 95.03$, $SD = 73.84$, range 66–354. Scores for the interactional mind-mindedness index were normally distributed, KS test = 0.06, $p = .200$, and internal reliability was good, Cronbach's $\alpha = .76$.

### 4.3.4 Interaction-based assessment of mind-mindedness: convergent validity with mind-mindedness in infancy and childhood

The correlations between the new interaction-based assessment of mind-mindedness at 44 months and appropriate and non-attuned mind-related comments at age 8 months and concurrent mental descriptions of the child are shown in Table 4.6. The new interactional mind-mindedness variables were all positively correlated with appropriate mind-related comments and concurrent mental description scores, but were unrelated to non-attuned mind-related comments at age 8 months (see Table 4.6).

**Table 4.6: Correlations (Pearson's *r*) between mind-mindedness measures**

|  | AMRC (8m) | NAMRC (8m) | Mental Descriptions (44m) |
|---|---|---|---|
| Collaborative communication (44m) | .23** | .02 | .24** |
| Solicited child involvement (44m) | .28*** | -.03 | .24** |
| Mental-state talk (44m) | .30*** | .04 | .19* |
| Interactional mind-mindedness (44m) | .29*** | -.01 | .28*** |

*Note:* AMRC = appropriate mind-related comments, NAMRC = non-attuned mind-related comments.
*$p < .05$, **, $p < .005$, ***$p < .001$.

### 4.3.5 Predictors of Interactional Mind-Mindedness at 44 months

Stepwise linear regression was used to investigate predictors of mothers' interactional mind-mindedness index scores at 44 months. Given the lack of association with non-attuned mind-related comments at age 8 months, this variable was not included in the regression equation. At the first step, appropriate mind-related comments at 8 months and concurrent mental description scores were added to establish whether these prior and concurrent established measures of mind-mindedness independently predicted the new interactional index. At the second step, the total number of comments produced by the mother during the session and the total number of comments by the child were entered to investigate whether predictions were independent of overall mother and child verbosity. At the final step, SES, reported behavioural difficulties, and maternal

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depression were entered as control variables. The results of the regression analysis are summarised in Table 4.7. The final model was significant, $F(7, 130)$ = 61.92, $p < .001$, accounting for 77% of the variance.

As shown in Table 4.7, appropriate mind-related comments and concurrent mental descriptions predicted independent variance in mothers' interactional mind-mindedness index scores when maternal and child verbosity were controlled. Appropriate mind-related comments at age 8 months continued to predict independent variance in interactional mind-mindedness with all variables entered into the regression equation, but concurrent mental description scores were no longer a significant predictor at the final step.

In order to explore which of the variables entered at the final step (SES, children's behavioural difficulties, maternal depression) was responsible for reducing the effect of mental description scores on interactional mind-mindedness, the regression was re-run, entering each of the three variables separately at the final step. Mental description scores continued to predict independent variance when children's behavioural difficulties or maternal depression were controlled (B = 29.76, β = .10, $p = .026$, and B = 31.80, β = .11, $p = .024$, respectively), but the effect became non-significant when SES when controlled, B = 19.60, β = .07, $p = .148$. Thus, concurrent mental descriptions did not predict interactive mind-mindedness independently of SES.

**Table 4.7: Summary of multiple regression analysis for variables predicting mothers' interactional mind-mindedness at 44 months**

| Variable | B | β | *p* |
|---|---|---|---|
| **Step 1** | | | |
| Appropriate mind-related comments | 4.42 | .21 | .012 |
| 44m mental descriptions | 67.41 | .22 | .008 |
| $R^2 = .12$ | | | |
| **Step 2** | | | |
| Appropriate mind-related comments | 2.63 | .13 | .008 |
| 44m mental descriptions | 33.75 | .11 | .019 |
| Mother total comments | 0.71 | .62 | <.001 |
| Child total comments | 0.37 | .24 | <.001 |
| $\Delta R^2 = .51$ | | | |
| **Step 3** | | | |
| Appropriate mind-related comments | 2.10 | .10 | .025 |
| 44m mental descriptions | 16.99 | .06 | .220 |
| Mother total comments | 0.61 | .53 | <.001 |
| Child total comments | 0.41 | .27 | <.001 |
| Socioeconomic status | 0.93 | .18 | .001 |
| Children's behavioural difficulties | -0.96 | -.07 | .188 |
| 44m maternal depression | -.53 | -.05 | .336 |
| $\Delta R^2 = .04$ | | | |

**4.4    Discussion**

The main aim of Study 4 was to develop and validate an observation-based assessment of caregiver mind-mindedness in relation to their preschoolers. As outlined in the Introduction to this chapter, we conjectured that caregivers would demonstrate that they were treating their preschoolers with minds of their own by engaging and communicating with them in a manner indicative of collaboration with the child. It was hypothesised that mind-minded caregivers would actively solicit input from their preschoolers by using questions and suggestions, and acknowledge their children's input. In contrast, a lack of mind-mindedness was hypothesised to be indexed by caregivers giving their children instructions, directions, and commands and tending to ignore or reject their children's input. Mind-mindedness was also expected to be indexed by mothers using higher levels of mental-state talk when interacting with their preschoolers.

The results of Study 4 supported these aspects of mother–child interaction as indices of interactional mind-mindedness. First, the summary scores measuring the three behaviours proposed to indicate mind-mindedness—collaborative communication, solicited child involvement, and mental-state talk—were highly positively correlated with one another, suggesting they were tapping into the same construct. Second, the three variables were positively correlated with established measures of mind-mindedness in the first year of life (appropriate mind-related comments) and concurrently (mental descriptions of the child). Finally, regression analysis showed that the composite measure of interactional mind-mindedness at age 44 months was independently predicted by appropriate mind-related comments at age 8 months and concurrent mental descriptions. However, when SES was added into the equation, concurrent

mental descriptions no longer independently predicted the interactional mind-mindedness composite; this is likely due to parental SES and mental descriptions at 44 months being highly correlated (.29).

Study 4 also replicated previous findings showing concordance in mind-mindedness over time and across assessment methods. In line with the findings reported by Meins et al. (2003) and McMahon et al. (2016), Study 4 showed that mothers' appropriate mind-related comments as measured in the infant observation mind-mindedness scheme were positively correlated with mothers' mental descriptions of their children later in development. In contrast, non-attuned mind-related comments in the first year of life were unrelated to mental descriptions and the new interactional mind-mindedness measure at 44 months.

Previous research presents a mixed pattern regarding the association between non-attuned comments and later mind-mindedness. Meins et al. (2003) reported a negative correlation between non-attuned comments at age 6 months and mothers' mental descriptions of their children at 4 years, but McMahon et al. (2016) reported no association between non-attuned comments at 7 months and mothers' mental descriptions 12 months later. Previous research has found a lack of concurrent association between appropriate and non-attuned mind-related comments (e.g., Meins et al., 2012). Also, different developmental outcomes are associated with appropriate versus non-attuned comments; appropriate mind-related comments have been found to be unrelated to children's internal state language and symbolic play at age 2, but positively associated with theory-of-mind at age 4, whereas non-attuned comments were negatively correlated with internal state language and symbolic play, but unrelated to theory-of-mind (Meins et al., 2013). As such, the lack of relation between early non-attuned

comments and mind-mindedness in the preschool years is not unexpected. However, the results of Study 4 suggest that appropriate mind-related comments are the index of early mind-mindedness that predict mind-mindedness later in development.

The role of SES in the observed pattern of findings is worthy of further discussion. Previous studies have shown that mothers' mental descriptions of their children are unrelated to maternal education and SES (Barreto, Pasco Fearon, Osorio, Meins, & Martins, 2016; Lundy, 2013; Meins et al., 1998, 2003). The positive correlation of .29 between SES and mental descriptions in Study 4 is therefore anomalous. SES was also found to relate to the new interactional assessment of mind-mindedness at age 44 months. Given that the new measure was based on mothers' mode of communicative involvement and exchange with the child, the positive association with SES is to be expected; mothers from higher SES backgrounds tend to talk more to their children, are more responsive to their child's vocalisations, and use speech more to initiate and sustain conversation (Hoff, Laursen, & Tardif, 2002; Hoff, 2003), which is particular pertinent to the interactional assessment of mind-mindedness. Nevertheless, it is important to recognise that, in contrast with the established measures of mind-mindedness, this new assessment is linked to SES.

In summary, Study 4 provides promising results in establishing a valid and reliable method for assessing mind-mindedness 'online' in the preschool years. The new scheme is thus the first to assess mind-mindedness beyond infancy from actual mother–child interaction. The results of Study 4 showed that the new measure was positively associated with the established measures of mind-mindedness in the first year of life and the preschool years. Further

validation of the new assessment as a measure of mind-mindedness would come from demonstrating that the new assessment is associated with known correlates of the established mind-mindedness measures. Perhaps the most well documented correlate of mind-mindedness is children's mentalising abilities. Appropriate mind-related comments in infancy predict superior mentalising abilities in the preschool years (Centifanti et al., 2016; Laranjo et al., 2010, 2014; Kirk et al., 2015; Meins et al., 2002, 2003, 2013), and mental descriptions later in development have also been found to relate to superior mentalising abilities (e.g., Lundy, 2013; Meins et al., 1998). In order to evaluate further whether the new interactional scheme described in this chapter was a valid measure of mind-mindedness, Study 5 investigated how it related to children's mentalising abilities.

