Becoming a Mother: The Transition to Parenthood

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Abstract

The relationship between mother and child has been one of interest to attachment theorists who have studied this relationship following Bowlby's (1969/1982) proposition that children are attached to their mother. They suggest that their mother is guided by a caregiving behavioural system to provide care and protection to her child. It has been proposed that this system develops throughout life, reaching a peak in its maturity during pregnancy and the transition to motherhood, however the ontology of this system has not previously been studied. Other researchers have proposed that the relationship during pregnancy is reflective of the mother being attached to her foetus. Although many researchers have studied the relationship between mother and foetus and mother and child, very few have looked at these constructs together. This thesis aims to draw together the differing methodologies to provide a better understanding of what impacts a mother's transition to parenthood and her relationship with her child. The findings of a total of 6 studies will be discussed. First, this research found that the antenatal relationship between a mother and her foetus is best explained as a caregiving relationship rather than as an attachment relationship. Additionally, maternal relationships with partners were important factors in the women's transition to motherhood – high relationship satisfaction and providing responsive care to partners 1 year after giving birth were significantly associated with lower parenting stress. Finally, a small longitudinal sample from the 3rd trimester of pregnancy until the children were 1 year old is presented. Overall, these results indicate that the development of the caregiving behavioural system merits further study, as it does seem to be related to antenatal relationships, which may impact infant attachment security.

Becoming a mother: The transition to parenthood

Chapter 1: General Introduction and Literature Review

There are many factors that contribute to a woman's experience of becoming a mother. Beginning in pregnancy, women start a transition to becoming a caregiver that is different from anything they have ever done in their lives. The process of this transition is experienced differently by women based on their previous and current appraisals of their relationships with parents and partners. Mercer (2004) has suggested that becoming a mother is a phenomenon that does not cease once a woman gives birth, instead this process continues as she transitions into the role of motherhood, suggesting this is a dynamic process which requires further transformations once the baby arrives. Similarly, this thesis proposes that giving birth does not complete the transition to motherhood, however, in expanding upon Mercer's theory, this thesis aims to investigate the transition to motherhood from an attachment theoretical perspective by examining relationship and mental health factors that impact a woman's relationship with her unborn foetus and go on to influence her relationship with her child after birth.

This chapter will begin by describing the development of attachment theory as proposed by Bowlby (1969/1982) and Ainsworth (1967). Next, the chapter will give an overview of attachment, and an overview of the caregiving behavioural system. Psychological adjustment to and attachment in pregnancy will be examined. Finally, the chapter concludes by providing the rationale for the thesis and providing an outline of the six included studies.

1.1 A Brief History of Attachment Theory

1.1.1 John Bowlby. In 1949 John Bowlby, a psychoanalytic psychiatrist by training, was commissioned by the World Health Organization to report on the mental health and well-

being of homeless children in Europe. Two years later, he published his report *Maternal Care and Mental Health* (Bowlby, 1951). It was during the research into maternal deprivation that Bowlby formulated the idea that 'What is believed to be essential for mental health is that the infant and young child should experience a warm, intimate and continuous relationship with his mother (or permanent mother-substitute) in which both find satisfaction and enjoyment' (Bowlby, 1951, p. 13). This report was highly regarded at the time and helped to make improvements to care for these war-time orphaned children, but was also criticized at the time for not discussing the processes at work that caused maternal deprivation to be detrimental to these children (Bretherton, 1992).

Bowlby had been feeling dissatisfied by the traditional psychoanalytic and social learning theory explanations of the importance of the mother figure (Bretherton, 1992). The psychoanalytic theory of that time explained that the mother's importance to her infant was simply to fulfil the infant's needs of sensuous oral gratification (Klein, 1952), while social learning theory suggested the infant's relationship with the mother was simply a secondary reinforcement based on her providing the primary reinforcement of food (Beller, 1955). Bowlby's own psychoanalytic training in object-relations theory with Melanie Klein and colleagues had helped him to think of the importance of children's early relationships and emotional health. However, he felt that Klein's (1952) assertion that children's emotional health was related to their internal world and not affected by their external world was not correct. Bowlby asserted that the family experiences (external world) influenced the child's emotional well-being more so than the psychoanalytical focus on libidinal drives (internal world) of the child (Bretherton, 1992).

In 1948 James Robertson, a psychiatric social worker, came to work with Bowlby on a project at the Tavistock clinic where he helped Bowlby observe children who had been separated from their mothers either during a hospitalisation or a period of institutionalisation (Bretherton, 1992). Robertson was trained in naturalistic observation and based on his observations, he and Bowlby began contemplating the theoretical implications of what they observed in these children who were suffering from temporary losses of their parents. During this time, Bowlby was directed to Konrad Lorenz's 1935 paper on imprinting (as cited in Hinde, 2005). Lorenz's (1937) explanation of imprinting in geese suggested that social bonds were not dependent on feeding practices. Instead, Lorenz (1937) found that goslings used visual and auditory cues to determine who their caregiver was, which would lead to the goslings following the caregiver, which helped to keep them safe, therefore ensuring their survival. Bowlby's interest in ethology, the science of animal behaviour, was further heightened because it involved animal observations in their natural environment, rather than in a laboratory setting, and this was similar to the observations that he and Robertson had been conducting (Bretherton, 1992). Robert Hinde, a zoologist, consulted with Bowlby to help him understand the basic tenets of ethology and to bring together their mutual interests in parent-offspring relationships (Hinde, 2005).

Hinde introduced Bowlby to Harry Harlow, an American animal psychologist, who studied the development of affectional responses in monkeys (van der Horst, LeRoy, & van der Veer, 2008). Both Harlow and Bowlby were dissenting from the traditional view that an infant primate's affection for his or her mother was related to feeding (van der Horst & van der Veer, 2008). The two often referred to the other in their writings and lectures given (van der Horst et al., 2008).

Bowlby noted that ethology placed an emphasis on adaptive function, which allowed him to then consider certain aspects of child-mother interactions. Bowlby was particularly interested in the area of fear (Hinde, 2005). He believed that 'natural cues of fear' would activate the *attachment behavioural system*, leading to proximity seeking, which was a biologically adaptive behaviour. Ethology proposes that animals have biologically based motivation systems (behavioural systems) which aid in the survival and reproductive fitness of the species (Bowlby, 1969/1982). These systems are activated when the animal senses cues. For example, if the animal sees a predator, its fear/wariness system will be activated. The behavioural system will be terminated once the adaptive goal is attained, in the case of the fear/wariness system, once the animal has sought safety. The animals are then able to learn and understand what strategies help in meeting their set goal.

Following ethology, Bowlby (1969/1982) proposed that humans have a biologically based motivational behavioural system known as the attachment behavioural system, the function of which is protection of and survival for the infant. The adaptive goal of the attachment behavioural system is proximity to the child's primary caregiver, known as the attachment figure. The attachment system is activated in response to fear, a time when the child requires the attachment figure to respond to his or her needs of protection. The function of seeking proximity is to receive protection and care from the child's attachment figure (Bowlby, 1969/1982). Bowlby suggested that the fear/wariness system and the attachment system worked in synchrony together. These systems are related, yet distinct, while the fear/wariness system is what elicits a response to natural cues of danger, the response is what drives the child to seek protection from a caregiver. Therefore the response to fear triggers the

attachment system and when an attachment figure assuages the attachment system, they also assuage the fear system (Bowlby, 1969/1982).

1.1.2 Mary Ainsworth. In the 1950s Mary D. Salter Ainsworth moved to London from Toronto and began working as a researcher on Bowlby's project into the effect of separation from the mother in early childhood on personality development (Ainsworth, 2013). Ainsworth's undergraduate and graduate training in psychology was strongly influenced by one of her professors, Blatz (1940) who had proposed a development-security theory of personality development (as cited in Bretherton, 1992). This theory suggested that infants and young children must develop a secure dependence on their parents in order to develop the courage to begin exploring and understanding their world. Blatz explained that this dependence would begin with parents in childhood, but would also mature and transfer over to peers and eventually long term romantic relationships, allowing us to trust in a secure base from which to explore (Ainsworth, 2013).

Initially Ainsworth was assigned to analyse Robertson's data from his observations of children separated from their mothers (Bretherton, 1992). She had not been exposed to this form of naturalistic methodology previously and this provided a useful approach for her future work. Ainsworth wrote that she was initially 'uneasy' about Bowlby's connections between imprinting and child attachment (Ainsworth, 2013). Apparently influenced by the current theories of the time, she wrote 'To me it seemed self-evident that a baby becomes attached to his mother because she fulfils his basic needs and drives' (Ainsworth, 2013, p. 454).

Ainsworth worked with Bowlby just a few years before she moved to Uganda temporarily. While in Uganda, Ainsworth launched a short-term, longitudinal, naturalistic study of infant-mother interaction (Ainsworth, 1967). She observed 26 families with children

between the ages of 1 and 24 months every 2 weeks, for 2 hours each visit, over a period of 9 months. She was interested in observing when proximity-seeking behaviour became evident and particularly when it became directed toward the mother. She recognized that through time, the infants began seeking their mother not only to fulfil their basic needs and drives (i.e., feeding), but also as a secure base from which they could explore their environment (Ainsworth, 1967). It was during this time that Ainsworth says that she truly began to understand Bowlby's ethological perspective on psychology and the child's attachment to his or her mother. She wrote that observing mothers and children in a place where she had little understanding of their language or culture allowed her to see the 'common core of parental concern for their children's welfare' (Ainsworth, 2013, p. 455). During this study, Ainsworth identified three main patterns of attachment during infancy; securely attached children felt comfortable exploring in the presence of their mothers and did not cry much, insecurely attached children did not explore much and did not seem soothed by their mothers, and children who had not yet attached did not seem to seek proximity to their mothers at all (Ainsworth, 1967). Ainsworth (1967) proposed that when caregivers were sensitive to the needs of their child, they were better able to meet the needs of their child.

Following the study in Uganda, Ainsworth moved to Baltimore, where she launched another similar study utilizing naturalistic observation with families who were recruited before birth and followed through the first year of the child's life. Additionally, she brought the infants into the laboratory at 12 months of age to examine the child's balance of proximity seeking and exploration behaviour during times of high and low stress, now known as the Strange Situation Procedure (SSP; Ainsworth, Blehar, Waters, & Wall, 1978). The SSP involves bringing the mother and child into an unfamiliar laboratory room, the child is then

observed for approximately 20 minutes as both the mother and a stranger enter and leave the room. This allows the researcher to observe the child's reaction to both familiar (time with the mother) and unfamiliar (time with stranger and time alone) circumstances (Ainsworth et al., 1978). Though the entire 20-minute episode is of interest, the two reunions between mother and child when the mother returns to the room are of most significance. This allows the researcher to observe how the child uses the mother as a source of support and comfort during times of distress (Ainsworth et al., 1978).

Three distinct patterns of attachment were identified at this point; secure, insecure-avoidant, and insecure-ambivalent (Ainsworth, et al, 1978). A securely attached child feels that his or her primary attachment figure is prompt, responsive, and sensitive to the child's needs, the child feels as though he or she is worthy of care. Avoidant children do not believe that they are worthy of care and are encouraged by their caregivers to be independent. As a result of the independence, these children avoid using attachment cues (described below in Section 1.2.1) which would achieve physical proximity, instead they maintain proximity, with little evidence of an emotional response, but from a distance. Ambivalent-resistant children are uncertain of their deservedness of care and their caregivers often do not feel confident in providing care, resulting in unreliable care. The child's attachment systems become hyper-activated, as they are not confident that they will receive care, and they are often not assuaged by proximity, as they are unsure that proximity will fulfil the goal of protection (Ainsworth et al., 1978). In addition to noting the patterns of attachment in the children, Ainsworth was also interested in maternal sensitivity and how that linked with security of attachment. She noted that prompt, appropriate responses by mothers led to children who were securely attached, while the mothers of insecurely attached children were more likely to let crying go unattended

or to not respond to the babies' actual needs, for example, trying to play with the baby when they were hungry. This information led Ainsworth to conclude that maternal sensitivity greatly corresponded with infant attachment patterns.

Ainsworth's research in Uganda and Baltimore became important additions to Bowlby's development of attachment theory. While his theory had mainly been developed around children who had been separated from their mothers, Ainsworth's observations were of normative mothers and children, which helped to cement his theory as one that was applicable to all humans. Although they had met nearly a decade before, the discussion of Ainsworth's findings in connection with Bowlby's theory is what cemented the life-long research relationship between the two.

1.2 Attachment Theory

As of the year 2010, Bowlby's seminal trilogy of Attachment (1969/1982), Separation (1973) and Loss (1980) had been cited over 12,000 times (Holmes, 2013). Nearly 50 years of attachment research has continued to build upon the theoretical behavioural system Bowlby initially proposed, as well as Ainsworth's contribution of the behavioural correlates to the theory. This section will introduce the behavioural system proposed by Bowlby and the advancements made to the theory through research since his original proposal.

1.2.1 Child attachment. The adaptive goal of the attachment behavioural system is proximity to the primary caregiver, which in turn, should achieve protection. A child will display certain behaviours, known as attachment cues, in order to gain proximity to the attachment figure when his or her attachment system becomes activated (Ainsworth, 1967). These cues can be crying, non-nutritive sucking, clinging, smiling, babbling and locomotion (Ainsworth et al, 1978). Once the child has obtained proximity, a sensitive and responsive

caregiver can help to calm and comfort the child, which should assuage the attachment system (Bowlby, 1969/1982).

There are four distinct phases of development of the attachment system in infants (Bowlby, 1969/1982). Between birth and 8 weeks, there is an indiscriminate, *pre-attachment* phase. At this point, perceptual discrimination has not yet developed, and although the infant does emit the attachment cues explained above, they are not truly attachment cues as at this point, the child has not discriminated their preferred caregiver and therefore is not using these cues to specifically gain proximity to a specific person for the purposes of protection. From about 12 weeks to 6 to 8 months, the infant's perceptual development becomes more acute, the child is now able to see their caregivers' faces more clearly and recognize their voices which helps the infant to discriminate between familiar caregivers and strangers. This allows the child to begin to recognize who responds to his or her cues, known as *attachment-in-the-making*. The attachment cues are directed toward a group of caregivers, but the child has not yet created a hierarchy of preferred figures. *Clear-cut attachment* becomes noticeable at 6 to 8 months when the infant has clearly discriminated a preferred attachment figure. At this point, the child creates a hierarchy of preferred figures and directs his or her attachment cues towards those figures, however, the infant has a bias towards monotropy: one specific, primary attachment figure (Bowlby, 1958; 1969/1982; Bretherton, 1985; Fox, Kimmerly, & Schafer, 1991; Howes & Spieker, 2008; Steele, Steele, & Fonagy, 1996). Bowlby defined *monotropy* as 'focusing of instinctual responses on to a particular individual' (1958, p. 370). He suggested that this focus is important for survival, as we will know who to turn to in our times of need. This proposition does not dispute that multiple caregivers play important roles

in children's lives, in fact, Bowlby himself said 'almost from the first, many children have more than one figure to whom they direct attachment behaviour' (1969/1982, p. 304).

This age is also a time when the fear response in children is developing and as a response, infants begin turning to their caregivers for comfort and reassurance (Sroufe, 1996). This supports the assertion that children need more than one attachment figure towards which to be able to direct their cues, as the primary caregiver may not always be readily accessible to the child. It has been suggested that the fears exhibited towards the end of the first year of life such as separation and stranger anxiety are more cognitively mature than the fear reflexes that infants are born with, because now these children are able to understand the differences between the novel and the familiar and are beginning to have the capacity for person permanence (Gullone, 2000). As such, it makes sense that this phase of development would be the time that the child would begin showing clear cut attachment cues to gain proximity to their familiar, primary caregivers.

The last stage of early attachment development begins around the age of 3, known as the goal-corrected partnership. Bowlby (1969/1982) explained that as the child matures, he or she becomes capable of becoming a partner in his or her relationship with the attachment figure. Increased cognitive and language functions now allow the child to negotiate the terms of separation from the attachment figures. This is also a time where the internal working model of the child becomes evident.

Throughout the first 3 years of life, the child has been developing an *internal working model*, or a mental representation, of attachment based on his or her experiences with caregivers (Bowlby, 1969/1982). Internal working models are cognitive schemas built by humans based on their previous experiences. Kenneth Craik (1943) was the originator of the

conceptualization of IWM. Craik suggested that the mind created ‘models’ of events which had not yet happened in order to prepare for what was to come and that these models were shaped by past experiences and were flexible in that they could be changed by further experiences. IWMs of attachment, similar to what Craik had described, were explained by Bowlby (1969/1982) as cognitive control processes which allowed for successful adaptation. By creating models of the self and of others, children can begin to predict how their interactions with caregivers will go. While cognitive theorists were proposing ideas such as ‘cognitive maps’ and ‘representations,’ Bretherton (1990) explains that Bowlby was attracted to mental models because they could be changed based on positive or negative interactions, whereas maps and representations were more invariable and did not have the flexibility of mental models. However, Bowlby (1980) did argue that after the formation of IWM, although a certain amount of flexibility remained, the models begin working beyond conscious processing and therefore become less capable of change.

Zimmermann (1999) explained the functions of the IWM to include two levels; the implicit-procedural function and the evaluative-declarative function. The implicit-procedural function of the IWM is what is present early on, it is the ‘intuitive perception’ (Zimmermann, 1999, p. 294) that develops as we determine if our caregivers will respond to our needs. The evaluative-declarative function develops later in life, once we can begin to forecast the availability of our caregivers and consciously make appraisals about their ability to respond to our attachment needs. Zimmerman proposed that the IWM helps children (and later adults) to regulate their emotions in an adaptive way when they feel insecure, giving the IWM an important role in emotion processing.

Bowlby (1969/1982) suggested that the IWM is something which develops based on our dyadic relationships with caregivers. As one example, if our model of others (in this case the caregiver) is that they will be rejecting, then our model of self will be that we are not worthy of care. The IWM is something that begins developing in the first year of life, during a time where the child is dependent upon the caregiver responding to his or her needs and bids for care. This is a time when the caregiver's response is a direct communication to the child as to whether or not he or she will receive this care. The work of Bell and Ainsworth (1972) further supported this notion, finding that children whose caregivers responded promptly to their crying actually cried less often. It can be assumed that these children developed a model of other (the caregiver) as responsive and therefore a model of themselves as being worthy of care.

These working models help guide us through our lives by helping us to anticipate what might happen based on our experience of what has happened before and are not just limited to attachment. Just as a child learns how he or she should behave, they also learn how their caregivers are expected to behave and create a framework of expectations within their relationships. The IWM of attachment is said to influence the child's relationships throughout life with siblings (Volling & Belsky, 1992), peers (Elicker, Englund, & Sroufe, 1999 as cited in K. H. Rubin et al., 2004), partners (discussed in further detail below in Section 1.2.2.2), and the child's own children (see Berlin, Cassidy, & Appleyard, 2008 for a full review). Further support for the assertion that the IWM is related to other relationships in later life comes from longitudinal studies which find that attachment remains relatively stable over time (Hamilton, 2000; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000; Waters, Hamilton, Weinfield, & Hamilton, 2000). This suggests that the IWM formed in infancy continues to

follow a similar path, or map, throughout adolescence and the beginning of early adulthood. However, Weinfield, Sroufe, and Egeland (2000) found that there was not a continuity in attachment from infancy to early adulthood in a high risk sample. They found that many participants moved from security to insecurity, and that those changes were often precipitated by child maltreatment, maternal depression, and family discord during early adolescence leading them to speculate that life events are strongly related to changes in the IWM. More recently Groh et al. (2014) have reported a longitudinal study which followed children from 15 months through late adolescence. These researchers report that although the association between infant attachment and adult attachment in late adolescents are significantly associated, the correlations are quite weak (r = .12). These findings do bring in to question the reliance upon the proposition that the IWM of attachment measured in infancy is predictive of relationships later in life.

In addition to the attachment system, Bowlby (1969/1982) proposed other behavioural systems as well. The exploratory system is seen as complimentary to the attachment system, but they are also inhibitory of one another. The exploratory system serves the adaptive function of helping the child learn about his or her environment and the goal of ultimately allowing the child to be away from caregivers (Ainsworth, 1979; Ainsworth & Bell, 1970). However, when the child is fearful, and his or her attachment system is activated, the exploratory system is diminished, as the child will stop exploring in order to seek proximity to his or her attachment figure. A sensitive and responsive caregiver is able to provide both a *haven of safety* and a *secure base* (Ainsworth, 1967). The haven of safety is provided when the child's attachment system is activated and the infant seeks protection from his or her caregiver. The secure base is provided when the child's exploratory system is activated the

child feels comfortable exploring. Children (and adults) without a secure base have trouble feeling comfortable exploring their world. A haven of safety and a secure base go hand-in-hand and work in concert with one another (Ainsworth, 1967).

Almost all infants will have an attachment relationship with their caregiver, however, not all of these attachments will be secure (Weinfield, Sroufe, Egeland, & Carlson, 2008). As mentioned earlier, three patterns of attachment were initially described by Ainsworth and colleagues (1978); secure, insecure-avoidant, and insecure-ambivalent. In a meta-analysis of cross-cultural distributions of attachment patterns conducted with 32 samples and 1,990 SSP classifications, it was found that generally, 65% of children are classified as secure, 21% avoidant, and 14% ambivalent-resistant (van IJzendoorn & Kroonenberg, 1988). Countries which placed a higher importance on independence (i.e., western cultures) had higher reports of avoidant classifications, whereas countries which valued interdependence (i.e., eastern cultures) had higher reports of preoccupied classifications. There was only one sample from the UK included in the meta-analysis (Smith & Noble, 1987 as cited in van IJzendoorn & Kroonenberg, 1988), however, the level of security for that sample was higher (75%) than other western countries.

Sroufe (1996, 2000) has proposed that security of attachment is related to self-regulation in young infants and social competence throughout childhood. Schore (2001, 2002) has proposed that right brain development is impacted by security of attachments with caregivers and therefore effects affective regulation. Security of attachment has also been correlated with lower reports of child behaviour problems by both mothers and teachers, as well as lower reports of maternal stress (Moss, Bureau, Cyr, Mongeau, & St-Laurent, 2004).

In 1990, Mary Main reviewed some of the more recent studies (of that time) that had assessed attachment. In this review, Main (1990) proposed that there may be an adaptive purpose to the two forms insecurity proposed by Ainsworth (1967). She suggested that there are often times where the needs of the parent and child will compete and that it might not always be in the parent's best interest to be particularly sensitive to the immediate needs of the infant. In this case, the infant may develop secondary strategies to maintain proximity to a caregiver who is not necessarily responding sensitively to the primary attachment cues. Main (1990) proposed that while secure attachment behaviour (seeking proximity) is a primary strategy for survival, at times, avoidant attachment behaviour and ambivalent attachment behaviour can actually be conditional secondary strategies. However, both primary and secondary strategies seek to achieve the same goal of proximity and therefore, the secondary conditional strategies are not maladaptive (Main, 1990).

Although many children were classifiable with Ainsworth's original three patterns, some children showed patterns which were difficult to classify using the original patterns. A few of Ainsworth's students began recognising that some children were difficult to classify and initially they would be 'forced' into the best-fitting classification (Main & Solomon, 1990). Further review found that the behaviours observed in these children were so dissimilar from the three original patterns that researchers began considering the cases 'unclassifiable.' Main and Solomon (1986) began to recognize that the inconsistencies were actually a failure of the underlying attachment system in its attempts to organize. The child was unable to use any primary or conditional secondary strategies to obtain proximity and instead displayed 'inexplicable, odd, or contradictory behaviour' (Main & Solomon, 1990, p. 132) which did not serve the goal of the attachment system.

Main and Solomon (1986, 1990) then began to review the SSPs of children who had assigned one of the original three classifications. They found that the children in these tapes who had received one of the three Ainsworth classifications also displayed some of the behaviours which they had recognised in these 'unclassifiable' children, however, in these cases, while these inexplicable, odd, or contradictory behaviours were identified, the attachment system was able to organize itself around either a primary or secondary strategy (such as avoidance or ambivalence) to allow the child to obtain proximity to his or her attachment figure. Therefore, they proposed that when these behaviours occurred without a strong underlying pattern of attachment, the behaviours alone were indicative of a specific category of behaviour seen in the SSP (Main & Solomon, 1990). They termed this category of behaviour 'Disorganised/Disoriented.' However, they proposed that an alternative, organised classification is also assigned, based on whichever organised strategy was most often used by the child, even if it was not successful.

Disorganised children have come to feel that they are not worthy of care and their caregivers often send mixed signals to the children because the caregiver is unsure of what caregiving strategy to use. At times, these caregivers may be frightened themselves or act in a frightening manner, which confuses the child and makes them believe that caregiver cannot provide the care the child needs (Main & Solomon, 1986, 1990). This leads to a dysregulation of the underlying behavioural system, where the child has not found that using primary or secondary attachment patterns, described above, are capable of helping him or her achieve proximity to the caregiver.

In the years since Ainsworth's Baltimore studies, the SSP (Ainsworth et al., 1978) has continued to be the gold standard of classifying infant attachment. Researchers have

conducted longitudinal studies utilizing the SSP during infancy to understand how attachment impacts relationships later in life, continuity of attachment patterns, as well as social and emotional development (see Grossmann, Grossman, & Waters, 2005 for a review). However, to date, there do not seem to be any longitudinal studies which follow the mother-child relationship during pregnancy beyond the first couple years of the child's life to understand if the antenatal relationship is also related to the continuity of attachment patterns or social and emotional development of the child.

1.2.2 Adult attachment. Bowlby did not just assume that attachment was a childhood process, in fact, he is often cited as saying that attachment plays a vital role 'from the cradle to the grave' (Bowlby, 1979, p. 205). The attachment behavioural system has been conceptualized in two ways during adulthood. The first is the adult's state of mind regarding attachment, that is, the coherence of the adult's mental representation of childhood attachment experiences. The second is romantic attachment (or global attachment styles); the adults' appraisals of their reciprocal relationships. The two conceptualizations are similar in that they both are examining attachment processes in adulthood, but are distinct in that one is specific to parent-child relationships and the other is specific to romantic and/or reciprocal relationships, or at times, even global attachment, not focusing on any specific relationship; instead, how the adult generally feels about close relationships.

1.2.2.1 State of mind regarding attachment. State of mind regarding attachment was proposed by Main, Kaplan, and Cassidy (1985) as a move to the level of representation. That is, investigating the IWM of attachment rather than actual attachment behaviours as was being done with infants. Main, Kaplan, and Cassidy (1985) defined the IWM as 'a set of conscious and/or unconscious rules for the organization of information relevant to attachment and for

obtaining or limiting access to that information…' (pp. 66-67). Howe (2011) describes this as 'the overarching, consolidated, single internal working model that influences perception, expectations, memories, behaviour, and attachment style, particularly in the context of close relationships' (p. 57).

Following his psychoanalytic training, Bowlby (1973) described the psychological process 'defensive exclusion' as a method of maintaining balance in the internal working model. Bowlby's (1980) proposal was that defensive processes allow the individual's representational model to integrate new information into its existing working model. Bowlby's model of defence was influenced by both psychoanalysis and information-processing theories. He argued that attachment needs, which should be attended to, are filtered by defensive processes sometimes causing the needs to be altered or sometimes causing them to be excluded completely before entering conscious thought. He suggested these negative experiences or memories needed to be excluded, otherwise they would keep the attachment system in a constant state of activation (Bowlby, 1980). In children, this can be seen as a behavioural response, for example, children who consistently find their bids for attention rejected by their mother may be observed turning away from her and busying themselves when attachment system is activated, rather than turning to their mother for comfort (Bowlby, 1980). In adults, it is suggested that this is seen when a person lacks a coherent description of negative experiences or memories when asked about attachment relationships (George & West, 1999). Secure attachment is explained as 'relatively integrated and undefended' (George & West, 1999, p. 289).

The first, and still most prominent, method of measuring attachment representations in adulthood is the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1984, 1985,

1996). The AAI is a structured clinical style interview with 20 questions designed to assess adult state of mind with regard to attachment. The initial intent of using the AAI was to understand parental representations of attachment and examine how these representations might be related to infant and child security of attachment (Hesse, 2008; Main et al., 1985; van IJzendoorn, 1995). The interview asks questions about the interviewee's relationship with his or her parents during childhood and present day. The interview asks the individual to describe his or her attachment-related childhood experiences and to evaluate how those experiences influenced their development and functioning as adults (Hesse, 2008). The key feature of an adult's state of mind in relation to attachment is the individual's capacity to provide a coherent description of childhood relationships with his or her own parents. Individuals are classified into four categories which were created to be analogous with infant Strange Situation patterns (George & West, 2012). Secure-Autonomous is the classification associated with infant security in the SSP both longitudinally (Waters, Merrick, et al., 2000) and when using the AAI to examine parental states of mind regarding attachment (Fonagy, Steele, & Steele, 1991). This classification is described as 'valuing of attachment relationships and experiences, and yet apparently objective regarding any particular relationship experience' (Hesse, 2008, p. 562). Dismissing is the classification associated with parents whose infants show patterns of insecure-avoidant and is described as 'dismissing, devaluing, or cut off from attachment relationships and experiences' (Hesse, 2008, p. 562). Preoccupied is the classification associated with parents whose infants show patterns of insecure ambivalent-resistant attachment and is described as 'preoccupied with or by early attachments or attachment-related experiences' (Hesse, 2008, p. 562). Unresolved is the AAI classification most closely related to the disorganized/disoriented infant patterns seen in the SSP. This

classification is characterized by lapses in coherence of discourse and reasoning during the interview which led researchers to believe that these lapses could be explained by the adult's unresolved loss and/or trauma as a child (Hesse, 2008).

While the AAI (George et al., 1984, 1985, 1996) is able to capture a plethora of rich narrative data, most researchers simply use the classifications yielded by the AAI in their studies. The AAI is a very lengthy and costly measure. In many cases, it is cost and time prohibitive to use it. In response to this, researchers have began looking at other ways to tap the same unconcious, implicit-procedural processes and ascertain the same type of information useful for understanding adult's state of mind regarding their childhood attachment experiences (Roisman et al., 2007). George and West (2001) developed a projective measure of attachment, the Adult Attachment Projective (AAP; George, West, & Pettem, 1997). The AAP is a method to assess state of mind regarding attachment in adults. Adults are assigned to an attachment classification group based on their narrative responses to eight pictures. Participants are shown a series of simple line drawings, one neutral picture (children playing with ball) and eight pictures depicting attachment related scenes (i.e. separation, solitude, death) which become increasing more stressful as they progress. They are asked to explain what is happening in the picture, what led up to the events, what the characters are thinking or feeling, and what will happen next. The responses are coded following a detailed and systematic coding system. The narrative is scored for internalized secure base, agency of self or synchrony (depending on the picture), and the use of defensive processes. The AAP assesses the same four attachment classifications that the AAI (George et al., 1984/1985/1996) yields; secure, dismissing, preoccupied, and unresolved. The AAP shows a 92% convergence with the AAI on secure vs. insecure classification and an 86%

convergence with the AAI for the four major attachment classifications (George & West, 2001). In the validity study George and West (2012) found that responses to the AAP and, subsequently, attachment classificiations, were not related to verbal intelligence or social desirability. The AAP is adminstered in much less time than it takes to adminster the AAI and therefore the time in transcribing and coding the AAP is also much shorter than the AAI. When used with a battery of other measurements, such as in the studies presented in this thesis, the AAP can be a more optimal tool to use than the AAI as it lessens the burden of time for the particiapnt.