# Chapter 5

**Relations between Maternal Mind-Mindedness in Infancy and Childhood and Children's Emotion Understanding and Theory-of-Mind**

## 5.1     Introduction

Of particular research interest and focus over the last quarter-century is children's understanding of other minds, and the mechanisms that serve to facilitate children's mentalising abilities. Theory of mind (ToM) can be defined as the capacity to attribute thoughts, beliefs, desires, or intentions to others, which can then be used to explain or predict an individual's behaviour. When children develop a ToM, they begin to appreciate that when there is a conflict between belief and reality, it is a person's beliefs that will guide their behaviour (Frith & Frith, 1991). As such, research paradigms assessing ToM usually focus on a child's ability to pass tasks where they must represent another person's belief state. Although there are debates in the literature about the age at which children acquire ToM understanding, children typically begin to pass tests requiring an understanding of the belief-states of others around the age of 4 (Wellman & Liu, 2004). In contrast, emotion understanding is proposed to precede belief-based understanding, with children acquiring language relating to feelings and desires at an earlier point in development than mental states such as beliefs (Bartsch & Wellman, 1995; Bretherton & Beeghly, 1982).

One aspect of parent behaviour that has consistently shown positive associations with children's developing understanding of the mind is parental mental state talk. Research by Taumoepeau and Ruffman (2006) has documented positive associations between parental mental state talk (in particular, talk about children's desires) to their 15-month-olds and children's mental state language

use and emotion understanding at 24 months. Mothers' talk about desires was a more consistent predictor of children's emotion understanding at age 24 months, compared to talk about knowledge states ('think and know'). Similar results have been reported by Symons, Fossum, and Collins (2006) in relation to children's ToM performance: mothers' desire-state language during free play with their 2-year-olds was associated with children's performance on a battery of ToM tasks at age 5. As children are proposed to understand desires and feelings before they grasp belief-based language (Bartsch & Wellman, 1995; Bretherton & Beeghly, 1982), these findings suggest that the form of mental state language that best matches children's level of understanding is most effective in facilitating children's mentalising abilities. For example, children's ability to predict how people will feel or react based on their desires comes before their ability to make predictions based on a person's beliefs (Wellman & Wooley, 1990; Wimmer & Perner, 1983); as such, children will only benefit from talk about knowledge or thinking at an older age, once they have a grasp of desires. Further research by Taumoepeau and Ruffman (2008) supports this notion, as mothers references to others' thoughts and knowledge (think-and-know talk) at 24 months was the form of mental state talk that predicted children's emotion understanding at 33 months.

However, several authors have suggested parents' broad use of internal state talk is also predictive of children's later ToM abilities. Dunn, Brown, Slomkowski, Tesla and Youngblade (1991) sought to investigate individual differences in children's social understanding, observing 33-month-old children and their mothers in their home environment. The authors found that family talk about mental states, feelings, and their likely causes at 33 months was associated

with children's false-belief understanding and emotion understanding at age 40

months. Thus, children from families who frequently engaged in discussions

about mental states were more likely to pass false-belief and emotion

understanding tasks later in development.

Longitudinal research by Ruffman, Slade, and Crowe (2002) also

provides evidence that mental-state talk during picture tasks with 2- to 4-year-

olds is positively related to their ToM understanding. In addition, these authors

found that the frequency of mothers' mental-state utterances was associated with

improvements in their children's performance on false belief tasks over the

subsequent years. Thus, the frequency of mental state references during parent–

child interactions appears to be influential in shaping children's developing

socio-cognitive skills. It is suggested that mental-state language serves to

highlight the aspects of human behaviour that children should seek to understand

(reference), or alternatively, children's exposure to mental state language may

highlight conflicting views about the world, or belief states different to their

own, which could serve to facilitate ToM understanding (Dunn, 1994).

In a similar vein, discourse-based indices of mind-mindedness during

infancy have also been found to be a positive predictor of children's socio-

cognitive skills (Laranjo et al., 2010, 2014; Meins et al., 2002, 2003, 2013).

Parents' use of appropriate mind-related comments in toy-based free play at 12

months has been found to be associated with children's early manifestations of

ToM understanding at age 2; mothers' earlier appropriate mind-related

comments predicted children's understanding of discrepant desires and visual

perspective taking abilities (Laranjo et al., 2010). During a follow-up study when

children were aged 4, the authors found that mothers' use of appropriate mind-

related comments at 12 months was similarly predictive of children's visual perspective taking and false-belief understanding, over and above children's earlier perspective-taking abilities (Laranjo et al., 2014). Further research has found relations between mothers' appropriate mind-related comments during free-play with their infants at age 6 months, and children's subsequent performance on a battery of ToM tasks at 45 and 48 months (Meins et al., 2003), and in a recent study, mothers' appropriate mind-related comments in infancy accounted for 40% of the variance in children's ToM scores (Kirk et al., 2015).

Investigations post-infancy have also linked mind-mindedness and children's understanding of the mind. In an early study, Meins et al. (1998) found that representational measures of mind-mindedness, namely a mother's tendency to focus on the mental attributes of their child at age 3, predicted children's mentalising abilities at age 5. Similarly, de Rosnay, Pons, Harris, and Morrell (2004) found that mothers who described their 4- to 6-year-olds using more mental state terms had children with advanced performance on emotion understanding tasks. Additionally, Lundy (2013) has demonstrated that maternal and paternal representational measures of mind-mindedness concurrently predict children's ToM performance at age 4.

There is therefore a considerable body of evidence showing a positive association between parental mind-mindedness and children's mentalising abilities. However, the mechanisms via which early appropriate mind-related comments facilitate children's later understanding of mind are currently poorly understood. Meins et al. (2002) reported that infant–mother attachment security did not mediate this link, and Meins et al. (2003) found no evidence for mediation via mothers' mind-minded descriptions of their children at age 4;

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mind-mindedness in the first year of life continued to have a direct relation with children's ToM when attachment security or later mind-mindedness were controlled. Meins et al. (2003) suggested that caregivers' tendency to comment appropriately on their infants' thoughts and feelings might act as a linguistic scaffold for children's acquisition of mental-state language. Given that children's mental-state language is known to relate positively to their ToM performance (e.g., Symons, Peterson, Slaughter, Roche, & Doyle, 2005), this language may thus mediate the relation between appropriate mind-related comments and ToM.

Meins et al. (2013) investigated this possibility by assessing children's mental-state language at age 2. In order to explore whether aspects of children's early symbolic representation other than language might explain the link between appropriate mind-related comments and ToM, this study also assessed children's age-2 perspectival symbolic play using tasks that required an understanding of symbolic representation and object substitution (Lewis & Boucher, 1988, 1997; Meins & Russell, 1997). Meins et al. (2013) found no evidence that these early symbolic representational abilities mediated the relation between appropriate mind-related comments and children's ToM: the direct positive association was maintained when children's age-2 language and symbolic play abilities were controlled.

Study 5 aimed to investigate associations between the new observation-based measure of mind-mindedness described in Chapter 4 and children's ToM abilities and emotion understanding. We hypothesised that children's age-4 mentalising abilities will be positively related to the preschool observation-based

assessment of mind-mindedness. Such positive associations would provide further validation for this measure as an assessment of mind-mindedness. Given the well-established association between mothers' use of mental-state talk and children's mentalising abilities, Study 5 investigated whether both the mental-state talk and collaborative communication/solicited child involvement component of the new interactional mind-mindedness index made independent contributions to children's ToM and emotion understanding. As well as investigating these relations, Study 5 explored whether interaction-based mind-mindedness at age 3 mediated the relation between mothers' appropriate mind-related comments in infancy and children's mentalising abilities at age 4. If interactional mind-mindedness at age 3 were found to mediate the relation between early mind-mindedness and children's mentalising abilities, these results would shed the first light on the transmission mechanism for this association.

Study 5 used ToM and emotion understanding data collected at age 4 as part of an Economic and Social Research Council grant that was awarded to Professor Elizabeth Meins and colleagues. Previously published papers (Centifanti et al., 2016; Meins et al., 2013) have reported positive associations between mothers' use of appropriate mind-related comments and children's age-4 ToM and emotion understanding abilities in this sample.

## Study 5

### 5.2    Method

#### 5.2.1   Participants

Participant information at phases 1–2 is described in Study 4. Infants were 51 months at phase 3 ($M = 51.53$ months, $SD = 0.85$, range = 49-53) when ToM and emotion understanding were measured. Of the original sample, 161

were followed up at 51 months. Families who failed to complete Phase 3 did not

differ with respect to early measures of mind-mindedness compared to those who

were retained throughout the study, but families who dropped out had lower SES

scores, $t(204) = 4.17$, $p < .001$, $d = 0.77$. The author was not responsible for any

of the data collection or coding at Phase 3, but conducted the statistical analysis.

### 5.2.2 Measures

Table 5.1 illustrates the tasks that were undertaken at each phase of study.