1.2.2.2 Romantic attachment. Adult attachment research has also extensively examined romantic relationships. For the purposes of this thesis, this concept will henceforth be described as romantic attachment, although these same processes are often measured for the purposes of understanding global attachment as well. In their 1987 seminal paper, Hazan and Shaver proposed that romantic love could be conceptualized as an attachment process. These researchers suggested that research in attachment had been limited to the relationship between children and parents, which Bowlby's (1969/1982) original theory explained. They suggested that to fully realise Bowlby's assertion that attachment was important throughout the lifespan, relationships later in life needed to be studied from an attachment perspective. They proposed that Bowlby's conceptualization of the attachment relationship between child and parent could also be used to examine couple relationships. The main difference is that a child and parent relationship is typically unidirectional, the child looks to the parent for protection and support, whereas in couple relationships, both members of the couple use one another as attachment figures in times of stress. A second, and related difference, is that couple relationships encompass more than just the attachment behavioural system; they are a

combination of attachment, caregiving, and sexual behavioural systems. Hazan and Shaver (1987) formulated three attachment styles, informed by Ainsworth and colleagues' (1978) description of infant behaviours and translated the infant behaviours to descriptions of adult feelings about romantic relationships. When asked to choose which attachment style best described their feelings, respondents self-classified themselves into a relatively similar pattern of distribution that had been seen in the SSP studies (56% secure, 25% avoidant, 19% anxious/ambivalent; Hazan & Shaver, 1987).

Since Hazan and Shaver's original study in 1987, researchers have refined the concept of romantic attachment. Hazan and Shaver explained a serious limitation of their study was the use of forced-choice formats, requiring participants to choose one style, based on a brief description of how they felt about relationships. Moving forward, other researchers have measured romantic attachment using multiple-item scales (see Feeney, 2008 for a review). In 1998, K. Brennan, Clark and Shaver conducted a study of all multi-item measures of romantic attachment and found that all 482 of the items of the various measures could be reduced to two theoretically derived dimensions; attachment anxiety and attachment avoidance. Attachment related anxiety is defined as the extent to which the participant is secure or insecure about the availability and responsiveness of partners, similar to the way that Ainsworth described an ambivalent-resistant infant. Attachment related avoidance is defined as the extent to which the participant is comfortable or uncomfortable getting close to a partner or depending on a partner, similar to the way that Ainsworth described an avoidant infant. A principal component analysis of the factors led to two dimensions which resulted in the creation of the Experiences of Close Relationships Scale (ECR; K. Brennan, Clark, & Shaver, 1998). These two dimensions were able to capture the multiple aspects of attachment

insecurity. However, it was believed that while the scale was good at capturing insecurity in attachment, it was uncertain if the questions were discriminating enough to also capture attachment security. Consequently, in 2000, Fraley, Waller, and Brennan investigated four self-report attachment measures using item response theory, a complex modelling system to measure an individual's reponse and the underlying trait of the item, to examine which measures had the properties necessary for measuring theoretical issues typically addressed in attachment theory. During this investigation, the researchers determined that the ECR was in fact the best self-report measure in regards to psychometric properties, but could be improved upon with the use of item response theory. So, the researchers further refined the criteria for items which were kept, leading to the Experiences of Close Relationships – Revised Scale (ECR-R; Fraley et al., 2000).

The ECR-R has allowed researchers to examine romantic attachment from a dimensional, rather than categorical standpoint. Researchers who use self-report measures of attachment have suggested that using dimensions rather than classifications is necessary to truly capture the orthogonal nature of attachment. However, a meta-analysis of studies using the ECR and ECR-R found that attachment anxiety and attachment avoidance are correlated, with the correlation between the two scales on the ECR-R being even higher than that of the original version of the measure (Cameron, Finnegan, & Morry, 2012).

1.2.2.3 Comparing adult attachment constructs. State of mind regarding attachment and romantic attachment differ in many ways. The researchers who study each construct differ, with developmental psychologists largely focusing on adult's state of mind regarding attachment which is related to their childhood experiences. Social psychologists are more likely to study the current relationship in adulthood, such as global attachment or romantic

attachment. The ways in which the constructs are measured also differ: developmental psychologists speak of 'surprising the unconscious' by creating attachment related stress in order to be able to observe the attachment system at work. Social psychologists often use questionnaire methods which rely on participants' subjective experience of how they feel in relationships. Studies which have measured both AAI and self-report measures have found that the two constructs are not predictive of one another (Jones, Cassidy, & Shaver, 2015). A 2007 meta-analysis by Roisman et al. of nine studies between 1994-2007, which utilized both the AAI and self-report measures of romantic attachment, found that there were only trivial or small associations between the two types of measurements.

Some developmental attachment researchers have suggested that the two constructs are actually measuring different things, that the social psychology attachment researchers may actually be measuring a type of personality construct, rather than 'a relationship based on protection and safety' (George & West, 1999 p. 289). However, many researchers disagree, suggesting that attachment is both theoretically and empirically different from other personality constructs in that the attachment system is not always operating, instead it is activated as a result of specific events such as the threat of danger or isolation (Ravitz, Maunder, Hunter, Sthankiya, & Lancee, 2010). Indeed, Shaver and Brennan (1992) found that attachment styles were related to personality traits, but did not simply replicate the Big Five personality traits. It has also been suggested that the self-report measures may reflect a stress-diathesis perspective of attachment, versus the unconscious processes reportedly reflected by the AAI (Ravitz et al., 2010). This suggests that when measuring state of mind regarding attachment, the measurement itself triggers the attachment system, whereas self-report measures may not be capturing the individual at a time when their attachment system is

activated, so instead, we are actually only able to see predispositional vulnerability to attachment anxiety or avoidance, perhaps not giving us a true view of how the individual would react when their attachment system is activated by stress (Ravitz et al, 2010).

Although these constructs are approached in different ways, both state of mind regarding attachment and romantic attachment are each fundamentally interested in how individuals behave in relationships. The two focuses, developmental and social psychology, often come together in the study of parenting, where a focus on the family systems can be interested in both parental and couple relationships. Jones, Cassidy, and Shaver (2014) have recently highlighted that the transition to parenthood can be an important time period for measuring both adult attachment constructs to understand how the stress of new parenthood impacts states of mind regarding attachment and romantic attachment together. The current thesis attempted to address these issues by measuring both state of mind regarding attachment and romantic attachment in relation to parenting to understand the unique contribution each of the conceptualisations provide.

1.3 The Caregiving Behavioural System

1.3.1 Parental caregiving. In addition to Bowlby's theoretical description of the child's attachment behavioural system, he suggested that the attachment figure has a reciprocal behavioural system, the goal of which is to keep the child close to the mother (Bowlby, 1969/1982). As mentioned in Section 1.1.2, Ainsworth (1969) proposed that a mother's capacity for sensitivity is a key component of her child's capacity to develop a secure relationship with her, a suggestion that has received continued support in the attachment literature (Weinfield et al., 2008). In her Baltimore study, Ainsworth (1978) developed rating scales of maternal interactions that measured maternal sensitivity,

acceptance, cooperation, and accessability. These scales were used to assess mother and child interaction during the many hours of home observation that Ainsworth and her team completed. From these observations, Ainsworth concluded that sensitive responsiveness was the key predictor of the security of a child's attachment to his or her mother, by finding a very strong relationship between the two. Ainsworth (1969) suggested that a key contributor of maternal sensitivity was the mother's ability to perceive and interpret the cues of her baby. Additionally, she added that understanding the cues was just the beginning, in addition a sensitive mother would also respond to her child's cues promptly and appropriately. She elaborated by saying that a sensitive mother is also cooperative, available, and accepting of her baby's needs (Ainsworth, 1969). Although the link between maternal sensitivity and child attachment has continued to receive support in the literature, De Wolff and van Ijzendoorn's (1997) meta-analysis of 66 studies involving maternal sensitivity and child attachment found that while parental sensitivity is an important factor for child attachment security, it is not the sole contributer to a child's attachment. Instead they found that other studies had similar effects for mutuality and synchrony in interactions, as well as behavioural measures of stimulation, positive attitude, and emotional support.

Early research into the parents' contributions to the attachment relationship investigated a direct method of intergenerational transmission (Main, Kaplan, & Cassidy, 1985). This was the belief that the parent's state of mind regarding attachment was directly linked to the child's attachment to the parent. This concept of intergenerational transmission of attachment followed a basic psychoanalytic explanation of transference, by believing that attachment was 'transferred' from parent to the child (Bowlby, 1973, 1988). Bowlby (1988) theorised that, similar to the concept of transference being the unconscious redirection of

feelings to another person, internal working models were unconsciously communicated to the child through the quality of the interaction and open discussions regarding emotion and relationships.

Initial studies using the AAI seemed to support the hypothesis that attachment was transmitted through parenting, by suggesting that the parent's state of mind regarding attachment influenced their behavioural interactions with their children, leading them to have more sensitive interactions with their children – which in turn influenced the child's security of attachment (Hesse, 2008). However, a meta-analysis of the AAI, parental sensitivity and child attachment classification data found that, although the AAI showed a rather high concordance with child attachment security, the security of parents' state of mind regarding attachment only explained about 12% of the variance in their sensitive responsiveness to their children (van IJzendoorn, 1995). This led van IJzendoorn to propose the 'transmission gap,' suggesting that a caregiver's state of mind regarding attachment did not impact the parent's sensitive responsiveness to his or her child and therefore, sensitivity was not the link between adult and child attachment. He posited that there was instead another, yet to be determined, factor involved in the transmission.

During the 1980s and 1990s, attachment researchers began investigating the internal working model of parenting (see George & Solomon, 2008a for a review). The body of work created during this time addressed the transmission gap and began considering what other factors might be influencing the relationship. For example, Zeanah and Barton (1989) pointed out that if the IWM of parenting was simply a transmission of a parent's own attachment system, as previously proposed, then parents' would have the same relationship with each of their children; however, Zeanah and Barton both felt that their clinical experience had shown

this not to be true. They, along with others, proposed that the child was an active participant in the relationship and that by just asking about the parent's own attachment history, one could not really come to understand the unique relationship seen in each dyad (Aber, Belsky, Slade, & Crnic, 1999; Arnott & Meins, 2008; Bretherton, Biringen, Ridgeway, Maslin, & Sherman, 1989; George & Solomon, 1989a; Meins, 2006; Zeanah & Barton, 1989). Each group of researchers took a unique, but related approach.

In particular, following on Bowlby's (1969/1982) description of caregiving as a behavioural system in its own right, George and Solomon (1989a, 2008a) developed a model of caregiving as a biologically based motivational system. Complementary to the attachment behavioural system, the caregiving behavioural system is activated in response to the attachment needs of someone else. Bowlby (1969/1982) proposed that this system is influenced by the parent's own attachment system and therefore may be involved in the intergenerational transmission of attachment. George and Solomon (2008a) proposed that the transition to parenthood is a time when the parent is 'making a shift away from seeking protection and proximate care from attachment figures (the function and goal of attachment for the child) to providing protection, comfort, and care for a child (the function and proximate goal for the parent)' (p. 834). George and Solomon (2008a) have hypothesised that the caregiving system develops throughout life, begins to move towards maturity during adolescence, peaks in maturity and development during pregnancy and the transition to parenthood, and remains relatively stable after that. However, the hypothesized ontogeny of the system has not yet been investigated.

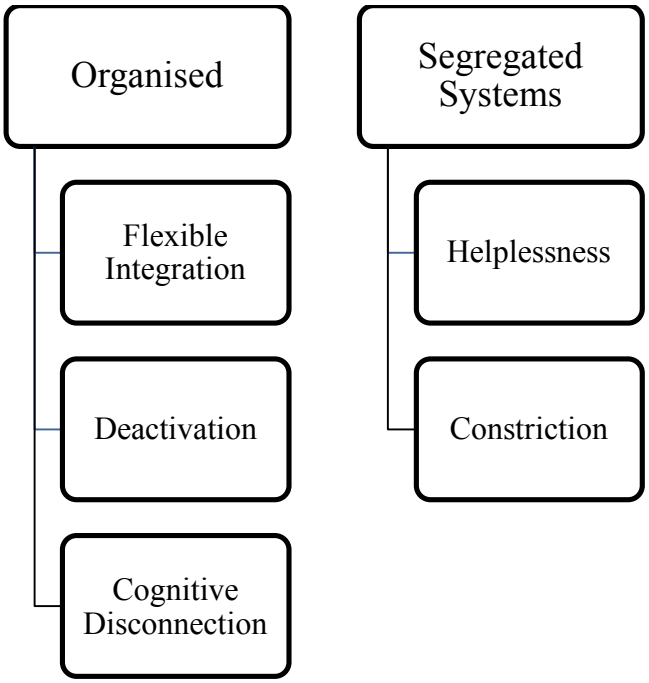
Caregiving representations are the parent's reconstruction of past and current experiences in their own internal working model of attachment and the parent's relationship

with his or her child. George and Solomon (1989b/1999/2008b) drew from Bowlby's (1980) conceptualization of defence, and defined four defensive processes which contribute to caregiving representations. Three forms of defence are organizing defences: flexible integration, deactivation, and cognitive disconnection. The organisation seen in these defences are similar to the organisation seen in child attachment patterns, they support a caregiver's basic ability to think about and provide protection for his or her child. *Flexible integration* is reflective of a caregiver that is balanced, integrated, and flexible. Flexible caregivers are capable of balancing their own needs with those of their child. Caregivers for whom flexible integration is most prominent in their thinking often have children whose attachments are secure (George & Solomon, 1989a, 2008a, 2016; Solomon & George, 1999). *Deactivation* emphasizes the caregiver's use of psychological distance as a defence process. When caregivers use deactivation as a defensive process, they most often put their own needs above those of their child. Caregivers for whom deactivation is most prominent in their thinking tend to have children who are avoidant (George & Solomon, 1989a, 2008a; Solomon & George, 1999). *Cognitive disconnection* is the defence process that puts an emphasis on 'close protection' which inclines caregivers to keep their children physically and emotionally close at all times, leading to the caregiver being unable to turn away from the child or caregiver's unhappiness. This can cause caregivers to put the needs of their children above their own needs, often by completely dismissing their own needs. Caregivers for whom cognitive disconnection is the most prominent defence in their thinking tend to have children who are ambivalent-resistant (George & Solomon, 1989a, 2008a, 2016; Solomon & George, 1999).

The fourth form is a disorganizing defence: *segregated systems*. Segregated systems are seen to be a dysregulation of the caregiving system (similar to disorganisation explained

with regards to attachment). When the adaptive defensive processes of deactivation and cognitive disconnection have not been able to filter caregiving distress, the dysregulated caregiving system segregates the distress. This leads to a separate self which is not integrated into one's caregiving representation. This segregation can take two forms; helplessness and constriction (Solomon & George, 2011). Helplessness occurs when a caregiver feels that he or she has no consistent caregiving strategy or that the strategies available to him or her are inadequate. These caregivers describe themselves as overwhelmed and their children as out of control (George & Solomon, 2011). Constriction prevents the caregiver from engaging in caregiving behaviours when their child is experiencing any attachment distress, instead they either separate themselves entirely from the experience or, at times, even merge their own psychological experience with their child, taking on the child's attachment distress themselves (George & Solomon, 2011). Constricted caregivers describe their child as so well-behaved that they never cause any trouble or conflict. Additionally, in the instance of merging, they also emphasize the special relationship they have with their child or what a wonderful caregiver their own child is. When the caregiving system is dysregulated and the maladaptive segregated systems are most prominent in caregivers, their children are often disorganized (George & Solomon, 2008a).