**Table 5.1: Overview of Study 5 Measures and Tasks**

| Measures | Tasks |
| --- | --- |
| *8 Months* | |
| Appropriate mind-related comments | 20 minute free play scenario |
| *44 months* | |
| Mental descriptions | 'Describe your child' interview |
| Mental state talk/ collaborative communication/ solicited child involvement | Semi-structured play interaction – 'camping trip' |
| *51 months* | |
| Emotion understanding | Denham's (1986) task, involving labelling of emotional states (a) by facial expression, (b) using situational context as a cue, (c) recognising that different people have different responses to the same event. |
| | Three items from the Test of Emotional Comprehension (Pons, Harris, & de Rosnay, 2004). |
| Theory-of-mind | Battery of ToM tasks based on Wellman & Liu (2004): (a) Diverse Beliefs; (b) Knowledge Access; (c) Contents False Belief – Other; (d) Contents False Belief – Self; (e) Explicit False Belief; (f) Unexpected Transfer. |

**5.2.2.1 Mind-Mindedness.** Mind-mindedness was assessed at 8 months using an interaction-based measure and at 44 months using both the interview-based measure and new interaction-based coding scheme, as reported in Study 4.

**5.2.2.2 Emotion Understanding.** Children's emotion understanding was assessed at 51 months, using Denham's (1986) task, and three items from the Test of Emotion Comprehension (TEC; Pons, Harris, & de Rosnay, 2004).

Denham's task is comprised of three main parts: (a) labelling of four emotional states by facial expression (happy, sad, cross, scared), (b) using information regarding the situational context as a cue to labelling the four emotions, (c) recognising that different people may have different emotional responses to the same event. For task (a) children were asked to name four emotional expressions depicted in faces that could be stuck onto a doll on the same gender as the child. Children received 2 points for a correct response, 1 point for an incorrect response of the correct valence (e.g. scared for sad), and 0 for other incorrect responses. Following this, the faces were subsequently shuffled and the experimenter laid all of the faces out, and asked the child to show them where he/she feels happy/sad/cross/scared. Again, children received 2 points for correct responses, 1 point for an incorrect response of the correct valence, and 0 for other incorrect responses. Total scores for section (a) ranged from 0–16. During task (b) children heard four vignettes, in which one of the four emotions labelled during task (a) would be unequivocally felt by the protagonist in the story (e.g. feeling scared after a nightmare). Children were required to label the appropriate emotion in each vignette, which were scored in the same fashion as described above. Total scores for section (b) ranged from 0–8.

Prior to task (c), mothers had reported on how their child responses to a number of emotionally ambiguous situations (e.g. being approached by a dog). Children then heard six vignettes, in which the protagonist expressed emotion that was atypical to the child (e.g. being happy to see a dog if the mother had reported the child would be scared). Children thus had to label the emotions correctly, without considering egocentric opinions. Each vignette was scored between 0–2, as described above, for a total score ranging between 0–12.

The three TEC items involved (a) simple causes of emotions, (b) relations between desires and emotions, and (c) knowledge/ignorance and emotion. For task (a) children received five vignettes (e.g., child looking at his/her pet turtle that had just died) in which the child had to label the target emotion by pointing to one of five cartoon faces (happy, sad, cross, scared, all right); children received 1 point for each correctly labelled emotion, with total scores ranging between 0 and 5. For task (b), children received two items to assess their understanding of two different people's emotional response to a desire being satisfied or unsatisfied (e.g., receiving a drink they liked or hated when they were thirsty); children received 1 point for correctly labelling each protagonist's emotional reaction, with total scores ranging between 0 and 4. For task (c), one item assessed children's understanding of the relation between knowledge/ignorance and someone's emotional response (i.e., a rabbit eating a carrot and being unaware of a wolf behind a bush); children received 1 point for correctly labelling the rabbit's emotion.

A total score of children's emotion understanding at 51 months was then summed by totalling the following: (a) total scores for section (a) of Denham's (1986) task (emotion labelling), possible range of scores 0–16, (b) total scores

for sections (b) and (c) of Denham's task and the TEC items on simple causes of emotion (emotion situations), possible range of scores 0–25, and (c) total scores for TEC items on relations between desires and emotions, and knowledge/ignorance and emotion (cognition and emotion); possible range of scores 0–5. Thus, children's emotion understanding composite score could range from 0–46.

**5.2.2.3 Theory-of-Mind.** Children completed a battery of ToM tasks at 51 months, based on Wellman and Liu (2004): (a) Diverse Beliefs task, which assessed children's ability to recognise beliefs different to their own, and predict another's behaviour based on an individual's beliefs; (b) Knowledge Access task, which assessed children's understanding of knowledge states being dependent on previous access to key information; (c) Contents False Belief – Other task, which assessed children's recognition that a person will predict the contents of a container based on it's outward appearance, rather than it's actual contents; (d) Contents False Belief – Self task, which assessed children's recognition of their own initial false belief about the contents of a container, based on it's outward appearance; (e) Explicit False Belief task, which assessed children's ability to predict a protagonists search behaviour based on what they are told about where he/she thinks the object is, rather than where the object really is; (f) Unexpected Transfer task, which assessed children's ability to predict a protagonists search behaviour based on a false belief.

The gender of the protagonists in the stories matched the child's gender, and the order in which the tasks were presented was randomised and counterbalanced. Memory and reality control questions were also used; all control questions were required to be passed, in addition to the test question,

for children to be classed as passing the individual task. For example, in the unexpected transfer task, children were asked "where did they put the apple first of all?" and, "where is the apple really?" in order to ensure that the child was not only paying attention to the story, but also that they had not forgotten the original information presented by the experimenter. For each task that was passed, the child received 1 point, giving a total that ranged between 0 and 6. Cronbach's $\alpha = 0.68$ for the battery of ToM tasks, which is in line with studies that have employed similar ToM batteries (e.g., Astington & Jenkins, 1999).

## 5.3    Results

### 5.3.1    Descriptive Statistics and Preliminary Analysis

The mean scores for all variables are shown in Table 5.2. With respect to gender differences, girls ($M = 3.31$, $SD = 1.73$) scored more highly than did boys ($M = 2.73$, $SD = 1.73$) on the ToM battery, $t(159) = 2.13$, $p = .035$. There were no gender differences with respect to any other parent or child measures ($t$s < 1.81, $p$s > .073). Maternal socio-economic status (SES), as measured by the Hollingshead Index (Hollingshead, 1975), was positively correlated with mothers' use of appropriate mind-related comments at 8 months and mind-related descriptions at 44 months, as described in Chapter 4. Maternal SES was also correlated with children's ToM, $r(161) = .20$, $p = .011$, and emotion understanding, $r(160) = .31$, $p < .001$. As such, maternal SES was controlled in subsequent analyses.

**Table 5.2: Descriptive Statistics for All Variables**

|  | Mean (SD) | Range |
| --- | --- | --- |
| *Mind-mindedness* | | |
| Appropriate mind-related comments (%) | 5.34 (3.64) | 0–18.67 |
| Mental descriptions 44 months (%) | 40.76 (25.55) | 0–1 |
| Interactional mind-mindedness at 44 months | 95.03 (73.84) | -66–354 |
| Mental-state talk at 44 months | 19.93 (11.79) | 1–54 |
| Communicative collaboration + solicited child involvement at 44 months | 75.09 (64.88) | -68–303 |
| *Mentalising abilities* | | |
| Theory of mind at 51months | 3.03 (1.75) | 0–6 |
| Emotion understanding at 51 months | 34.93 (5.78) | 14–44 |
| *Other variables* | | |
| Socioeconomic status | 34.00 (14.03) | 11–66 |

### 5.3.2 Relations between mind-mindedness and children's mentalising abilities

Correlations between the mind-mindedness measures and children's mentalising abilities are shown in Table 5.3. As shown in Table 5.3, all of the mind-mindedness measures were positively correlated with children's ToM and emotion understanding abilities at age 51 months. With respect to the new interactional mind-mindedness assessment at 44 months, the associations with children's mentalising abilities held for both the mental-state talk and collaborative communication/solicited child involvement components of the interactional mind-mindedness index (see Table 5.3).

**Table 5.3: Correlations (Pearson's *r*) between mind-mindedness and children's mentalising abilities**

| | ToM 51m | Emotion Understanding 51m |
|---|---|---|
| AMRC 8m | .24** | .29*** |
| Mental descriptions 44m | .18* | .17* |
| Interactional MM 44m | .22** | .44*** |
| Mental State Total 44m | .25** | .43*** |
| Collaborative communication + solicited child involvement 44m | .21* | .43*** |

*Note*: AMRC = appropriate mind-related comments; ToM = Theory-of-mind
$p < .05$, **$p < .01$, $p < .001$

### 5.3.3   Predictors of Age-4 Emotion Understanding

Stepwise linear regression was used to investigate predictors of children's emotion understanding at age 4. Maternal socioeconomic status, appropriate mind-related comments at 8 months, and mental descriptions at 44 months were entered at the first step; mental state talk at 44 months and collaborative communication + solicited child involvement at 44 months were added at the second step. Table 5.4 summarises the results of the regression. The final model was significant, $F(5, 134) = 10.32$, $p < .001$, accounting for 27.8% of the variance. As shown in Table 5.4, when all variables were entered into the regression equation, appropriate mind-related comments at 8 months was the only variable predicting independent variance in children's emotion understanding at age 4. As appropriate mind-related comments were still found to predict independent variance in children's emotion understanding, despite the proposed mediating variables at age 3 being added into the regression equation,

there were no grounds for performing formal mediation analysis.

**Table 5.4: Summary of multiple regression analysis for variables predicting children's emotion understanding at age 4.**

| Variable | B | β | *p* |
| --- | --- | --- | --- |
| Step 1 | | | |
| Socioeconomic status | 0.12 | .28 | .001 |
| Appropriate mind-related comments 8m | 0.50 | .31 | <.001 |
| Mental descriptions 44m | 1.10 | .05 | .555 |
| $R^2 = .21$ | | | |
| Step 2 | | | |
| Socioeconomic status | 0.06 | .13 | .130 |
| Appropriate mind-related comments 8m | 0.38 | .24 | .003 |
| Mental descriptions 44m | 0.63 | .03 | .731 |
| Mental state talk 44m | 0.09 | .19 | .106 |
| Collaborative communication + | 0.01 | .15 | .173 |
| Solicited child involvement 44m | | | |
| $\Delta R^2 = .07$ | | | |

### 5.3.4   Predictors of Age-4 Theory-of-Mind Ability

Stepwise linear regression was used to investigate predictors of children's ToM scores at age 4. Maternal socioeconomic status, appropriate mind-related comments at 8 months, and mental descriptions at 44 months were entered at the first step; mental state talk at 44 months and collaborative communication + solicited child involvement at 44 months were added at the second step. Table 5.5 summarises the results of the regression. The final model was significant, $F(5, 135) = 3.39$, $p = .006$, accounting for 11.1% of the variance. As shown in

Table 5.5, as was the case for emotion understanding, only appropriate mind-related comments at 8 months predicted independent variance in children's ToM ability at age 4, therefore formal mediation analysis was not performed.

**Table 5.5: Summary of multiple regression analysis for variables predicting children's ToM scores at age 4.**

| Variable | B | β | *p* |
|---|---|---|---|
| Step 1 | | | |
| Socioeconomic status | 0.01 | .10 | .231 |
| Appropriate mind-related comments 8m | 0.11 | .23 | .008 |
| Mental descriptions 44m | 0.68 | .10 | .264 |
| $R^2 = .09$ | | | |
| Step 2 | | | |
| Socioeconomic status | 0.004 | .03 | .771 |
| Appropriate mind-related comments 8m | 0.09 | .19 | .032 |
| Mental descriptions 44m | 0.72 | .10 | .246 |
| Mental state talk 44m | 0.03 | .19 | .127 |
| Collaborative communication + Solicited child involvement 44m | -0.001 | -.04 | .753 |
| $\Delta R^2 = .02$ | | | |

## 5.4     Discussion

The first aim of Study 5 was to investigate whether the measures from the newly-devised interaction-based scheme for coding mind-mindedness in the preschool years were related to children's mentalising abilities at age 4. All three interaction-based measures of maternal mind-mindedness at age 44 (overall

mind-mindedness index, mental-state talk, collaborative communication/solicited child involvement) were positively correlated with children's later ToM and emotion understanding, as was the case for mothers' mental descriptions of their children at 44 months. These findings replicate the well-established link between mothers' mental state language use and children's mentalising abilities (see the Introduction to this chapter). But they also highlight how, by adopting a conversational style that is scaffolding, stimulating of the child's ideas and promoting the child's input, mothers may also facilitate their children's understanding of other minds. The results support the conclusions of authors such as Ereky-Stevens (2008), who stated that "a mother, who is available for interactions that are well tuned to the child's abilities, interests, needs, and moods, facilitates children's developing awareness of the internal world" (p. 539). The positive associations between the new interactional assessment of mind-mindedness in the preschool years and children' mentalising abilities thus provides further validation of the assessment as a measure of mind-mindedness.

However, the results of Study 5 fail to shed light on the pathways via which mothers' appropriate mind-related comments in infancy predict children's later mentalising abilities. The results of the regression analyses showed that mothers' early appropriate mind-related comments continued to predict children's emotion understanding and ToM when the 44-month interactional and describe-your-child measures of mind-mindedness had been added to the regression equation. Moreover, the 44-month measures of mind-mindedness no longer related to children's ToM and emotion understanding when early appropriate mind-related comments were taken into account.

These findings highlight the importance of the mother's social interaction with her child within the first year of life, specifically her ability to represent and comment appropriately on the internal states of her infant, in predicting children's subsequent understanding of mind. Study 5's results suggest that it is mind-mindedness in infancy, rather than mind-mindedness in the preschool years, that is crucial for facilitating children's mentalising abilities. This lack of mediation observed in Study 5 is in line with the results of other studies that have failed to find a developmental mechanism to explain the association between mind-mindedness in the first year of life and children's later mentalising abilities (Meins et al., 2002, 2003, 2013). Research is thus yet to elucidate the developmental pathways via which early mind-mindedness predicts children's development.

<center>**Chapter 6**</center>

<center>**General Discussion**</center>

## 6.1     Summary of findings

The studies in this thesis aimed to test the proposal that mind-mindedness is a relational construct, as well as exploring how mind-mindedness may be manifested during interactions between caregiver and child beyond infancy. Studies 1 to 3 aimed to test the proposal that mind-mindedness is a quality of close relationships by assessing mind-mindedness in caregiver–child dyads where the relationship has not spanned the child's entire life or where the relationship has been deemed dysfunctional, in comparison to community control parents. The results outlined below, collectively, are in line with the proposal that mind-mindedness is a relational construct.

Study 4 aimed to establish the validity of an interaction-based coding scheme of mind-mindedness for use in the preschool years. The results suggest further avenues of exploration around the assessment of mind-mindedness during online interactions in parent–child dyads (both mothers and fathers), over a range of contexts and ages, to validate age-appropriate measures of mind-mindedness. Study 5 aimed to explore relations between interaction- and interview-based measures of mind-mindedness and their power in predicting children's ToM ability and emotion understanding later in childhood. The results suggest that it is mind-mindedness in infancy, rather than mind-mindedness in the preschool years, that is crucial for facilitating children's mentalising abilities. Thus, parents' mind-mindedness in the first year of the child's life appears to be particularly influential in shaping the child's understanding of mind later in

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childhood.

### 6.1.1 Mind-mindedness as a relational construct

Study 1 had two main aims: to compare levels of mind-mindedness of adoptive parents in comparison with a sample of community parents, and to assess whether adaptations to the mind-mindedness coding scheme were necessary for adoptive parents' descriptions of their children. It was hypothesised that, if mind-mindedness is a relational construct (Meins et al., 2014), then mind-mindedness would be lower in adoptive parents due to the fact that the parent–child relationship has been non-continuous and not spanned the child's entire life. In support of this hypothesis, Study 1 found that mind-mindedness was lower in adoptive parents compared to their community counterparts. It was also found that a sizeable minority of adoptive parents described their child with reference to their pre-adoption experiences ('in care for around 18 months'), and as such a *Placement*-related category was included in the mind-mindedness coding scheme. Adoptive parents' tendency to describe their child in terms of their pre-adoption experiences was negatively related to their tendency to describe them in mind-minded terms. Thus, parents who spontaneously represented their child in terms of their past experiences seemed less willing or able to represent their child's current mental and emotional states.

Study 2 aimed to replicate and extend the findings of Study 1 by establishing whether the group differences in mind-mindedness between adoptive and birth parents could be explained in terms of parent- or child-centred characteristics, such as parental mental health or child behavioural difficulties. Despite research suggesting levels of post-adoption depression are similar to those seen in biological motherhood (Foli et al., 2012; O'Hare & Swain, 1996;

Vesga-Lopez et al., 2008), it is thought that adoptive parents may be exposed to additional factors which may contribute to difficulties with mental wellbeing, such as fear and anxiety associated with new responsibilities of parenthood (McKay & Ross, 2010), and unrealistic expectations for their children and of themselves as new parents (Foli, 2010; Foli et al., 2012). As such, it was important to assess parents' reports of depression and anxiety in order to explore whether differences in mental wellbeing between adoptive and biological parents could account for the group differences in mind-mindedness. In addition, past research has consistently reported that adopted children experience elevated levels of behavioural difficulties compared to their biological counterparts (Cohen, Coyne, & Duvall, 1993; Juffer & van IJzendoorn, 2005; Lansford et al., 2001; Wierzbicki, 1993). Thus, Study 2 investigated whether differences in mind-mindedness between adoptive and biological parents remained once parents' mental health and children's behaviour were controlled.

Consistent with the results of Study 1, Study 2 found that mind-mindedness was lower in adoptive parents compared to biological parents. Additionally, the results suggested that the group difference in mind-mindedness was independent of parental mental health and could not fully be explained in terms of children's behavioural difficulties, in line with proposal of mind-mindedness being a relational construct. The negative relation between mental descriptions and placement descriptions was also replicated, supporting the suggestion that adaptations to the mind-mindedness coding scheme for non-biological parents are required. However, somewhat unexpectedly, adoption length was unrelated to mind-mindedness; the implications of this finding are discussed further in Section 6.3 (theoretical implications).