Figure 1. *Diagram of organised caregiving defences and segregated systems.*



In their 1989(a) original study of the caregiving behavioural system, George and Solomon observed mother-child dyads, interviewed mothers about their representations of caregiving and attachment, and assessed patterns of attachment in the 5-6-year-old children. The Caregiving Interview (George & Solomon, 1989b/1999/2008b) was adapted from the Parent Development Interview (Aber et al., 1985) for this study, which is how the researchers inquired into the mothers' representations of caregiving. The researchers found that there was a strong relationship between maternal representations of caregiving and her child's attachment behaviour. When comparing the caregiving mental representations to the adult attachment representations, the researchers found that there was a relationship between the two, but that the individual differences in the caregiving representations were better explained by differences in child attachment behaviour more so than in the differences in the adult attachment representations (George & Solomon, 1996). The researchers suggested that these findings support the notion that the caregiving system is a behavioural system separate from the adult attachment system, and that it is instead based on a mature transformation of the

attachment system, influenced not only by attachment experiences, but also by experiences of caregiving (George & Solomon, 1989a). This supports the notion that in addition to an IWM of attachment, parents will also have an IWM of caregiving. The IWM of caregiving is developed based on experiences of previous care, but also updates based on experiences of providing care to their children, just as Bowlby (1969/1982) suggested that the IWM of attachment will be updated based on experiences with new attachment figures.

A recent update and extension of van IJzendoorn's (1995) meta-analysis included the additional 20 years of research since van IJzendoorn first proposed the transmission gap (Verhage et al., 2015). This latest analysis confirmed the association between parental attachment representations and child-parent attachment, although they found the association to be weaker than van IJzendoorn's (1995) original meta-analysis had proposed (Verhage et al., 2015). Verhage et al. did still find evidence for the originally proposed transmission gap, as the gap could not be explained by issues of measurement or by parental sensitivity. They suggest this supports van IJzendoorn's original finding and propose that research continue to search for the mechanism which moderates the association between parental attachment representations and child-parent attachment.

1.3.2 Non-parental caregiving. Just as attachment research has gone beyond the child to parent relationship, so too has the research on the caregiving behavioural system. Caregiving has been studied in the context of romantic relationships as a reciprocal process with attachment between partners (Kunce & Shaver, 1994). Collins, Guichard, Ford and Feeney (2006) assert that romantic partners who offer responsive support and care to one another during times of need often find that both partners have better emotional health and feel more secure within their relationship. These researchers draw from Bowlby's

(1969/1982) proposition that relationships which are healthy and secure develop when both partners recognize the need to support one another's attachment needs. Just as differences in parental caregiving have been explained above, there are also individual differences in couple caregiving.

Caregiving in a romantic relationship has two major goals: providing a safe haven to allow the partner to feel soothed and to help them problem solve during times of stress, and providing a secure base from which the partner can feel that his or her independence and exploration is valued. Bowlby (1988) stated that a sensitive caregiver was one who was able to regulate his or her behaviour to be in sync with the needs of the person he or she is caring for. Similarly, when a caregiver responds sensitively and appropriately to the exploration needs of their partner, they are providing a secure base from which their partner can feel encouraged and supported in exploring their world in a confident way (Bowlby, 1988). Whereas in a parent-child relationship, the parent is often the one providing care and the child is the one receiving care, in an adult romantic partnership, these roles of caregiver and care receiver can change back and forth, with one partner providing care at times and receiving care at others. For the caregiver to respond in a sensitive and responsive way, the caregiver's own attachment system must not be active as well. The caregiving behavioural system in adult romantic relationships must also be balanced with both the adult attachment system and the sexual system (J. A. Feeney, 2008).

The internal working model of caregiving, although theoretically different from the internal working model of attachment, is thought to have many intersections with the latter. These intersections are seen both in the development of the system and in how the system works. As described in the section above on parental caregiving (Section 1.3.1), the

caregiving behavioural system is influenced by attachment experiences. Collins and colleagues (2006) propose that through interactions with caregivers, individuals develop models which are based on the appropriateness of dependence and how beneficial it may be to provide care. Additionally, through experiences of receiving care, individuals will also be likely to develop specific caregiving behaviours that may be either similar to care they received or explicitly different.

There will be times in which an individual experiences an activation of his or her caregiving system at a time when the attachment system is also activated. These two systems may compete with one another and this can hinder caregiving behaviours. B. C. Feeney and Collins (2001) measured adult romantic attachment styles and romantic caregiving in 194 couples to better understand the predictors of caregiving in romantic relationships and found that insecure attachment styles were related to ineffective caregiving patterns. For individuals with high levels of attachment related anxiety, this was related to the tendency to become compulsive in the care of their partner in order to keep them close, which will help to assuage their own attachment system, rather than their partner's system. When individuals have high levels of attachment related avoidance, the opposite may occur, and they may not be able to recognize the needs of their partner because they are uncomfortable being depended on by a partner (B. C. Feeney & Collins, 2001).

The above study utilised Kunce and Shaver's (1994) self-report questionnaire, the Caregiving Questionnaire (CQ), in order to assess the quality of caregiving in romantic partnerships. In developing the CQ, Kunce and Shaver (1994) used a student sample and found that the scales of proximity, sensitivity, cooperation, and compulsive caregiving differentiated attachment groups in ways which would be expected according to attachment

theory. The researchers found that secure individuals not only reported being more sensitive to their partner's needs, but also reported high levels of proximity (Kunce & Shaver, 1994). They found that in young couples, there was reliability between self-report and partner's report, suggesting the use of self-report was a valid type of measurement to understand this process in adults.

1.3.3 Comparing caregiving constructs. Once again, there is often a split between the types of researchers who study parental and non-parental caregiving; with developmental researchers being more likely to study parental caregiving and social psychology researchers being more likely to study non-parental caregiving, often in the context of romantic relationships. There has, however, been some overlap in the literature. Millings, Walsh, Hepper, and O'Brien (2013) explained that although some studies (e.g. Mills-Koonce, 2011) had reported a relationship between adult romantic attachment style and parenting behaviours, the exact mechanisms between the two were unclear. They therefore proposed that couple caregiving responsiveness could be that mechanism. In their study, the researchers measured romantic attachment style, couple caregiving, and self-reported parenting styles in couples with children aged 7-8 years old. As predicted, caregiving responsiveness to partner was a mediator between the attachment and parenting styles for both parents. The researchers suggested this finding provides evidence that caregiving to partner is related to caregiving to child, as relationships between security of attachment in middle childhood and parenting styles have been reported (i.e. Karavasilis, Doyle, & Markiewicz, 2003).

1.4 Pregnancy and Attachment

To truly understand the development of parenting relationships, it is important to look at where they begin. For most people, the transition to parenthood begins during pregnancy.

Pregnancy is of interest to researchers in many fields; medicine, anthropology, sociology, and psychology. The following section will discuss how research into the maternal-foetal relationship followed Bowlbian attachment theory, and led to the study of attachment relationships during pregnancy.

1.4.1 Maternal-foetal relationships. The mother-child relationship during pregnancy has been the subject of research in many areas of psychology. Klaus, Kennell, and Klaus (1995) researched the relationship as a possible explanation of the beginning of maternal bonding. Winnicott (1956) suggested that the 3rd trimester of pregnancy was when women begin a time of 'primary maternal preoccupation', which suggested that the time surrounding the birth of a child is a time when a mother is so consumed by the thought of the child, it is almost as if she has a mental illness. Winnicott believed that this time of preoccupation was necessary for a mother to be able to identify with her soon-to-be child and prepare to give herself fully to being a mother. Bowlby (1988) suggested that pregnancy is a time when a woman must begin to see herself as able to provide a secure base for her child and to see herself as a mother. He also proposed that it is the time for the expectant mother to begin reflecting on her relationship with her own mother and their relationship as she further develops her representations of caregiving.

In the 1960s, R. Rubin, a maternity nurse working towards her doctorate, was interested in maternal role attainment and examined how antenatal processes impacted a mother's bond with her newborn (Brandon, Pitts, Denton, Stringer, & Evans, 2011). R. Rubin identified four tasks that she felt women completed during pregnancy in order to successfully bond with their babies after birth: seeking safe passage for self and baby, the acceptance of the baby by significant others, 'binding-in,' and the giving of herself (R. Rubin, 1967, 1976).

Seeking a safe passage is the mother ensuring that she and her baby are both healthy. To ensure that significant others accept the baby, the mother must consider her relationship with those others and determine how that might change once the baby is born. Binding-in was R. Rubin's way of describing the bond that the mother-to-be should develop with her foetus. Finally, the giving of herself entails the mother recognizing the sacrifice she is making to become a mother, the giving of her body and time to ensure the well-being of the child-to-be. The overall goal of the tasks suggested by R. Rubin seem to be similar to the primary maternal occupation proposed by Winnicott (1956), however R. Rubin expanded this theory by further elucidating what steps were necessary to complete the occupation.

Later, Mercer, one of R. Rubin's students elaborated R. Rubin's (1967) theory of maternal role attainment and proposed instead that this be called 'Becoming a Mother' (Mercer, 2004, p.226). Mercer suggested this change as she proposed that R. Rubin's idea of role attainment was a static process, one which would be completed upon actually having a child and would not properly reflect the dynamic developmental processes which continue throughout motherhood. The term 'Becoming a Mother' recognises that the transition to motherhood does not stop after giving birth, instead the whole process of raising a child is also a fluctuating, life span developmental process, one that can differ with each child (Mercer, 2004).

At the same time that R. Rubin was researching maternal role attainment, Bibring was examining pregnancy from a psychoanalytic standpoint (Slade, Cohen, Sadler, & Miller, 2009). She found that affective instability was actually quite common and described that the majority of women she and her colleagues observed during pregnancy and through the first year of motherhood seemed to be quite emotionally unstable during pregnancy. Bibring,

Dwyer, Huntington, and Valenstein (1961) described one patient who seemed severely psychologically disturbed, however had not a history of any disturbance that would account for the state she was in. This emotional instability that Bibring and colleagues described reveals an emotional upheaval that many theorists have described in relation to pregnancy.

Following Bibring's work, an American psychologist, Leifer, was also studying the psychological process of becoming a mother (Leifer, 1980). She followed 19 first-time mothers during the course of their pregnancy and found the degree of personality integration (that is the ability to effectively integrate prior relationships into her template of her impending relationship with her child-to-be), during the beginning of pregnancy was related to the mother's psychological growth during her pregnancy and in the transition to motherhood (Leifer, 1980). This integration proposed by Leifer is not dissimilar to the assertion made by Bowlby (1988) that pregnancy is a time where a woman must begin to reflect on her relationship with her own mother, effectively integrating those experiences into her new relationship with her foetus.

Slade and colleagues (2009) have suggested that pregnancy is a time that can pose threats to the mother's psychological wellbeing. They also theorise that the fear and positive anticipation of birth and mothering can serve the mother-to-be well when the two are balanced; however, when fear overcomes positive anticipation, the mother's psychological wellbeing is at stake. They suggested that one of the ways a woman begins to feel like a mother is by thinking about her relationship with her own mother and that an internal, psychological reorganization must occur during the woman's transition to motherhood (Slade et al., 2009), similar to the thinking of Leifer (1980) and Bowlby (1988).

Each of the theories in this section overlap in that they all suggest that pregnancy is a time of upheaval, developmental maturation, and integration for a mother-to-be. George and Solomon (2008a) further suggest that the transition to parenthood is a time where the mother-to-be is making a transition from being the person who is seeking care to becoming the person who will provide care. Bowlby (1988) supported this by suggesting that pregnancy was a time for a mother-to-be to begin thinking of herself as a secure base. However, despite the interest of Bowlby and George and Solomon in this area of transition, they did not actually study pregnancy from an attachment or caregiving standpoint. Instead they hypothesised what might have been happening during the transition, leaving this area open to other researchers.

1.4.2 Antenatal attachment. A common conceptualization of the antenatal relationship is 'prenatal attachment' or 'antenatal attachment'; for the purposes of this literature review, this will henceforth be referred to as antenatal attachment. Researchers have defined antenatal attachment a few ways: Cranley (1981) described antenatal attachment as 'the extent to which women engage in behaviours that represent an affiliation and interaction with their unborn child' (p. 282). Müller (1990) defined antenatal attachment as 'the unique affectionate relationship that develops between the mother and her fetus' (p. 129, as cited in Müller, 1993). Condon (1993) has suggested that antenatal attachment is 'the emotional tie or bond which normally develops between the pregnant woman and her unborn infant' (p. 167). Doan and Zimmerman (2003) have explained 'Prenatal attachment is an abstract concept, representing the affiliative relationship between a parent and fetus, which is potentially present before pregnancy, is related to cognitive and emotional abilities to conceptualize another human being, and develops within an ecological system' (p. 110).

Cranley (1981) is credited as being the first to define the relationship between mother-to-be and foetus specifically as an attachment relationship. Cranley's conceptualization was very similar to R. Rubin's theories. Her contribution to the body of research was the theoretical construct of maternal-foetal attachment (Brandon et al., 2011; Cannella, 2005; Cranley, 1981). This construct was proposed by Cranley to be a multidimensional model with six aspects which represented maternal-foetal attachment: differentiation of self from the foetus, interaction with foetus, attributing characteristics to the foetus, giving of self, role taking, and nesting (Cranley, 1981). In her work, she developed the first questionnaire to measure this construct, the Maternal-Fetal Attachment Scale (MFAS; Cranley, 1981). The MFAS comprised 5 subscales which measured behavioural adjustments to motherhood during pregnancy (Cranley, 1981). Another research group have since developed a slightly shorter version of the MFAS to remove items which may not be applicable in the earlier parts of pregnancy (Sjögren, Edman, Widström, Mathiesen, & Uvnäs-Moberg, 2004).

In the 1990s, Müller began investigating the utility of the MFAS (Müller, 1993). During her research, she determined that the MFAS focused too much on behaviours and did not consider affiliation (Müller, 1993). Müller also criticised the MFAS for having too many dimensions, suggesting that a unidimensional, global scale would be of more use to researchers. Following more closely to Bowlby's theory of attachment, Müller proposed a new model of antenatal attachment which advanced the concept, whereby intergenerational transmission of attachment influences an internal working model for the mother-to-be, which helps her to attach to her foetus. This model also acknowledges the relationship between attachment to partner, adjustment to pregnancy, and the attachment to foetus (Müller, 1993). In keeping with her new model, Müller also developed a new measure, the Prenatal

Attachment Inventory (PAI; Müller, 1993). The PAI consists of 21 items which measure thoughts or behaviours that indicate affection (Müller, 1993). Müller proposed that the PAI was a unidimensional measure which aided researchers in having a global measure of the antenatal attachment relationship, an idea which was later reviewed by Siddiqui, Hägglöf, and Eisemann, (1999). These researchers instead found that the PAI had five underlying dimensions, which made it even more complex than the MFAS.

During the same time period, Condon also felt that Cranley's proposal of maternal-foetal attachment was insufficient, because it did not differentiate between how the mother-to-be related to her foetus and how she was adjusting to pregnancy (Condon, 1993). Again, following attachment theory, drawing on Bowlby's (1969/1982) conceptualization of attachment as an 'emotional tie' and Bretherton's (1985) description of attachment as a 'psychological bond,' Condon concluded that the core experience of attachment was love and he extended this experience to suggest that a pregnant woman was attached to her foetus. Condon developed a measure as well, the Maternal Antenatal Attachment Scale (MAAS; 1993).

Condon proposed that there were two factors of importance when examining the antenatal relationship between mother and foetus; quality of attachment and strength or intensity of preoccupation. Quality of attachment is defined as 'experiences of closeness, tenderness, pleasure in interaction, distress at fantasized loss and the conceptualization of the foetus as a "little person"' (Condon & Corkindale, 1997, p. 359). Strength or intensity of preoccupation is defined as 'the extent to which the foetus occupies a central place in the woman's emotional life' (Condon & Corkindale, 1997, p. 359). Brandon and colleagues (2011) have stated that currently, the MAAS and MFAS are the two most widely used

measures of antenatal attachment, although in 2009, Van den Bergh and Simons suggested that there were too few psychometric data available to be able to review the psychometric properties of the MAAS.

Later, Doan and Zimmerman (2008) proposed a developmental model of antenatal attachment. It is the assertion of these researchers that antenatal attachment does not just begin once the woman finds out that she is pregnant, instead this is a process that is influenced by cognitive and emotional schemas and internal working models of attachment which are present before conception when the future mother begins thinking about what it will be like to be pregnant (Doan & Zimerman, 2008). The researchers base this assertion on evidence which shows that women's relationships with their own mothers impact their antenatal attachment (Bielawska-Batorowicz & Siddiqui, 2008; Priel & Besser, 2000; Siddiqui & Hägglöf, 2000). Additionally, Sjögren and colleagues (2004) have reported a stability in personality traits during pregnancy and following delivery, which Doan and Zimmerman (2008) have interpreted as evidence that personality traits which may impact antenatal attachment are already present before birth. However, given that there is not yet any longitudinal research which follows women before conception through their transition to parenthood and measured the stability of these personality traits that impact antenatal attachment overtime, we do not have any empirical evidence of this phenomenon.

1.4.3 Empirical work in pregnancy and attachment. The initial intent of the AAI was to predict infant attachment patterns based on parental responses in the interview (Hesse, 2008). Fonagy, Steele, and Steele, (1991) used the AAI (George et al., 1984, 1985, 1996) in the London Child-Parent study to examine parents' antenatal responses to the AAI in relation to their child's attachment patterns as measured by the SSP (Ainsworth et al., 1978). They

found that parents' AAI classification measured in the 3rd trimester of pregnancy was predictive of infant security of attachment one year postnatally in 75% of the parent-child dyads.

Inspired by the antenatal findings of the AAI, some researchers began studying the relationship that the mother was developing towards her foetus from other perspectives (Benoit, Parker, & Zeanah, 1997; Dayton, Levendosky, Davidson, & Bogat, 2010; Huth-Bocks, Levendosky, Bogat, & von Eye, 2004; Huth-Bocks, Theran, Levendosky, & Bogat, 2011; Slade et al., 1995). This research involved creating an antenatal version of measures used to assess the mother's representations of her internal working model of attachment and caregiving by asking her to forecast what her relationship with her child might be like.

The Working Model of the Child Interview (WMCI; Zeanah, Benoit, Hirshberg, Barton, & Regan, 1994) was created as a clinical instrument with the intention to assess parents' emotional reactions and perceptions of their infant's development. Early research done with the WMCI studied mothers and their 1-year old children (Zeanah et al., 1994). The results showed a significant concordance at the <.001 level between a mother's WMCI interview classification and her child's attachment patterns and classification as measured by the SSP when both the interview and SSP were conducted at 12 months of age. Benoit, Parker, and Zeanah (1997) sought to extend these findings to an antenatal sample and predicted that the classification determined by the WMCI interview administered in the 3rd trimester of pregnancy would predict the child's attachment to his or her mother at 12 months and that the maternal classification would remain stable 1 year postnatally. The researchers studied 96 mothers recruited in their 3rd trimester of pregnancy, following these mothers for one year. Mothers were administered an adapted version of the WMCI, in which probes for

the interview were changed to reflect future tense and expectations of the child, during their pregnancy. The researchers administered the WMCI again approximately 12 months later and the SSP concurrently to obtain attachment patterns of the infant. The results of this follow up study found that the researchers' predictions were supported, the mothers' responses to the adapted WMCI during pregnancy were related to their representations of their infant (WMCI) and their infant's attachment to them at 12 months. However, the researchers point out the significance of the concordance is mainly explained by the relationship between balanced mothers and secure infants, and that there was not a strong concordance found for the insecure categories of attachment in infants. They suggest this could be because the sample was skewed towards security, with only 9% of infants being classified as insecure (Benoit et al., 1997).

The Parent Development Interview (Aber, Slade, Berger, Bresgi, & Kaplan, 1985) was created for a similar reason; to assess parents' representations of their children, themselves as parents, and their relationship with their children. The PDI was analogous to the AAI, however instead of asking about relationships with parents, it instead asked questions about the parents' relationship with their own child. Originally, the researchers were interested in understanding the parents' representations of affective states in themselves and their children. This differed from the WMCI in that the PDI assessed more internal states, whereas the WMCI was asking about the development of the child. Later, Slade, Grienenberger, Bernbach, Levy and Locker (2005) became interested in the mother's capacity to think about her own child at the representational level, or 'mentalize,' and how that related to adult attachment and infant attachment classifications. The role of reflective functioning had been hypothesized by Fonagy, Steele, and Steele (1991) as playing a critical role in linking adult and infant

attachment. Reflective functioning was described as the mother's capacity to hold complex mental states in mind as the 'adult's capacity to understand one's own or another's behaviour in terms of underlying mental states' (Slade et al., 2005, p. 286). Slade and colleagues proposed that this definition of reflective functioning might be the critical piece in explaining the transmission gap. The researchers hypothesized that the mother's ability to reflect about the internal experience of her child and of her experience as a mother would help explain the intergenerational transmission of attachment more so than when parents were asked to reflect on their own relationship with their parents, because this would offer information directly about the relationship between the mother and her child. Utilizing the new scoring system, Slade and colleagues (2005) designed a study that would investigate parental state of mind regarding attachment, maternal reflective functioning, and infant attachment security. This study extended the findings of Fonagy, Steele, and Steele (1991) by adding the PDI at 10 months of age. As expected, there was a concordance between the AAI and PDI classifications for the mothers. The results also indicated that maternal reflective functioning strongly predicted security of the infant's attachment to his or her mother at 14 months of age. However, the distinctions between avoidant and secure children were not predicted from maternal reflective functioning (on the PDI) in the way that the AAI was able to predict avoidance. Although the PDI has an antenatal version, currently, Slade and colleagues have not yet published the results of any studies which measured the PDI during pregnancy and after birth to determine whether the antenatal version of the PDI has any capacity to predict the relationship postnatally.

In a somewhat similar approach, Meins (1999) investigated the transmission gap by proposing a construct of 'mind-mindedness'. Meins proposed that maternal sensitivity was not

the central mechanism in explaining intergenerational transmission of attachment. Instead, she proposed that mothers' ability to respond appropriately, a major tenet of Ainsworth's original definition of the construct of sensitivity, could be better characterized by 'mind-mindedness', a cognitive concept that was defined as 'the proclivity to treat their infants as individuals with minds, rather than merely entities with needs that must be met' (Meins, 1999, p. 332). She proposed that much of the research measuring maternal sensitivity measured the responses as prompt or contingent, but not necessarily as appropriate. She felt that mind-mindedness explained appropriate responses, because the mother was able to recognize that her child had his or her own needs as a person. Meins proposed that the ability of the mother to recognize the internal mental or emotional states of her child and to respond to the appropriate states was necessary to provide an appropriate response. Meins suggested 'mind-mindedness' is not a separate construct from maternal sensitivity, but instead is a refinement of Ainsworth, Bell, and Stayton's definition and supports the assertion that the capacity to 'see things from the child's point of view,' (1971, p. 43 as cited in Meins, 1999) was a necessary component of maternal sensitivity.

More recently, Arnott and Meins (2008), have researched the continuity of mind-mindedness through the transition to parenthood. To do this, the researchers asked mothers- and fathers-to-be, during the 3rd trimester of pregnancy, what they thought their child might be like at 6 months of age, they were especially concerned with comments they coded as 'mentalistic' such as 'she'll have her own personality by then' or 'showing signs of intelligence'. A measure of antenatal attachment was also administered at this point as a matter of discriminant validity (MAAS; Condon & Corkindale, 1997). When the children were 6 months, they came into the laboratory with their parents and the parents and baby were

videotaped in a free play interaction (Arnott & Meins, 2008). The videos were then coded for comments by the parents to the child which focused on the child's internal mental or emotional states. The researchers believed that mind-mindedness would be present before birth because part of being able to respond appropriately to their children is the parent's capability to willingness to think about their child's internal states, which they believe suggests that mind-mindedness is a feature of the caregiver, not of the particular relationship between child and caregiver. They proposed that the measure of antenatal attachment would measure parents' experiences of closeness and involvement with the foetus, but did not predict it would have a relationship with mind-mindedness when the child was 6 months old. As expected, the ability to mentalize about the child before birth was related to more appropriate responses to their infants' internal states in mothers. Yet, in fathers, the ability to mentalize about the child before birth was linked to the ability to comment on the infant's internal state. However, fathers used both appropriate and inappropriate responses, not just appropriate responses as seen in mothers. As expected, antenatal attachment was not related to the parent's ability to mentalize about their child or their use of mind-minded comments at 6 months postnatally (Arnott & Meins, 2008). However, more recently, McMahon, Camberis, and Gibson (2016) found that higher levels of antenatal attachment, as measured by the MFAS (Cranley, 1981) were related to lower numbers of non-attuned mind-related comments by parents at both 7 and 19 months after birth. The relationship between antenatal attachment and appropriate mind-related comments was not significant though, leaving the relationship between antenatal attachment and mind-minded comments somewhat ambiguous.

While Arnott and Meins have blended the developmental psychology attachment research with antenatal attachment research as described above, Mikulincer and Florian

(1999) studied the concept of antenatal attachment in relation to adult romantic attachment. They proposed that a pregnant woman's romantic attachment style would be related to the intensity and development of her antenatal attachment. In a cross-sectional study of women in all three trimesters of pregnancy, they found women with secure attachment styles had higher levels of antenatal attachment throughout the pregnancy, while women with insecure-anxious attachment styles started off with lower levels of antenatal attachment which grew stronger as the length of the pregnancy increased. Interestingly, they found that women with insecure-avoidant attachment styles had lower levels of antenatal attachment in the 1st and 3rd trimester, yet higher scores in the 2nd trimester. The researchers suggest that women with anxious-avoidant attachment styles may use distancing as a method of coping with psychological distress. If the first trimester brings worries of physical well-being and the 3rd trimester brings distress overlabour complications, the avoidant mother-to-be may feel less bonded to her foetus during these times as she uses distancing methods to cope with her stress (Mikulincer & Florian, 1999).

Walsh, Hepper, and Marshall (2014) extended this research by examining caregiving responsiveness to partner as a mediating factor between security of attachment style and antenatal attachment (referred to as maternal-foetal representations; MFR). The researchers found that even when controlling for mental health, responsive caregiving did in fact fully mediate the relationship between insecure-avoidant attachment style and MFR. However, they did not find a pathway between insecure-anxious attachment style and caregiving responsiveness or MFR. They hypothesise that it may be that women with higher attachment related anxiety feel that their attachment needs are being met during pregnancy, a time when women are typically more looked after.

Many studies utilizing the concept of antenatal attachment, but not relating it to other forms of attachment have been produced through the years. Correlational studies examining antenatal attachment and psychosocial variables have found that high levels of social support, attachment security, and family functioning are related to higher levels of antenatal attachment (for reviews see Cannella, 2005 and Yarcheski, Mahon, Yarcheski, Hanks, & Cannella, 2009). Yarcheski et al.'s (2009) meta-analysis of 14 predictors of antenatal attachment found that gestational age was the most powerful predictor, followed by social support. Some researchers have found a relationship between antenatal attachment and both depression and anxiety, however, findings differ. Condon and Corkindale (1997) and Walsh and colleagues (2014) found that both depression and anxiety were powerful predictors of the quality of antenatal attachment, but Yarcheski et al.'s (2009) meta-analysis found the relationship between the two predictors and antenatal attachment was low. This may be related to the fact that different measures of depression and anxiety are utilized in antenatal attachment studies.

A qualitative study carried out by Sandbrook and Adamson-Macedo (2004) utilized unstructured, participant-led interviews to consider a new definition of antenatal attachment, one which was generated from the women they interviewed. They analysed the transcripts of the interviews looking for key themes that stood out in the ways women spoke about being attached to their foetuses. A common theme the researchers noticed was protection, leading the researchers to question whether the antenatal relationship was actually about love, or if it was instead more related to protection. They report that the women described protection of the foetus in a way that was almost instinctual, which would be in line with the concept of the relationship being overseen by a biologically motivated behavioural system – the caregiving

behavioural system. In line with other antenatal relationship researchers, they also found that the women tended to explain their attachment to their foetuses in a progressive manner, that is, they grew more attached to their foetuses as the pregnancy progressed (Sandbrook & Adamson-Macedo, 2004).

1.5 Critique of the current research

Following Bowlby's suggestion that attachment is the child's tie to his or her mother, it has been suggested that defining the mother's relationship to her foetus as 'attachment' is a misnomer (Redshaw & Martin, 2013; Van den Bergh & Simons, 2009; Walsh, 2010). Following George and Solomon (2008a), Walsh (2010) has suggested that perhaps these so-called 'attachment' representations, feelings and attitudes that are explained by antenatal attachment researchers are, instead, indicative of the mother's caregiving system or a precursor of it, which *would* be consistent with attachment theory.

Antenatal bonding has been proposed as the emotional investment a woman has for her unborn baby during pregnancy and that it is the foundation of her desire to provide protection and nurturance to her unborn baby (Klaus & Kennell, 1976). This definition of bonding is quite similar to researchers' definitions of antenatal attachment (Condon, 1993; Cranley, 1981; Müller, 1993). This similarity suggests that antenatal attachment researchers may actually be describing the phenomenon of antenatal bonding, rather than their proposed construct of antenatal attachment. Condon (2012) argues that calling the antenatal relationship that the parent-to-be has with his or her future child 'bonding' is to 'water down a parent's subjective feeling state of attachment to their infant' (p. 4). However, Ainsworth (1989) explained that 'a mother is said to have a *bond* to her child. This usage is tacitly in agreement with those who hold that this is not an attachment because a mother does not normally base

her security in her relationship with her child, however eager she may be to give care and nurturance' (p. 712).

Condon (2012) has written that the work of himself and his colleagues has led them to conclude that both antenatal attachment and postnatal attachment 'involve a core experience of "love" which language limitations render difficult to articulate' (p. 2). Condon cites a 1969 paper written by Ainsworth where she said that attachment is synonymous with love to impress his point. However, later in that same paper she wrote (regarding the components of the attachment relationship) 'If "attachment" refers to the "love" component of the relationship, rather than the relationship as an amalgam of love, anger, and anxiety, then it is clear that the intensity of "attachment behaviours" is an obscure index of the attachment itself' (Ainsworth, 1969, p. 1016). Walsh (2010) suggests that the term attachment is not the 'exclusive property of attachment theorists' (p. 449) and that the use of the word attachment to describe the relationship between the expectant mother and her unborn baby would not be problematic if antenatal attachment theorists did not suggest that their theoretical framework was rooted in Bowlby's attachment theory.

1.6 Rationale for the Current Work

Antenatal attachment researchers have claimed that their work is grounded in attachment theory as proposed by Bowlby, but their research has not demonstrated that the relationship they describe is predictive of an attachment relationship with the child after birth. While some research has measured the relationship after birth, the measurements used were a refinement of the antenatal attachment measures designed to measure 'postnatal attachment,' which asked the parent questions about their appraisals of their baby and even these only show modest correlations (described in further detail in the following chapter; Condon &

Corkindale, 1998; Müller, 1996). Currently only one study had examined the 'postnatal attachment' measures and a measure of child-parent attachment. Feldstein, Hane, Morrison, and Huang (2004) investigated the relationship between parent-child attachment, as measured by the Postnatal Attachment Questionnaire (PAQ; Condon & Corkindale, 1998) and the Attachment Q-Set (AQS; Everett Waters & Deane, 1985). The authors suggested that the PAQ and the AQS would share some degree of variance because the AQS examined the behaviour of the caregiver and infant and the PAQ examined the emotional bond or tie of affection experienced by the parent towards the infant. They found that there was a moderate relationship between the two and proposed the parent's emotional feelings towards the child is only one piece of the attachment relationship. In a dyadic relationship, the child's emotional feelings towards the parent also contributes to the relationship, meaning that by not also accounting for the child's emotional feelings, the PAQ cannot explain the behaviour of the infant measured by the AQS.

Currently there have not been any studies which examine if, or how, antenatal attachment might influence the child's attachment to the mother or the mother's own caregiving behavioural system. Through a variety of studies (explained below), this thesis seeks to understand how the transition to motherhood impacts the mother's appraisals of relationships in her life with her partner and her child.