Study 3 aimed to build upon these findings and establish whether lower levels of mind-mindedness can be generalised to other types of caregiver relationships, such as foster carers. Study 3 also explored mind-mindedness in families that have objectively been judged as dysfunctional, due to suspicions of abuse or neglect. It was hypothesised that in families where the quality of the parent–child relationship has been compromised, parents' ability to represent the mental states of their child may be impaired or affected, thus mind-mindedness would be lower in families where the parent–child relationship has been judged to be sub-optimal. A second aim was to establish whether the negative relation found between mental descriptions and placement descriptions in adoptive parents in Studies 1 and 2 could be replicated in a sample of foster carers.

It was found that mind-mindedness was lower in foster carers, parents of children who have been the subject of a child protection plan, and those who had spent a period of time in care but had been reunified with their parents, in comparison to a community sample of parents. Mind-mindedness was near identical in the three 'care' groups. The differences in mind-mindedness were found to be independent of children's behavioural difficulties, in line with the proposal that mind-mindedness is a quality of close relationships. As was the case for adoptive parents, foster carers' tendency to describe their children in relation to their placement experiences was negatively related to their mind-minded descriptions.

### 6.1.2 Exploring the use of an interaction-based measure of mind-mindedness beyond infancy

Study 4 had two main aims: the first aim was to extend existing research findings on stability in measures of mind-mindedness (e.g. Kirk et al., 2015;

McMahon et al., 2016) and explore stability in mind-mindedness from infancy (8 months) to early childhood (44 months). It was found that mothers' appropriate mind-related comments at 8 months were positively correlated with mind-minded descriptions at 44 months, providing evidence for temporal stability of mind-mindedness over a period covering several developmental stages, as well as continuity across the different methods of assessing mind-mindedness.

The second aim was to develop and validate an interaction-based measure of mind-mindedness for use post-infancy. To date, there has been very limited research investigating how mind-mindedness is manifested during interactions between the parent and child beyond infancy, and how any such measure would relate to existing measures of mind-mindedness. Mind-mindedness during infancy and childhood is assessed using different methods; during infancy, mind-mindedness is assessed via an interactional measure, operationalised in terms of caregivers' tendency to comment in either an appropriate or non-attuned manner on the infant's thoughts and feelings (see Meins et al., 2001). Post-infancy, mind-mindedness is operationalised in terms of caregivers' tendency spontaneously to focus on mental attributes when asked to describe their child (Meins et al., 1998). Mind-mindedness is measured via different methods at different ages in order to accommodate the advancing physical and mental abilities of the child.

One of the advantages of assessing mind-mindedness in an interactional context is that it allows researchers to capture a parent's awareness of their child's mental states during on-going interactions with them, and thus assess the accuracy of those representations and the appropriateness of their subsequent response. However there has been little consideration of how mind-mindedness

and the appropriateness of parents' responses to their child are manifested beyond infancy, when the child becomes a more autonomous and verbal interactional partner, with his or her own sense of agency. Parents' mental-state language use during interactions with their child has been suggested to be an important facet of parental speech post-infancy, and has been found to be associated with parents' mental descriptions of their child (Lundy, 2013). As such, parents' references to mental states during interactions with their child were included as a measure of interest within the analysis.

Study 4 also aimed to conceptualise parental responsiveness to their child's bids post-infancy, and the form and content of their speech during interactions with their child. As mind-mindedness is thought to index a parent's appreciation of the child as a mental agent, and the ability to respond to their child in an appropriate manner, one could speculate that highly mind-minded parents will respond in a timely and appropriate manner to their child's bids (both verbal and behavioural). A collaborative communication measure was thus created by summing the total number of times the parent acknowledged their child's input, and subtracting the instances where they ignored or rejected the child's input.

With regard to the form of parents' speech, previous research has found negative associations between mind-mindedness and parental intrusiveness (defined as the parent being controlling over over-stimulating) during infancy (Rosenblum et al., 2008). For the purpose of the current research, intrusiveness was conceptualised as the parent making directive comments and commands towards their child, in order to control the child's behaviour and fulfill the agenda of the parent. Conversely, parental speech aiming to stimulate or scaffold

the child's thought processes and ideas, welcoming their input and creating an atmosphere of shared agency, could be considered a more supportive form of input. A solicited child involvement measure was created by summing the total number of questions and suggestions the parent made, and subtracting the total number of commands and directives the parent made towards their child.

The three interaction-based measures hypothesised to index mind-mindedness at 44 months (mental-state talk, collaborative communication, and solicited child involvement) were highly positively intercorrelated, suggesting they were tapping into the same construct. Significant positive relations were also found between the three interaction-based measures and both appropriate mind-related comments at 8 months and mothers' concurrent mind-minded descriptions of their children. When the three 44-month measures were summed to provide an overall interactional mind-mindedness index, appropriate mind-related comments and mind-minded descriptions each predicted independent variance in the mind-mindedness index scores. These results thus represent a promising start in developing an interaction-based mind-mindedness coding scheme post-infancy. Assessing parent–child interactions and the relationship between the dyad over a range of contexts, and with both mothers and fathers and their children, could help further establish the validity of the coding scheme.

### 6.1.3   Mind-mindedness and children's mentalising abilities

Study 5 aimed to explore associations between the interaction-based assessment of mind-mindedness and children's ToM and emotion understanding to attempt to provide further validation of the new coding scheme. Previous research has consistently shown positive associations between parental mental

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state talk and children's burgeoning emotion understanding and ToM (e.g., Dunn et al., 1991; Symons et al., 2006; Taumoepeau & Ruffman, 2006). Similarly, mind-mindedness in infancy has been found to be a positive predictor of emotion understanding and ToM in childhood (Centifanti et al., 2016; Laranjo et al., 2010, 2014; Meins et al., 2002, 2003, 2013), and positive associations have also been reported between parents' mind-minded descriptions of their children and their children's ToM performance (Lundy, 2013; Meins et al., 1998).

Study 5 investigated associations between measures of mind-mindedness, as outlined in Study 4, and children's emotion understanding and ToM. All three interaction-based measures of maternal mind-mindedness (mental-state talk, communicative collaboration, solicited child involvement) were positively correlated with children's later emotion understanding and ToM. The fact that the new measures are positively related to children's mentalising abilities provides further validation of the interaction-based assessment of mind-mindedness at age 44 months given that mentalising abilities are a well-established correlate of the existing mind-mindedness measures.

Study 5 also sought to investigate the developmental pathways from mind-mindedness in the first year of life to children's mentalising abilities at age 4, exploring interaction-based mind-mindedness at 44 months as a potential mediator. The results of the stepwise regression analyses did not lend support to the notion that later mind-mindedness mediated the relation between early mind-mindedness and children's mentalising abilities. With 44-month mind-mindedness added into the regression equation at the second step, mothers' appropriate mind-related comments at 8 months still continued to predict children's age-4 ToM and emotion understanding. Indeed, appropriate mind-

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related comments was the only independent predictor of both of these aspects of children's mentalising abilities. Collectively, the results highlight the importance of mind-mindedness during the first year of life in shaping children's understanding of mind.

## 6.2    Study limitations

Adoptive parents in Studies 1 and 2 were self-selected, and thus may not be representative of adoptive parents as a whole. Although online designs have the advantage of gaining access to specific participant populations that may be difficult to otherwise recruit (Schmidt, 1997), and reduces experimenter effects and demand characteristics (Reips, 2000), self-selection reduces the generalisability of results as information cannot be objectively verified. Parents may have chosen to complete the describe-your-child measure either because they felt positively about their adopted child and the parent–child relationship or because they were experiencing difficulties with their child and perhaps wished to take part in research in order to learn more about these issues. To establish levels of mind-mindedness in a more representative sample of adoptive parents, future research could administer the describe-your-child measure as part of the measures taken during completion of the adoption process. Also, the sample size of adoptive parents was lower than desired, thus reducing the power the findings. However, consistency in the patterns of results was found between Studies 1 and 2, which is promising. Participants in Studies 1 and 2 also tended to be highly educated, with a large proportion being in professional/associate professional occupations. As such, further research would benefit from recruiting parents with a greater variety of educational attainment and occupations, to improve the generalisability of the results.

Foster carers' age was not recorded in Study 3, due to the interviewers focussing more on the age of the child's birth parents, meaning that associations between current caregiver age and mind-mindedness could not be established for this group. Despite caregiver age being unrelated to mind-mindedness in all of the studies, being privy to this information would have allowed for methodological robustness, and more conclusive evidence of mind-mindedness being unrelated to parent-centred characteristics, such as age.

There were slight variations in how the child description data were collected between the studies. Data collected in Studies 1 and 2 were obtained by caregivers typing their responses and submitting them via the internet; participants in the three 'care groups' in Study 3 had their descriptions transcribed in real time by a researcher, and the community control group had their descriptions recorded and later transcribed, as was the case in Studies 4 and 5. However, Meins et al. (2014) reported that administration mode (transcribed interview, paper and pen written description, online written description) was unrelated to mind-mindedness, thus there is no obvious reason why differences in administration mode would make parents more or less likely to describe their child in mind-minded ways. Despite this, future research should attempt to use identical procedures for assessing child descriptions in order to increase methodological robustness.

Using parent report only on the SDQ may potentially increase the likelihood of rater bias, particularly within the groups of parents who have had involvement from child protective services. Behavioural difficulties within foster children and adoptive children were to be expected, given the wealth of previous research reporting higher levels of behavioural difficulties within these groups.

Previous research has also found elevated levels of behavioural difficulties in children who have been the subject of a child protection intervention, or children who have been reunified with their birth families (e.g., Egelund & Lausten, 2009; Taussig et al., 2001). However the results of Study 3 did not support these previous findings, as parents' reported levels of behavioural difficulties in children who had been the subject of a child protection plan, or children who had been reunified with their birth families, were not statistically different to the control sample of community children. The potential for rater bias may be higher within these two groups of parents involved with child protective services; as concerns about their child's wellbeing, and their ability to provide adequate care for their child, have been raised, there may be a tendency to deny or downplay any potential behavioural difficulties the child is displaying, in fear that they will be judged, and that it reflects badly on them as parents. Equally, adoptive parents and foster carers may also feel that they are subject to judgement, given that they have been 'chosen' to care for their child, which may have influenced their responses. If parents' reports of child behavioural difficulties have been downplayed, this could have implications for the validity of the results, as when controlling for behavioural difficulties, differences in mind-mindedness between parent groups could become non-significant. That said, the SDQ is a highly validated against clinical assessments (Goodman & Goodman, 2009), and has been deemed appropriate for detection of difficulties amongst looked after children (Goodman et al., 2004), and those in care (McCrystal & McAloney, 2004). The design could be strengthened through both parents giving an account of their child's perceived behavioural difficulties, or use of teacher-report of behavioural difficulties across the studies, where possible, to assess the

degree of concordance among raters.

The research would also benefit from obtaining measures of mind-mindedness and other variables of interest from both caregivers or parents in two-adult households. This would allow for investigation of the degree of concordance in mind-mindedness between mothers and fathers, or both parents in same-sex relationships. It may be that parents have differing perceptions of their child, depending on the amount of time they spend interacting with their child and the respective roles they have within the child's life (e.g., main caregiver). This could help to improve the representativeness of the data within different contexts and across different relationships.

## 6.3     Theoretical implications

The results of Studies 1 to 3 add to growing literature on the construct of mind-mindedness, exploring mind-mindedness in family structures that have not been previously investigated. Given the great diversity in family structures in modern times, straying away from the typical 'nuclear families' and encapsulating varying routes into parenthood, it is important to extend the current literature in mind-mindedness to include varying family structures. The finding that mind-mindedness is lower in non-birth parents, including both adoptive parents and foster carers where the relationship is non-continuous, adds further evidence to the proposal that mind-mindedness is a relational construct (Meins et al., 2014). The findings are particularly interesting given the length of the placements within adoptive and foster families. Adopted children in Studies 1 and 2 had been placed with their families an average of 40 months and 42 months respectively, while children in Study 3 had been placed with foster carers an average of 46 months, so the relationships could be considered well

established.

However, yet to be discovered are potential factors or mechanisms that may explain the lower levels of mind-mindedness in non-birth families. The findings of this thesis suggest that mind-mindedness is unrelated to placement length, which initially seems at odds with the suggestion that mind-mindedness is a quality of close relationships, as people tend to gain greater insight into a person's likes, dislikes, emotional states, and cognitions through being in an intimate relationship with them (Meins et al., 2014). However, as discussed in the empirical chapters, the number of placements that had been established relatively recently (e.g., for a period of weeks or months) was scarce. If there had been a greater number of parents and caregivers participating who were representative of discrete placement timeframes, such as 0-3 months, 3-6 months, 1-2 years, etc., this would allow for a more thorough investigation of the relation between mind-mindedness and placement time, and the associated theoretical implications of such findings.

Alternatively, it may be that relationship length is not necessarily the most important factor in dictating levels of mind-mindedness, but rather other factors that influence the closeness and quality of the relationship between the parent and child. For example, foster carers may view themselves as a professional caregiver, as opposed to a parental figure (Blythe et al., 2014), which may result in them seeing the relationship with the child as less close and intimate. If a foster carer views themselves a professional service provider, the implications may be that they do not feel the need to develop an intimate, nurturing, and emotionally close relationship with the child, which may subsequently impact on their level of mind-mindedness. It has also been

suggested that it may be emotionally challenging for foster carers to really 'commit' to the child and forge a meaningful relationship with them, knowing that it may be temporary and will end (Lindhiem & Dozier, 2007). If the foster carer has the belief that the foster placement is temporary, this may hinder the development of a strong foster carer–child relationship (Marcus, 1991), which could also impact on the willingness or ability to be mind-minded.

Adoptive parents also tend to report lower levels of closeness to their adopted children compared to their biological children (Walker & Reutner, 2014), however the reasons why this may be requires further exploration. It could be inferred that adoptive parents tend to enter their relationship with the child with the hope that it will be life-long, which may differ from foster carers. If the parent were hopeful that the relationship would be life-long, one would assume that they will have both a high level of commitment to the child, and the willingness to forge a meaningful and close bond with them, which should optimise the opportunity to be mind-minded. Thus, factors that may impact on the closeness of the relationship and mind-mindedness in adoptive parents are likely to differ from other non-birth caregivers, such as foster carers, where the expectation is that the relationship may be temporary. It may be that factors associated with infertility and loss are still pertinent for some adoptive parents, which could affect them emotionally, and influence their relationships with others.

Alternatively, it may be that there is a discrepancy between the reality of adoptive parents' experience of parenting and the vision that they held of parenthood: the 'ideal' child that they expected to rear, and the strength or ease with which a relationship can be formed. In order to expand our theoretical

knowledge of adoption and mind-mindedness, relations between adoptive parents' views of the quality and closeness of the relationship with the adopted child, and the challenges or barriers to forging a close relationship, should be investigated. As part of adoption screening, it may be useful to ask parents to describe their ideal child; this description could then be compared with parents' descriptions of their actual children when they are placed with the family. Parents whose descriptions between their ideal and actual children are most discrepant may be likely to be those most in need of support.

Study 4 adds to the literature on mind-mindedness by describing the genesis of an interaction-based measure of mind-mindedness for use post-infancy. It explores age-appropriate manifestations of mind-mindedness, in order to represent the increasingly sophisticated motoric and verbal abilities of the child. Using actual interactions between the parent and child to assess mind-mindedness allows for researchers to investigate the *appropriateness* of parents' responses to their child, which is the foundation of the mind-mindedness construct in infancy. The results showed that the quality of parents' responsiveness, collaboration, and mental state talk when interacting with their 44-month-olds were positively related to both interaction-based assessments of mind-mindedness in infancy, and a concurrent interview-based assessment of mind-mindedness. The development of the new coding scheme is a promising start in expanding the assessment of mind-mindedness to include both interaction and interview-based measures during childhood. Which assessment method is preferable will depend on the broader research questions that are being addressed, the research paradigm being used, and the time and resource constraints of the project. Further validation of the scheme, through assessing the

appropriateness of the interaction-based coding scheme post-infancy in a range of situations and contexts, would serve to broaden the current conceptualisation of mind-mindedness.

Study 5 highlighted the importance of parental mind-mindedness during the first year of life in shaping children's mentalising abilities later in development. Interestingly, only mothers' use of appropriate mind-related comments during infancy was found to be an independent predictor of children's emotion understanding and ToM ability later in childhood. The results add to the growing body of literature showing that mind-mindedness in the first year of life relates directly to children's mentalising abilities at age 4 and is not mediated by attachment security (Meins et al., 2002), mind-mindedness in the preschool years (Meins et al., 2003), or children's age-2 language and symbolic play abilities (Meins et al., 2013). The direct nature of this link is intriguing, given that one's intuition is that some aspect of the parent–child relationship or children's development in the preschool years should mediate the relation between mothers' early attunement to their infants' internal states and children's understanding of other minds several years later.

## 6.4    Clinical and policy implications

The results highlight the importance of equipping pregnant or 'new' parents with ample information on the importance of how they think about and interact with their child during the first year of life. Many expectant mothers and fathers are overwhelmed by the idea of becoming a parent, and the life-long responsibility that they are about to embark on. Many would welcome information from people they deem more 'experienced' in the realm of infant and child development, such as midwives or health visitors, who have frequent

contact with expectant and new parents; their job roles include a focus on education and child health promotion, which means they are in an influential position to impart knowledge about the importance of mind-mindedness and parental mentalisation for children's socio-cognitive development.

New parents could benefit from being made aware of the importance of attempting to attune to their child's mental states by considering the underlying intention behind the child's behaviour, and how they may respond appropriately to them. Once parents are presented with information about what mind-mindedness is and the benefits of being mind-minded, both for themselves and for their baby, this may be an additional motivation for them to take an active role in forging a close relationship with their child from the outset, and considering the infant's mental life. It would be of great benefit to provide professionals who are frequently at the forefront of educating pregnant or new mothers in the early stages of parenthood, such as midwives and health visitors, with training and workshops about mind-mindedness, so they feel knowledgeable and equipped to explaining the importance of mind-mindedness to expectant or new parents. This information could be incorporated into antenatal classes or individual appointments with parents, for example, which could then lead to potential benefits for the child and the parent later in development.