1.7 Description of Studies

The thesis begins with two studies which prepare the reader for the Becoming a Mother studies. First, an integrated review of the literature which examines studies up until February 2015 which have followed mother-child dyads longitudinally from pregnancy until after the child is born is presented to determine what research has currently attempted to

understand how the transition to motherhood impacts maternal-child relationships. Next, a relatively new measure of parental caregiving representations was validated for use with a British population before using the measure in the main studies. The Becoming a Mother studies are then laid out over 4 chapters (see Figure 1 for a map of these studies). Figure 2 provides a diagram which shows how the participants in the Becoming a Mother studies overlapped.

1.7.1 Study 1: Antenatal representations and their concordance with postnatal relationships: An integrative review. The aim of this chapter is to present an integrated review of the literature to date that has measured the antenatal maternal-foetal relationship and additionally measured child-mother relationships after birth. This study addressed the question: What can the antenatal maternal-foetal relationship tell us about the postnatal mother-child relationship? By conducting a systematic search of the literature, studies which measure maternal-foetal attachment, antenatally measured adult attachment, and antenatal measurements of internal working models of parenting and followed correspondence of these constructs with post-birth relationships between mothers and infants were identified and are described to help understand what antenatal representations can tell us about postnatal relationships and what gaps in the literature still remain.

1.7.2 Study 2: The Caregiving Experiences Questionnaire: A cross-cultural validation. The aim of this study was to examine the cross-cultural validity and reliability of a new questionnaire measure of the caregiving behavioural system with a British population. Although English is the most common country in both the United States and the United Kingdom, there are slight differences in the language, therefore British-English speaking participants provided input on the language used and the validity and reliability was assessed

of the new translated measure. A total of 150 mothers of children aged 1.5-5 years old who spoke British-English as their first language completed the British version of the Caregiving Experiences Questionnaire, a measure of maternal reported parenting stress, and maternal reported child behavioural problems. The internal consistency, predictive validity, and factor structure of the CEQ were investigated.

1**.7.3 Study 3: Becoming a mother: The beginning**. As the antenatal relationship that women have with their foetuses has been determined to be an important construct, this study sought to investigate the relationships among antenatal attachment, adult attachment, caregiving, relationship satisfaction, and antenatal mental health. A total of 41 women in their 3rd trimester of pregnancy with their first child participated in the research. The relationships amongst the variables were assessed and contributors to antenatal attachment were examined.

1.7.4 Study 4: Becoming a mother: The child's first year. In order to better understand maternal contributions to infant's attachment security, this study assessed the individual differences amongst mothers of children with differing attachment groups. Nineteen mothers and their 11-15 month old children participated in the Strange Situation Paradigm (Ainsworth et al., 1978) and the mothers completed measures of romantic attachment, caregiving, relationship satisfaction, and parenting stress.

1.7.4 Study 5: Becoming a mother: The mother's first year. Following from the antenatal study (Study 4), this study aimed to determine if the associations between adult attachment, caregiving, and relationship satisfaction were also significant approximately 1 year after giving birth. The study also measured maternal reports of parenting stress to understand the impact of the maternal variables on the mother's stress levels during this

transition. A total of 48 mothers completed questionnaire measures and associations between each of the constructs were assessed.

1.6.6 Study 6: Becoming a mother: The transition to motherhood. The final study in this thesis presents a small, longitudinal chapter which followed seven first time mothers-to-be from their 3rd trimester of pregnancy through their first year of motherhood. The chapter presents descriptive results of the associations between the antenatal constructs and 1 year constructs. This group of women completed measures of adult attachment, maternal relationship representations, infant attachment, caregiving, and relationship satisfaction when their child was during pregnancy, when their child 6 months old, and when their child was 11-15 months old allowing for the opportunity to examine relationships among the variables and changes to these constructs from pregnancy through the first year of life.

Figure 2. *Map of Becoming a Mother studies with hypothesised relationships.*

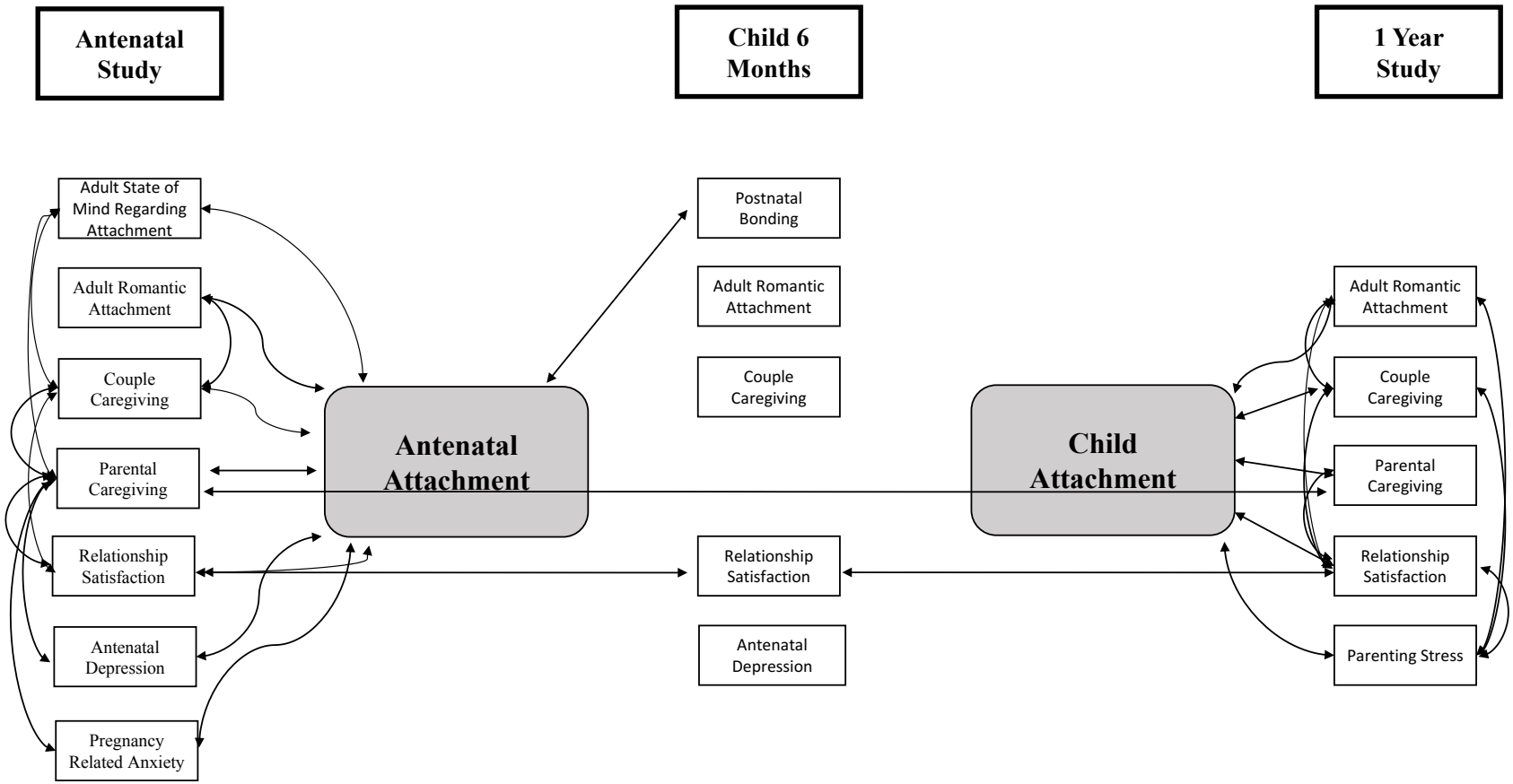
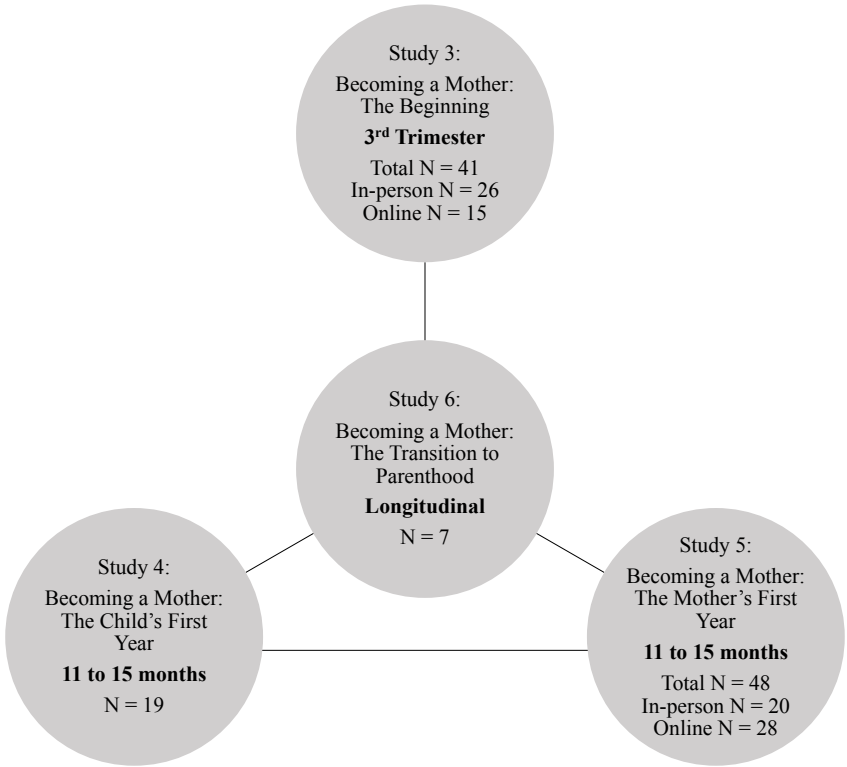


Figure 3. *Diagram of participants in each of the Becoming a Mother studies to highlight the overlap between studies.*



Chapter 2: Study 1: Antenatal representations and their concordance with postnatal relationships: A review

The goal of this chapter is to present an integrated review of the literature to date which studied the antenatal relationship between the mother and her foetus and additionally measured either mother-child or child-mother relationships after birth. This chapter asks the question: What can the antenatal relationship between mother and foetus tell us about the postnatal relationship between parent and child? This adds to the existing body of knowledge by helping to understand how maternal-foetal representations are related to outcome variables, as suggested by Cannella (2005). It has been proposed that the maternal-foetal representation is an important relationship to understand because this relationship has implications for the mother-child relationship after birth (e.g. Condon & Corkindale, 1997), however, little of the research in antenatal attachment has measured relationships between the mother and child after birth.

2.1 Introduction

Bowlby's (1982) proposal of a theory which explained the child-parent relationship has been adopted in many areas of research. The theory has been expanded to include romantic relationships (Hazan & Shaver, 1987), global relationships (K. Brennan et al., 1998; Fraley, Waller, & K. Brennan, 2000), and parenting relationships (George, Kaplan, & Main, 1984/1985/1996). Additionally, most commonly in nursing research, the theory has been applied to parental-foetal relationships, in which researchers have said that the parent-to-be becomes attached to the foetus in utero (Condon, 1993; Cranley, 1981; Müller, 1993).

Each of these extensions, apart from parental-foetal attachment, has followed Bowlby's original assertion that the goal of the attachment behavioural system is to seek and

receive protection. Romantic relationship research has suggested that as we mature, our attachment systems begins to become more symmetrical, that is, we not only are still seeking protection, but we are now able to provide protection as well. As this occurs, we are able to engage in mutually satisfying pair-bond relationships (Zeifman & Hazan, 2009). Global relationships explain how we seek and provide protection generally in adulthood. Patterns of relating across relationships are said to be influenced by our history of attachment experiences, generally beginning with our parents (Mikulincer & Shaver, 2007).

2.1.1 Antenatal attachment. Condon and Corkindale (1997) have used the word attachment in a different way, to explain 'the emotional tie or bond which normally develops between the pregnant parent and her unborn infant' (p. 359). With this usage, the researchers change Bowlby's (1969/1982) definition of attachment from seeking and receiving protection to instead describing an emotional bond between two people. However, in addition to proposing that attachment was a biologically motivated behavioural system, Bowlby (1969/1982) also proposed that a reciprocal system existed, one in which an individual is motivated to care for their young. George and Solomon (1989a) elaborated on Bowlby's proposition and went on to describe this as the *caregiving behavioural system,* a system in which protection of the child is the proximal goal. Walsh (2010) explained that the issue with describing the parental- foetal relationship as an attachment relationship is that the use of attachment is misleading, because when suggesting that they are using the term 'attachment' as Bowlby described it, antenatal attachment researchers are suggesting that the parent is seeking care and protection from their unborn child. Antenatal attachment researchers suggest that the framework they have used to develop their theory is in fact rooted in Bowlby's

(1969/1982) theory of attachment, yet, they stray from his definition and his very own words on the subject:

> There is a strong case, based on the usage of the past twenty years, for restricting the term attachment to the behaviour typical of child to parent and the behavioural system responsible for it, and to avoid using it to describe the complementary behaviour and behavioural system of the parent. Adopting this convention both parties can be said to be bonded (p. 377).

2.1.2 Bonding. While the maternal-foetal relationship has been referred to as 'bonding' by some (Mikulincer & Florian, 1999; Walsh, 2010), Condon (2012) has criticised this verbiage by saying that referring to the relationship as bonding is 'to water down a parent's subjective feeling state of attachment to their infant by referring to it by some euphemism such as "bonding"' (p. 4). Whereas Ainsworth (1989) preferred to keep very close to Bowlby's proposition by suggesting that the core of the mother-infant bond is the caregiving behavioural system. Other attachment theorists have suggested that bonding is an important precursor to maternal sensitivity (Bretherton, 1992). As such, post-birth bonding may be an important construct to understand the caregiving relationship between mother and child as well.

2.1.3 Previous reviews. This is not the first review to explore the area of antenatal attachment. Brandon, Pitts, Denton, Stringer, and Evans (2011) wrote a review of the history of antenatal attachment theories. In this review, the authors presented not only a timeline that informs the reader of the development of the theories, but also helps the reader to understand where these theories originated from by including information both about the history of attachment theory and of the psychological adjustment to pregnancy. Additionally, Van den

Bergh and Simons (2009) wrote a review of the construction and psychometric properties of the scales used to measure the maternal-foetal relationship.

Cannella (2005) has written an integrative review that helped to synthesize the research of 41 studies in antenatal attachment relationships up until the year 2000. In this review, Canella explains that longitudinal studies, which covered time periods throughout pregnancy, consistently found that antenatal attachment becomes stronger as pregnancy progresses. Cannella suggests that the correlational studies included in her review which measured psychosocial variables, demographic variables, and attitudes towards childbirth provided mixed evidence. She recommended that more longitudinal studies are required, to examine the impacts maternal-foetal attachment on relevant outcome measures.

In 2008, Alhusen published an update to Cannella's review. Alhusen's review not only included an update of the 22 studies which had been published between 2000 and 2007, but also specifically examined how each of these studies considered racial and ethnic diversity in their samples. Alhusen's review reported that racial inequality may interfere with women accessing antenatal healthcare, possibly leading to lower levels of maternal-foetal attachment. A year later, Yarcheski, Mahon, Yarcheski, Hanks, and Cannella (2009) conducted a meta-analytic study of the reported predictors of maternal-foetal attachment. Seventy-two studies were analysed which included a wide range of participants at varying gestational age. The results indicated that gestational age was the strongest pregnancy related predictor of maternal-foetal attachment and social support was the most powerful theoretical predictor, although the effect size for social support was moderate (Yarcheski et al., 2009).