Additionally, with the rise in technology, having access to information about mind-mindedness in readily available formats, such as an app-based programme, may improve the reach of information, make it more interactive, and easier to understand and digest. Some parents may struggle to understand concepts like mind-mindedness until they see examples being utilised in real

situations; an app which includes videos, examples, and tips may be of great benefit to new parents, and improve uptake of the information. Currently, a smartphone app to facilitate mind-mindedness is being piloted, which is a promising step in a world where technology is so influential to the lives of many.

The findings of Studies 1 to 3 have implications for awareness training and intervention with non-birth parents involved with the care system, such as adoptive parents and foster carers. Assessing parents' descriptions of their children may be a resource-effective way to provide professionals with additional information on parents and carers who may need more support. It may also be a more objective measure of tapping representations of the relationship, without asking direct questions that may seem threatening or loaded to the parent. While professionals working with adoptive and foster parents emphasise the importance of acknowledging the child's history and respecting the child's existing identity, dwelling on the child's past and representing the child predominantly in terms of his or her pre-adoption or pre-placement experiences may not be ideal. Given that conservative estimates indicate that between 2 and 9% of adoptions disrupt after the adoption order has been granted (Selwyn, Wijedasa, & Meakings, 2014), it may be beneficial to have as much information as possible on parents' views about their children in order to attempt to reduce the number of children returning to the care system because the adoption has failed.

One existing study, which has focused on mind-mindedness as an intervention, has led to positive outcomes. Colonnesi et al. (2012) reported on the efficacy of an intervention to improve mind-mindedness in adoptive parents, and promote positive parent–child relationships, via the use of video feedback.

The intervention aimed to promote and improve mind-mindedness by teaching parents attend to their child's signals and behaviours, and to label their child's mental states appropriately. The intervention resulted in a significant improvement in adoptive mothers' report of insecure attachment behaviours and conduct problems in their children 6 months post-intervention. This highlights the potential of mind-mindedness for intervention work with families, to help promote positive relationships and potentially improve the quality of the relationship between the caregiver and child.

Initial training could focus on an attempt to shift representations away from the child's pre-adoption or pre-placement experiences, which may have a positive impact on parents' closeness to the child, and their ability to then focus on the child's current mental states and respond to them appropriately. This is particularly pertinent, given the number of adoptive parents and foster carers who tended to describe their child with reference to their pre-placement experiences, despite the average length of placement being several years. Informing adoptive and foster parents of what can constitute 'normal' child behaviour could help reduce the tendency for parents to pathologise their child's difficult behaviour, and attribute such behaviour to the child's pre-placement experiences. It has been suggested that if foster parents are taught to think about the child's perspective, and how it influences the child's behaviour, it is possible that foster carers may change their attributions regarding difficult child behaviour, particularly blame of the child or themselves, and thus their behavioural management of the child (Kelly & Salmon, 2014).

For birth parents involved with child protective services, such as those who have been reunified with their child or those subject to a child protection plan, support may focus on educating parents about child development, providing awareness into what their child's behaviour may be signalling, accurately inferring the intention behind the behaviour accordingly, and teaching appropriate ways in which to respond to their child's emotional states. This could help to improve psychological attunement to the child's mental states, and the closeness of the relationship.

## 6.5     Directions for future research

Future research with non-birth families and families where the quality of the relationship has been deemed sub-optimal would help further refine our understanding of the mind-mindedness construct. It would be interesting for future research to explore mind-mindedness before and after the adoption process or foster placement to investigate whether levels of mind-mindedness change as the parent–child relationship becomes more intimate and well established. Previous research involving biological families has suggested that mind-mindedness is relatively stable over time (Illingworth et al., 2016; Kirk et al., 2015; Meins et al., 2003; 2011; McMahon et al., 2016). But this stability has been observed only within early childhood, and no study has investigated whether mind-mindedness changes with fluctuations in the quality of the relationship; this would help to further refine understanding of the construct of mind-mindedness. Additionally, research would benefit from investigating relations between parents' representations of their child, and observed parenting behaviour in adoptive and biological families. This would strengthen the results as it would allow for corroboration of parents' accounts of child behaviour, and

how parents' perception of their child may influence the closeness of the relationship, and their behavioural response to their child.

An interesting question that arises is whether there is 'ceiling point' that caregivers reach in terms of their mind-mindedness, and if this is a result of relationship length or if it is influenced by relationship quality. If mind-mindedness is still shown to be lower in comparison to biological parents when the relationship is equally well-established, this may help to direct researchers to investigate what factors are influencing relationship quality or intimacy in non-biological parent–child relationships. It would thus be of value to investigate genetic and environmental factors that could explain the differences in mind-mindedness between adoptive/foster parents and biological families.

Some of the participants in the current research had both an adopted and a biological child; however as the number of participants in this sample was low, they were asked to report only on their adopted child. Unfortunately there were not enough participants in this category to allow for meaningful comparisons with adoptive parents without their own biological children, but future research could focus on exploring mind-mindedness in descriptions of adoptive children and birth children, or birth children and foster children. Measuring the same caregiver's mind-mindedness when describing an adopted/foster versus biological child would enable one to control for parent-related differences, as well as addressing potential genetic and environmental contributions to mind-mindedness. Similarly, genetic and environmental contributions could be investigated by exploring mind-mindedness in step-parents' descriptions of their biological and step children. It would also be interesting to obtain mind-mindedness measures from both parents to establish if there is evidence for

concordance in caregivers' descriptions of their adoptive or foster children. Lundy (2013) reported concordance in couples' mind-minded descriptions of their biological children, but this issue has not yet been investigated in non-biological caregivers.

It would also be of interest to establish whether other factors not considered in the current analysis could explain lower mind-mindedness in foster carers, such as the number of children the foster carer has fostered in the past, and the foster carers' views or expectations of their role as a caregiver. Given that research has suggested that foster carers who have cared for many foster children exhibit lower levels of commitment to the child (Dozier & Lindhiem, 2006), it would be of interest to explore whether experienced foster carers, who have cared for many children, display lower levels of mind-mindedness compared to carers who have cared for fewer children. Also, given the often-transitory nature of foster placements, foster carers may struggle to define themselves as parents, or professional service providers (Blythe et al., 2014). If the expectation is that the placement will be relatively short, or if foster carers are uncertain about how long the placement will last, they may be more cautious about investing in the relationship their involvement in the child's life may be only brief (Kinsey & Schlosser, 2012). Thus, this may mean that they are less willing to take the child's perspective and engage with the child's internal states. This is particularly pertinent, as caregivers' willingness to engage in a close relationship has been found to be important for children in foster care. Foster youths' perception of their relationship with their caregiver, assessed by asking youths to rate how close they felt to their caregiver and how much they feel their caregiver cares about them, has been found to be significantly correlated with

caregivers' report of youth internalising and externalising difficulties; the closer the perceived relationship, the fewer behavioural difficulties were reported (Cooley, Wojciak, Farineau, & Mullis, 2015). Investigating attitudes and expectations about the placement in relation to mind-mindedness in foster carers would therefore be worthwhile, and could provide initial ideas about potential mechanisms to explain why mind-mindedness is lower in foster carers.

Similarly, future research should explore whether parental factors associated with the risk of abuse or neglect may help further explain the observed lower level of mind-mindedness in parents in the child protection groups. For example, lack of social support, experience of domestic violence, or substance abuse may all contribute to these parents' comparative inability to represent the mental states of their child. Bebbington and Miles (1989) conducted a survey with 2500 families in which children were taken into care, and found that the children often came from broken homes, lived in poor neighbourhoods, and had parents who were in receipt of benefits. Often children who are reunified with their parents continue to be exposed to socioeconomic risk factors following reunification, compared to substitute homes (Bellamy, 2008; Lloyd & Barth, 2011). Mothers' mental health has also been noted as an important characteristic for children entering, or re-entering care (Alpert, 2005). Although many of the parents in the current study were not reporting elevated issues with their mental health, it could be that factors that influence their mental wellbeing play an important role in their ability to represent their child's mental states, such as the social-environmental context in which they dwell. Also, as mental health difficulties were assessed using a self-report measure, it could be that parents'

reports of their mental wellbeing were subject to social desirability bias. Further research is required in order to gain a more thorough understanding of the construct of mind-mindedness in non-normative samples.

Future research should also investigate whether mind-mindedness is similarly related to positive outcomes for both the caregiver and child in foster and adoptive families. For example, mind-mindedness has been found to be related to superior executive function (Bernier, Carlson, & Whipple, 2010) and mentalising (Centifanti et al., 2016; Laranjo et al., 2010, 2014; Lundy, 2013; Meins et al., 2008, 2013) abilities in children. It would be interesting to investigate whether these positive associations hold for children of mind-minded adoptive and foster carers also. If mind-mindedness is similarly related to positive outcomes in adoptive parents and foster carers, caregivers who are mind-minded should experience lower levels of parenting stress (Demers et al., 2010; McMahon & Meins, 2012) and be more attuned to their children's needs (Lundy, 2013). Adoptive mothers often report lower levels of stress (Judge, 2003; Sanchez-Sandavol & Palacios, 2012), however comparisons have drawn on normative data, as opposed to collecting data from adoptive and biological parents simultaneously (Howat-Rodrigues, Tokumaru, de Amorim, Garcia, & Izar, 2013), which could be an interesting avenue for further exploration.