2.1.4 The current review. This integrative review differs from the previous reviews by looking specifically at longitudinal studies which measure the antenatal relationship or

representations thereof and follows the mother and child after birth as well. An ‘integrative review is a specific review method that summarizes past empirical or theoretical literature to provide a more comprehensive understanding of a particular phenomenon’ (Whittemore & Knalfl, 2005, p. 546). Integrative reviews are recommended for areas of research which have multiple and divergent conceptualizations. These differ from systematic reviews in that, most studies included in systematic reviews are experimental in nature, more often than not, randomized control trial studies (De Souza, da Silva, & de Carvalho, 2010; Whittemore & Knalfl, 2005). Cooper (1982) Suggested that “the goal of an integrative review is to summarize the accumulated state of knowledge concerning the relation(s) of interest and to highlight important issues that research has left unresolved” (p. 292). In the field of parent-child relationships, most of the research is not experimental, therefore, a method such as the integrative review is useful, as it allows for synthesizing and describing the diverse methodologies (Whittemore & Knalfl, 2005). It also allows for the various conceptualizations which we see in the field of antenatal relationships.

The literature will be presented in two parts; studies which utilize traditional Bowlbian measures of attachment during pregnancy (i.e. measures of internal working models of attachment in adults) and those which are more commonly explained as antenatal attachment and bonding.

2.2 Methods

2.2.1 Framework of Review

Following Cooper's (1982) original guidelines for conducting an integrative review, Whittemore and Knalfl (2005) have provided an update to Cooper’s method, suggesting that his original guidelines are more in keeping with systematic reviews or meta-analyses, as the

issues that are inherent to combining varied data sources are not addressed. This review followed the updated methodology set forth by Whittemore and Knalfl (2005) which involved five steps: Problem identification, literature search (inclusion criteria, search, search results), data evaluation, data analysis (results), presentation (discussion).

2.2.1.1 Problem identification. There are a variety of ways in which the relationship between mother and foetus are measured, therefore the links to outcomes between mother and child are not clear as the variety of methods leads to differing results. The current review seeks to understand the research question: What can the antenatal relationship between mother and foetus tell us about the postnatal relationship between mother and child?

2.2.1.2 Inclusion criteria. Only original research manuscripts which were published in English in peer-reviewed journals were included. All studies must have followed the mother from the antenatal to postnatal period and have measured the relationship at both of those times points. The studies must report associations between antenatal and postnatal relationship measures. For inclusion, it was determined that the relationship assessments used during the antenatal and postnatal periods needed to be considered measures of either attachment or caregiving, for example measures of adult state of mind regarding attachment (as this has been used in previous parenting research, see Hesse, 2008 for a review), measures of the parental internal working model, measures of bonding, antenatal attachment, or measures of child's attachment security to the mother.

2.2.2 Literature Search

2.2.2.1 Search. A literature search of four computerized databases (Medline (Ovid), Cumulative Index to Nursing and Allied Health Literature, Psychological Information, and Web Of Science) looked for the relevant key phrases of prenatal attachment AND postnatal,

maternal-fetal attachment AND postnatal, antenatal attachment AND postnatal, prenatal attachment AND caregiving, maternal-fetal attachment AND caregiving, antenatal attachment AND caregiving, pregnancy AND attachment AND postnatal, pregnancy AND bonding AND postnatal in papers published with no start date and ending as of February 2015.

2.2.2.2 Search results. A total of 1169 articles were identified from these search terms, after deduplication 694 remained. A title review of each of the 694 removed nearly two-thirds of these, leaving 228 articles for an abstract review. From the abstract review, 19 articles were identified as appearing to meet the inclusion criteria. An ancestry search was undertaken on these 19 articles by reviewing the references in each of those articles and an additional 19 articles were identified. See Figure 1 for a diagram of the search results.

2.2.2.3 Data evaluation. This left 38 full-text articles to be reviewed. Articles were excluded if they did not report associations between antenatal and postnatal measures of attachment or caregiving, if postnatal measures were not attachment or caregiving related, or were not published in a peer-reviewed journal. Two researchers independently reviewed the full-text articles identified and determined their inclusion in the review. All disagreements were discussed in consultation and agreed upon. A total of 22 papers were included in the current review (see Table 1 for all included studies).

2.3 Results

2.3.1 Included Studies

The studies included in this review were found to be representative of two separate theoretical orientations. There were researchers using Bowlby's (1969/1982) original conceptualisation of attachment (referred to as Traditional Measure of Attachment) suggesting that the use of the term attachment be reserved for the unidirectional relationship from child to

parent and those which investigated the mother's relationship towards her foetus or infant (referred to as Maternal-Foetal Attachment or Bonding). As these studies defined the relationship in such contrasting ways, it was not possible to compare the results of the two theoretical orientations against one another, therefore, the following sections (2.3.2 and 2.3.3) describe the two orientations separately.

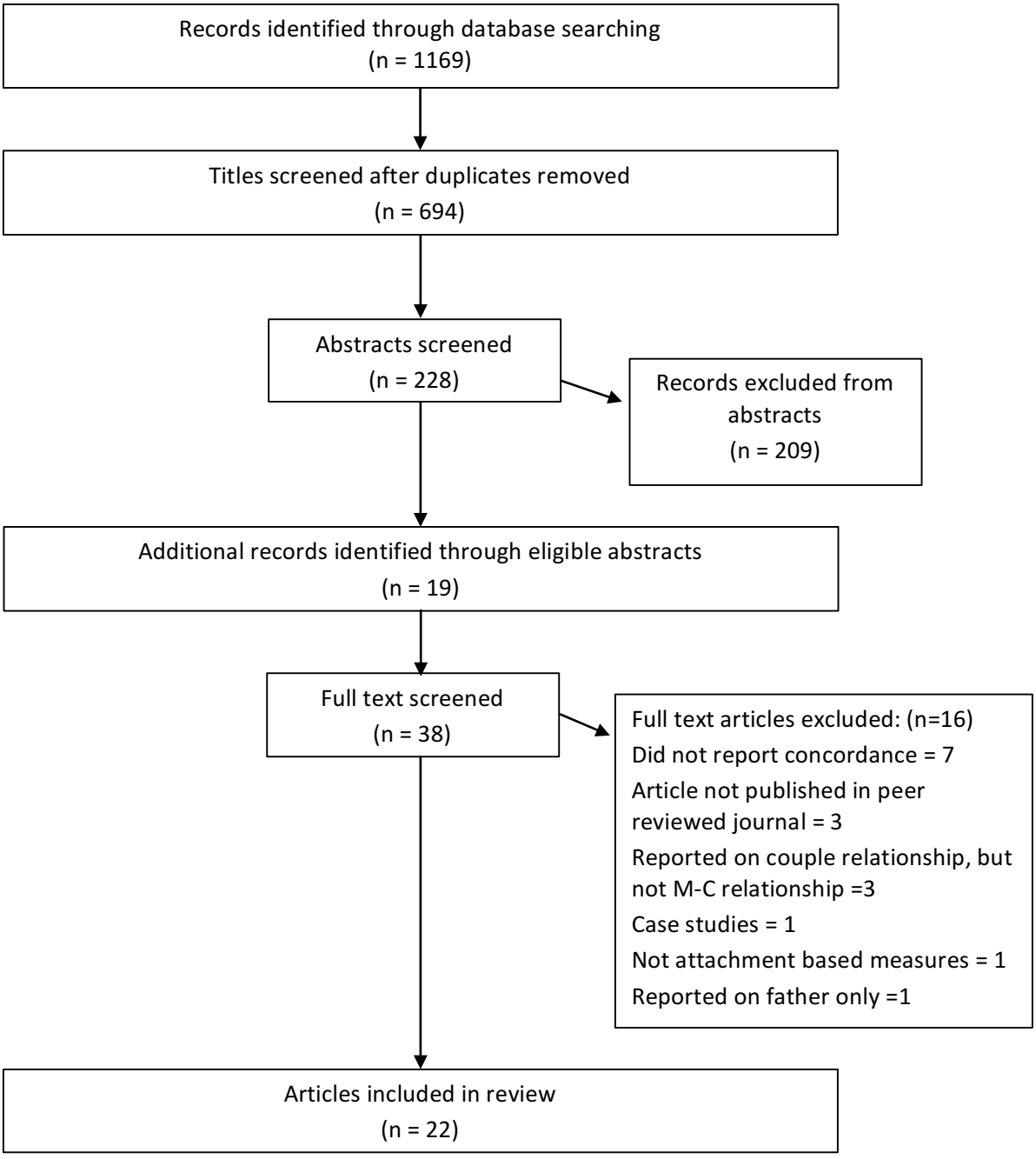
2.3.2 'Traditional' Measures of Attachment

'Traditional' measures of attachment are defined for the purposes of this chapter as measures which have followed Bowlby's original theoretical viewpoint of attachment; the belief that a child is attached to their parent, and not the other way around. These measures include the Adult Attachment Interview (AAI; George et al., 1984, 1985, 1996), Strange Situation Procedure (SSP; Ainsworth et al., 1978) and internal working models of parenting. These are different from the parental-foetal measures of attachment as they follow Bowlby's original, directional conceptualisation of attachment.

A total of 17 articles reporting on 11 samples are described in the following section. The studies included in this section vary in size from very small samples (n = 18) to larger samples (n = 206) and took place in the United States and the United Kingdom. All studies included the mother and child, but some also examined other family members such as the child's father or grandmother.

2.3.2.1 State of mind regarding attachment. Five published articles reporting on four studies which measured adult state of mind regarding attachment using the AAI during pregnancy and the Strange Situation Paradigm (Ainsworth et al., 1978) were identified

Figure 4. *Flow chart which explains the literature search process and evaluation for the current integrative review.*



(Benoit & Parker, 1994; Fonagy et al., 1991; Hughes, Turton, McGauley, & Fonagy, 2006; Steele et al., 1996; Ward & Carlson, 1995). Additionally, one study which used another measure of child attachment, the Attachment Q-Sort (Waters & Deane, 1985) was included (Heinicke et al., 2006), as was one study which measured maternal frightening caregiving behaviours (Jacobvitz, Leon, & Hazen, 2006). Each of these studies measured mothers' (additionally, in some cases fathers' and grandmothers') state of mind regarding attachment during pregnancy and the child's attachment to his or her mother to examine the intergenerational transmission of attachment as a direct link from mothers' representations to the child's attachment.

Most of the studies identified which reported the concordance between the AAI and the SSP reported the relationship between both the secure/insecure concordance rate and either a 4-way match or a 3-way match between the adult and child classifications. A 4-way match is a concordance between all four child classifications (secure, insecure-ambivalent, insecure-avoidant, and disorganised) and the adult classifications which are analogous to the child classifications (autonomous, dismissing, preoccupied, and unresolved). Whereas a 3-way classification allows for a 'forced' fit, which is when an individual with a disorganised classification is forced into an organised classification. When children are classified as disorganised (and adults as unresolved) they also have an underlying attachment strategy. Therefore, a child or adult with disorganised or unresolved classification also includes an alternate classification of one of the organised classifications as well. For example, a child who shows disorganised behaviour during the reunion in a Strange Situation, may also show attempts of organising their behaviours by utilising avoidant behaviours. Then the child will be classified as disorganised with an alternate classification of insecure-avoidant. As the

organised strategies are more adaptive (even insecure-organised), it is of interest to researchers to know if these underlying patterns are being transmitted from parents to children, using a forced fit allows them to test this phenomenon. The forced fit can also be employed when there is not a large enough sample of disorganised/unresolved participants to provide enough power for a 4-way analysis. Additionally, 2-way classifications are sometimes used where security is dichotomized as secure or insecure, with insecurity encompassing ambivalent-resistant, avoidant, and disorganised.

Using the AAI and SSP, three papers have reported the 4-way concordance rate between maternal attachment and child attachment is 64%-65% for mother-infant dyads (Benoit & Parker, 1994; Fonagy, Steele, & Steele, 1991; Ward & Carlson, 1995), 56% for fathers (Steele et al., 1996) and much higher 2-way classifications (explained for each paper below). The London Parent-Child Project (Fonagy et al., 1991; Steele et al., 1996) included a middle-class, married, British sample of soon to be first-time parents. AAIs were conducted during the 3rd trimester of pregnancy and SSPs were conducted with the mother when the infant was 12 months and with the father when the child was 18 months. In a 2-way analysis antenatal AAIs with the mother correctly predicted whether the infant was securely or insecurely attached to her 75% of the time and the father 63% of the time, although, the 4-way match was much lower. The researchers reported that there was not a statistically significant association between the AAI classifications of the partners and therefore, therefore, they did not believe that the relationship between the parents' state of mind regarding attachment explained the differences in child's attachment to each of his or her parents.

Ward and Carlson (1995) investigated the prospective concordance of the AAI and SSP with an adolescent mother population. Similar to Fonagy and colleagues (1991), Ward

and Carlson found that antenatal AAIs with the teens correctly predicted if the child was securely or insecurely attached to their mother in 78% of the cases in a 2-way match. These researchers also found that adolescents who were classified as autonomous on the AAI during pregnancy provided more sensitive care to their infants at 3 and 9 months as measured with the CARE Index (Crittenden, 2003).

With an interest in the transmission of attachment across three generations, Benoit and Parker (1994) recruited 96 mothers-to-be whose own mother would also participate in the study. In addition to finding a higher than chance prospective concordance rate (68% for a 4-way match), the researchers also noted that when there was a correspondence between the grandmother and infant's attachment classification, it was mediated through the mother. They reported the stability of the adult attachment classifications through the transition to motherhood and found that they remained stable in 77% of cases. This is quite similar to reported stability over time in populations who are not making the transition to parenthood as well (see Crowell, Fraley, & Shaver, 2008 for a review). This is an interesting finding, as it suggests that the transition to motherhood may not impact the mother's state of mind regarding attachment.

Using the Attachment Q-Sort (AQS; Waters & Deane, 1985) instead of the SSP, Heinicke and colleagues (2006) investigated the impact of mothers' adult attachment (as measured with the AAI) on involvement with a home-visiting intervention and subsequently, their relationship with their child at 6 months and 24 months. First time mothers who were identified as being at risk were recruited into a home-visiting intervention program in the US. The researchers were most interested in the effect of adult attachment on involvement in the intervention. Analyses of the pre-birth adult attachment classification and 24 months mother-

child relationship found that mothers who had were classified as having a secure state of mind regarding attachment showed higher levels of responsiveness to their child. Additionally mothers who were classified as either secure or unresolved but with an alternate classification of secure showed both higher ratings on encouragement of child's autonomy and verbal and positive control of child (Heinicke et al., 2006).

2.3.2.1.1 Unresolved adult attachment and child attachment. Some researchers have been most interested in how an unresolved state of mind regarding attachment might impact parenting (Hughes et al., 2006; Jacobvitz et al., 2006a). Hughes and colleagues (2006) reported analyses from a sample of pregnant women who had been pregnant prior to the research, but their pregnancy had ended in a stillbirth after 18 weeks. In the reported longitudinal analysis, the researchers investigated differences in social, obstetric, attachment, and psychiatric factors in mothers who were classified as unresolved with regards to loss (specifically stillbirth in this sample) on the AAI. Their goal was to determine if antenatal unresolved status may have contributed to disorganisation in children's attachment (Hughes et al., 2006). Just over half (55%) the unresolved women had infants who were classified as disorganised on the SSP. There were no differences in the social, obstetric, or attachment factors between mothers of disorganized infants and mothers with infants who were not disorganized. There were however some differences for some psychiatric scores; women with children who were not disorganized showed significantly higher scores on both depression and intrusive thoughts during pregnancy and when the child was 1 year, the higher scores on intrusive thoughts remained elevated in these mothers. The researchers suggest that this surprising finding might be due to the fact that feeling depressed and being aware of the

intrusive thoughts may actually protect the mother from slipping into a dissociative state of mind which could lead to her infant being disorganized.