Foster carers often have additional stressors to contend with, including troubled relationships between themselves and the child's biological parents, tensions within their own family, placement disruptions, and disagreements with social services (Wilson, Sinclair, & Gibbs, 2000). As well as frequently caring for foster children with behavioural and emotional difficulties, due to the severe shortage of foster carers available, foster carers are often asked to provide care

beyond the scope of their training or their own perceived capabilities (Whenan, Oxlad, & Lushington, 2009), which could lead to them feeling ineffective and stressed. Research reports that, potentially due to screening and training, overall levels of depression are low in foster carers (Cole & Eamon, 2007), however assessing parenting stress in foster carers may capture more clearly the stressors they encounter, and the degree of stress they feel within the caring role. This is of importance as even at low levels, strain can negatively impact on the quality of parenting foster carers are able to provide, as well as leading to higher rates of placement disruption (Cole & Eamon, 2007).

Finally, given the observed direct associations between early mind-mindedness and children's mentalising abilities, future research should investigate new factors as potential mediators of the relation between appropriate mind-related comments in the first year of life to children's later understanding of mind. One factor that could be argued to play a mediating role is children's early emotion development. To make an appropriate mind-related comment, the caregiver needs to interpret the infant's mental state accurately. Accuracy in labelling the young infant's thoughts and feelings is plausibly important in enabling the caregiver to regulate the infant's emotions—knowing that the infant is protesting because he wants a toy that is out of reach, or because she is finding the story boring, will enable the caregiver to avoid the infant becoming overly distressed. In turn, this will facilitate infants' recognition of their own emotions and how they are influenced by the situational context, leading them to be able to regulate their emotions more successfully.

This proposal is in line with the theoretical models that assume that parents' reactions to their children's emotions relate to children's socio-cognitive

and socio-emotional functioning via children's own emotion regulation (Eisenberg, Cumberland, & Spinrad, 1998; Gottman, Katz, & Hooven, 1997). Children's inhibitory control of their behaviour is also a key component of executive functioning, which is positively associated with mothers' appropriate mind-related comments (Bernier et al., 2010) and strongly positively related to children's ToM performance (Carlson, Mandell, & Williams, 2004; Carlson & Moses, 2001). Emotion regulation and inhibitory control may therefore mediate the relation between early mind-mindedness children's ToM and emotion understanding at age 4. Future research investigating this proposal may thus shed the first light on the developmental pathways linking parents' attunement to their infants' internal states and children's own ability to read the minds of others.

# Appendix 1: Parental Concepts of Development Questionnaire (CODQ; Sameroff & Feil, 1985)

| | Strongly agree | Agree | Disagree | Strongly disagree |
|---|:---:|:---:|:---:|:---:|
| 1. Children have to be treated differently as they grow older. | ☐ | ☐ | ☐ | ☐ |
| 2. It is not easy to define a good home because it is made up of many different things. | ☐ | ☐ | ☐ | ☐ |
| 3. The mischief that 2-year-olds get into is part of a passing stage they'll grow out of. | ☐ | ☐ | ☐ | ☐ |
| 4. Parents need to be sensitive to the needs of their children. | ☐ | ☐ | ☐ | ☐ |
| 5. Difficult babies will grow out of it. | ☐ | ☐ | ☐ | ☐ |
| 6. Children's problems seldom have a single cause. | ☐ | ☐ | ☐ | ☐ |
| 7. Parents can be turned off by a fussy child so that they can't be as nice as they would like. | ☐ | ☐ | ☐ | ☐ |
| 8. There is no one right way to bring up children. | ☐ | ☐ | ☐ | ☐ |
| 9. Firstborn children are usually treated differently from later-born children. | ☐ | ☐ | ☐ | ☐ |
| 10. Parents change in response to their children. | ☐ | ☐ | ☐ | ☐ |
| 11. Parents must keep to their standards and rules no matter what their child is like. | ☐ | ☐ | ☐ | ☐ |
| 12. Fathers cannot raise their children as well as mothers. | ☐ | ☐ | ☐ | ☐ |
| 13. If a child isn't toilet trained by 3 years of age, there must be something wrong. | ☐ | ☐ | ☐ | ☐ |
| 14. Girl babies tend to be easier to take care of than boy babies. | ☐ | ☐ | ☐ | ☐ |
| 15. There's not much anyone can do to help emotionally disturbed children. | ☐ | ☐ | ☐ | ☐ |
| 16. The father's role is to provide the discipline in the family, and the mother's role is to give love and attention to the children. | ☐ | ☐ | ☐ | ☐ |
| 17. Children's success at school depends on how much they have been taught at home. | ☐ | ☐ | ☐ | ☐ |
| 18. Boy babies are less affectionate than girl babies. | ☐ | ☐ | ☐ | ☐ |
| 19. An easy baby will grow up to be a well-behaved child. | ☐ | ☐ | ☐ | ☐ |
| 20. Babies have to be taught to behave themselves or they will be naughty later on. | ☐ | ☐ | ☐ | ☐ |

## Appendix 2: The Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983)

Participants are asked to choose one response from the four given for each interview.  Instruct the participant to answer how it currently describes their feelings. The questions relating to anxiety are marked "A", and to depression "D".

| A | 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 |

| D | 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 |

| A | 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 |

| D | 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 |

| A | 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 |

| D | I feel cheerful: | |
|---|---|---|
| | Not at all | 3 |
| | Not often | 2 |
| | Sometimes | 1 |
| | Most of the time | 0 |

| A | I can sit at ease and feel relaxed: | |
|---|---|---|
| | Definitely | 0 |
| | Usually | 1 |
| | Not Often | 2 |
| | Not at all | 3 |

| D | I feel as if I am slowed down: | |
|---|---|---|
| | Nearly all the time | 3 |
| | Very often | 2 |
| | Sometimes | 1 |
| | Not at all | 0 |

| A | I get a sort of frightened feeling like 'butterflies' in the stomach: | |
|---|---|---|
| | Not at all | 0 |
| | Occasionally | 1 |
| | Quite Often | 2 |
| | Very Often | 3 |

| D | 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 care as ever | 0 |

| A | I feel restless as I have to be on the move: | |
|---|---|---|
| | Very much indeed | 3 |
| | Quite a lot | 2 |
| | Not very much | 1 |
| | Not at all | 0 |

| D | 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 |

| A | I get sudden feelings of panic: | |
|---|---|---|
| | Very often indeed | 3 |
| | Quite often | 2 |
| | Not very often | 1 |
| | Not at all | 0 |

| D | I can enjoy a good book or radio or TV program: | |
|---|---|---|
| | Often | 0 |
| | Sometimes | 1 |
| | Not often | 2 |
| | Very seldom | 3 |

## Appendix 3: CRQ Warmth and Inductive Reasoning (taken from Paterson & Sanson, 1999)

Participants are asked to choose one of the following five responses for each question: 1) Never/almost never, 2) Rarely, 3) Sometimes, 4) Often, or 5) Always/almost always

CRQ Warmth subset:

Over the past 6 monthly, roughly how often did you:

1. Hug or hold him/her for no particular reason

2. Tell him/her how happy he/she makes you

3. Have warm, close times together with him/her

4. Enjoy listening to him/her and doing things with him/her

5. Feel close to him/her both when he/she was happy and when he/she was upset

6. Express affection by hugging, kissing and holding him/her

CRQ Inductive Reasoning subset

1. Talk it over and reason with him/her when he/she misbehaved

2. Give him/her reasons why rules should be obeyed

3. Explain to him/her why he/she was being corrected

4. Explain to him/her the consequences of his/her behaviour

5. Emphasise to him/her the reasons for rules

## Appendix 4: The 12-Item General Health Questionnaire (GHQ-12; Goldberg & Williams, 1988)

1) Able to concentrate; 0 = better than usual, 1 = same, 2 = less, 3 = much less

2) Loss of sleep over worry; 0 = not at all, 1 = no more than usual, 2 = rather more, 3 = much more

3) Playing a useful part; 0 = more so than usual, 1 = same, 2 = less, 3 = much less

4) Capable of making decisions; 0 = more so than usual, 1 = same, 2 = less, 3 = much less

5) Felt constantly under strain; 0 = not at all, 1 = no more than usual, 2 = rather more, 3 = much more

6) Couldn't overcome difficulties; 0 = not at all, 1 = no more than usual, 2 = rather more, 3 = much more

7) Able to enjoy day-to-day activities; 0 = more so than usual, 1 = same, 2 = less, 3 = much less

8) Able to face problems; 0 = more so than usual, 1 = same, 2 = less, 3 = much less

9) Feeling unhappy and depressed; 0 = not at all, 1 = no more than usual, 2 = rather more, 3 = much more

10) Losing confidence; 0 = not at all, 1 = no more than usual, 2 = rather more, 3 = much more

11) Thinking of self as worthless; 0 = not at all, 1 = no more than usual, 2 = rather more, 3 = much more

12) Feeling reasonable happy; 0 = more so than usual, 1 = same, 2 = less, 3 = much less

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