2.3.2.1.2 Unresolved adult attachment and caregiving behaviours. Jacobvitz and colleagues (2006) were interested in the origins of frightening maternal behaviours. The researchers were particularly curious as to whether unresolved status predicted frightening maternal behaviour, whether underlying security (secure/autonomous as an alternate classification) buffers the negative effects of being unresolved on sensitivity in caregiving, and if the risk factors for unresolved attachment status would themselves predict the frightening behaviour. They found that mothers who were classified as unresolved, regardless of their underlying attachment classification, did in fact show higher levels of frightening behaviour. The researchers administered the AAI during the 3rd trimester of pregnancy and then recorded home interactions when the infant was 8 months. During the interaction, the mothers were asked to play with their child, feed them, and change their clothes. These videos were then coded for maternal sensitivity and frightening behaviours. There were no significant differences in maternal sensitivity for mothers classified as unresolved versus those who were not. When classifications were forced into a 3-way fit (not including unresolved), it was found that mothers who were secure scored higher on maternal sensitivity than those who were insecure, but this difference was not found for frightening behaviours. While an unresolved state of mind was the most predictive of frightening maternal behaviour, the risk factor of the loss of a parent at any age was the only other risk factor which independently predicted frightening behaviour. While this paper does not report the child's attachment to his or her mother, the researchers hoped that the origins of this frightening behaviour may help to better understand the intergenerational transmission of disorganized attachment particularly.

As AAI classifications have been shown to remain stable over time (see Crowell et al. 2008) and AAI classifications have also shown concordance with the child's security of attachment to their parent, it is not surprising to see that the studies described above found a concordance between antenatal AAI classifications and the child's attachment to mother at 12 months. However, the concordance rate is still similar to the original studies that van IJzendoorn (1995) included in his meta-analysis (which found a 75% concordance in 18 studies), where he concluded that a parent's state of mind was not a direct transmission to the child's attachment, likely leaving us with the same gap in transmission.

The studies which have gone beyond the AAI and the SSP, such as those which looked at how the AAI influenced caregiving after birth provide us with a more enriched understanding of the mechanisms involved in the transmission of attachment. Ward and Carlson (1995) have added to the growing literature in this area by highlighting the importance of adult attachment security in providing sensitive care to young infants. Jacobvitz et al.'s (2006) in-depth analysis of maternal frightening behaviours adds to the growing body of research interested in determining the underpinnings of disorganised attachment. However, as the two studies have looked at special sections of the population, it is hard to generalise these findings to normative samples.

2.3.2.2 Internal working models of parenting. Eight published articles reporting on four samples were identified which examined the internal working models of parenting with The Working Model of the Child Interview (WMCI; Zeanah et al., 1994). Five of the papers reported the prospective concordance of the WMCI in pregnancy and the SSP (Atkinson et al., 2009; Diane Benoit, Parker, & Zeanah, 1997; Crawford & Benoit, 2009; Huth-Bocks et al., 2004, 2011). The other three papers examined the stability of mothers' internal working

models of parenting over time (Dayton et al., 2010; Lannert, Levendosky, & Bogat, 2013; Theran, Levendosky, Bogat, & Huth-Bocks, 2005). The WMCI asks parents about their perceptions and subjective evaluations of their infants' characteristics, when used antenatally, mothers are asked to predict what they believe their child will be like. The original version of the WMCI provided three classifications similar to attachment organized classifications; balanced, which relates to security, disengaged, which relates to avoidance, and distorted, which relates to ambivalent-resistant. The original version of the WMCI does not have a classification which is related to infant attachment disorganisation.

2.3.2.2.1 The prospective concordance of WMCI. The three generation sample explained earlier (Benoit & Parker, 1994) was also used for a later paper, one which measured the stability of the mother's internal representations, or working models, of her relationship with her child and examined the concordance of these representations with the infant's attachment to his or her mother (Benoit, Parker, & Zeanah, 1997). Benoit et al. (1997) found that the prospective concordance of antenatal maternal WMCI classifications and infant SSP classifications at 12 months was significant (74% for a 3-way match) and concurrent WMCI classifications and SSP classifications were significant 73% of the time. However, it was believed that the high levels of security in the sample are what led to the significance. The classification of balanced had the most stability over the transition to parenthood through the first year (89%), distorted also remained rather high (85%), but disengaged mothers saw the least stability, only 12% remained stable over the one year period.

2.3.2.2.2. WMCI and child disorganised attachment. Crawford and Benoit (2009) developed another scale for the WMCI, the disrupted scale, which they believed would identify features of a caregiver's discourse which would be linked to disorganization in infant

attachment and to adult attachment representations which were unresolved (Crawford & Benoit, 2009). The researchers observed that caregivers who had been classified as unresolved on the AAI had often described their relationship with their child in ways which resembled behaviours that were identified in the AMBIANCE, a measure which examines atypical parenting behaviours, as disrupted behaviours (Lyons-Ruth, Bronfman, & Parsons, 1999). As predicted, the WMCI-disrupted scale measured antenatally was significantly associated with unresolved adult attachment and the mothers' display of disrupted behaviours when her child was 12 months. The WMCI-disrupted scale during pregnancy corresponded to disorganised child attachment 77% of the time (Crawford & Benoit, 2009). The authors explained that there was not a significant relationship between the other classifications of the WMCI (balanced, disengaged, distorted) and disorganised child attachment, however they do not report concordance between the other WMCI classifications and other child attachment classifications.

Atkinson and colleagues' (2009) also added an additional scale to the WMCI, in the hope of understanding whether attachment disorganization impacted selective attention. Because the WMCI does not have a classification analogous to unresolved or disorganized, the researchers used the scale 'irrational fear of loss of the child' as the fourth classification as a category to examine in relation to disorganised child attachment and unresolved adult attachment in their 4-way classification. Their study reported significant relationships between the antenatal AAI and the antenatal WMCI (54%; $X^2(9) = 45.94$, $p < .01$), as well as between the antenatal AAI and the SSP when the child was 12 months (47%; $X^2(9) = 25.57$, $p < .01$). However, the relationship between the antenatal WMCI and postnatal SSP only approached significance (43%; $X^2(9) = 14.55$, $p = 0.10$; Atkinson et al., 2009).

2.3.2.2.3 The stability of internal working model of parenting. The WMCI was also used antenatally in a large (206 pregnant women), longitudinal study which aimed to examine the effects of domestic violence on the physical and psychological health of women and their children which was reported over five papers (Dayton et al., 2010; Huth-Bocks et al., 2004, 2011; Lannert et al., 2013; Theran et al., 2005). This sample showed slightly lower rates of stability of the WMCI classifications; 62% of the entire sample remained stable, 79% balanced, 48% disengaged, and 37% distorted (Theran et al., 2005). The two-way match (balanced-secure/non-balanced-insecure) showed a 60% prospective concordance between the 3rd trimester and when the baby was 12 months old (Huth-Bocks et al., 2004, 2011). Observations of maternal behaviour showed a pattern in which mothers with a balanced classification displayed more positive parenting behaviours, while mothers with distorted and disengaged classifications displayed more hostile and controlling behaviours, respectively (Dayton et al., 2010).

The prospective concordance of the antenatal administration of the WMCI and the SSP when the child is 12 months shows different results in the studies which reported concordance: a 74% for 3-way match in Benoit et al. (1997) paper, a 60% for a 2-way match in the Huth-Bocks et al. (2004, 2011) papers, and 43% for a 4-way match in the Atkinson et al. (2009) study. A possible reason may be the intent of the WMCI. The researchers initially created the interview to better understand the mechanism behind the transmission of attachment. They proposed that if parental state of mind regarding attachment was the only mechanism, then parents would have the same relationships with all of their children. However, Zeanah and Barton (1989) explained that clinical evidence often showed that parents had differing internal representations of children within the same family. Therefore,

an important tenet of the WMCI is the child's contribution to the relationship. It is possible that the interview does not show a higher prospective concordance when measured antenatally because the child has yet to contribute to the relationship, so the representations being measured may still be simply be reflective of the adult's own state of mind regarding attachment.

2.3.2.3 Mind-mindedness. Two papers published by Arnott and Meins (2007; 2008) reported on a small, longitudinal study researching various measures of attachment during pregnancy and the concordance of those with postnatal interaction with the child and the child's attachment security in a population of 25 mother and father dyads. The main intention of Arnott and Meins' study was to understand if parental mind-mindedness, a cognitive concept that Meins defined as 'the proclivity to treat their infants as individuals with minds, rather than merely entities with needs that must be met' (1999, p. 332), was related to other measures of attachment. Arnott and Meins (2008) suggested that parental mind-mindedness is a construct which may help to isolate parents' representation of themselves as a caregiver from their representations of their children.

In the 2007 study, Arnott and Meins reported that mind-mindedness when the child was 6 months was possibly a pathway between mother's state of mind regarding attachment during pregnancy and the security of her child's attachment to her. All mothers who were classified as autonomous (the adult classification analogous to secure) on the AAI during pregnancy and who were judged to have high levels of mind-mindedness when their child was 6 months had a child who was securely attached to the mother at 12 months. However, the pathway with mothers who were not classified as autonomous was not significant.

Appropriate mind-minded comments in mother-father dyads were positively associated with one another, but inappropriate mind-minded comments were not.

The 2008 paper investigated associations between the constructs of parental antenatal attachment, antenatal mind-mindedness (as measured by the parents' ability to make mentalistic predictions about their child) and postnatal mind-mindedness. Arnott and Meins found no significant relationships between antenatal attachment and the number of predictions made during pregnancy about their child or the amount of appropriate mind-related comments when the child was 6 months old. Mothers' levels of antenatal attachment, as measured by the Maternal Antenatal Attachment Scales (Condon, 1993), were unrelated to antenatal mentalistic predictions about the child. In fact, only maternal education was significantly associated with maternal antenatal attachment.

These two studies do not give much information about the relationship between antenatal representations and postnatal relationships. While Arnott and Meins (2007) demonstrated that antenatal mind-mindedness may be a pathway between a mother's state of mind regarding attachment and her child's attachment security, the analysis only approached significance, likely because of the small sample size, which means that this hypothesis cannot necessarily be supported. Because mind-mindedness has been found to be a mediating pathway between a mother's postnatal state of mind regarding attachment and her child's attachment, the construct of mind-mindedness merits study as a measure of caregiving. Arnott and Meins' (2008) additional analyses regarding antenatal attachment and antenatal and postnatal mind-mindedness suggest that antenatal attachment may not have a postnatal relationship with the caregiving construct of mind-mindedness.

2.3.3 Maternal-Foetal Attachment and Bonding

Moving away from the traditional 'Bowlbian' measures of attachment which emphasised the direction of the attachment from child to mother and suggested that the mother's relationship with her child was either the product of a caregiving relationship *or* of her attachment representations which are based on relationships in which she seeks care, the studies presented in the next section are focused on maternal representations of the mother's relationship to her foetus during pregnancy and her appraisal of her relationship with her child after birth.

A total of five articles reporting on five separate samples are described below. These studies had larger average samples sizes than seen in the traditional Bowlbian attachment studies (n = 91 - 672). The data was collected in Bangladesh, Portugal, Sweden, and the United States. All studies included women during pregnancy and after giving birth.

2.3.3.1 Antenatal and postnatal attachment. The Prenatal Attachment Inventory (PAI: Müller, 1993) is only one measure of antenatal attachment which has a postnatal adaptation, the Maternal Attachment Inventory (MAI; Müller, 1996). The Maternal Antenatal Attachment Scale (MAAS; Condon, 1993) also has a postnatal adaptation called the Maternal Postnatal Attachment Scale (Condon & Corkindale, 1998). However, as of February 2015, no studies reporting on the concordance between the MAAS and the MPAS were identified, only the paternal version of this scale (Condon & Corkindale, 2013), which is not in the scope of this review. Therefore, the PAI and the MAI are the only antenatal and postnatal attachment questionnaires which could be assessed for this review. Two studies were identified which measured the mother's antenatal reports of attachment to her foetus and her postnatal reports of attachment to her child, one normative sample (Muller, 1996) and one sample of mothers

carrying twins (Damato, 2004). The correlation between the antenatal and postnatal measurement is modest, yet significant in both studies.

Müller (1996) reported that researchers who had tried to find a link between the construct of antenatal attachment and its postnatal correlates had mixed results. Following the trend of parental-foetal researchers to measure parents' perceptions of their children after birth as a construct of parent-infant attachment, Müller created a postnatal measure called the Maternal Attachment Inventory (MAI) as a follow up to her original Prenatal Attachment Inventory (PAI; Müller, 1993). This measure was designed to assess the 'unique, personal relationships that develops between a mother and her infant' (Müller, 1996, p. 163). In a study of 198 women recruited in their latter part of pregnancy, a moderate correlation was found between the PAI and the MAI ($r = 0.41$, $p < .001$). Antenatal attachment scores explained approximately 17% of the variances of the MAI scores (Müller, 1996). The researcher reported that some limitations of the study included the homogeneity of the sample, the fact that most mothers were multiparous, and the lack of consistency as to when measures were completed.

Damato (2004) also was curious as to how this construct might be different for mothers of twins. Mothers were recruited for her study during any trimester of pregnancy, but the mean gestational age of sample was 26.5 weeks (n=139). Postnatal attachment was measured at a mean infant age of 9.8 weeks. Damato found a similar correlation between antenatal and postnatal attachment as had been found in Müller's (1996) study (.39 and .41 respectively). After controlling for covariates, scores on the PAI explained 14.5% of the variance of scores on the MAI. Postpartum depression moderated the relationship between ante- and postnatal attachment, women with greater antenatal attachment and those who

showed less postpartum depression reported greater postnatal attachment to their twins, but postpartum depression did not mediate the relationship between ante- and postnatal attachment. Admission of their twins to the neonatal intensive care unit lowered levels of postnatal attachment as well.

2.3.3.2 Antenatal attachment and early interaction. In keeping with this same line of inquiry, Siddiqui and Hägglöf (2000) researched whether antenatal attachment (as measured by a Swedish adaptation of the PAI during the last trimester of pregnancy) was related to mother-infant interactions during en-face interaction at 12 weeks postpartum. Antenatal attachment was linked with some maternal behaviours during interaction, but not all (i.e., responsiveness). They found that mothers who reported greater affection during pregnancy and fantasised more about their unborn babies showed more overall involvement with their babies, the mothers were more active and stimulated them more during the interaction at 12 weeks. However, levels of antenatal attachment were not significantly related to maternal responsive behaviour, which was measured by observing how the mother responded to the infant when the baby vocalised, touched, or smiled at the mother. The researchers suggested that mothers' involvement with her baby in ways which are directed by her rather than her child (suggesting that responsiveness is directed by the child) may be a sign of the mother's sensitivity to her child's developmental needs and capacities (Siddiqui and Hägglöf, 2000).

2.3.3.3 Antenatal attachment and bonding. In a rural area of Bangladesh, Edhborg, Nasreen, and Kabir (2011) recruited women in their 3rd trimester of pregnancy and investigated the impact of depression and anxiety symptoms on maternal bonding with the infant at 2-3 months postpartum. The researchers measured the mother's attachment to her

foetus during pregnancy and bonding to her own caregiver during childhood (as measured with the Parental Bonding Instrument; Parker, Tupling, & Brown, 1979) as possible predictors of maternal bonding after birth. Antenatal attachment was measured with the PAI and postnatal bonding was measured with the Postpartum Bonding Questionnaire (Brockington, Fraser, & Wilson, 2006) which is scored by calculating the number and severity of bonding disturbances (with a higher score suggesting more bonding disturbances). Analyses found that maternal antenatal attachment had a significant, positive impact on postnatal bonding (r = -.171, p = .001), in other words, higher antenatal attachment led to lower postpartum bonding disturbance. Maternal depressive symptoms were correlated with postpartum bonding disturbances and also impacted maternal antenatal attachment (Edhborg et al., 2011).

The important question to this review, is whether or not the MAI measures attachment or caregiving during the postnatal period. Based on Müller's (1996) definition of 'maternal attachment' it seems that the relationship she describes is very similar to the definition of maternal-infant bonding, which Klaus and Kennell (1976) describe as the emotional tie from the mother to the infant. This is important to attachment relationships, in fact, Ainsworth (1989) suggested that this should be considered to be a core component of the caregiving behavioural system. Therefore, the MAI may be a good measure of caregiving, however whether this links to child outcomes remains to been seen.

The fact that relationships between the PAI and measures of caregiver interaction as well as maternal bonding show antenatal to postnatal concordance, further supports the notion that this measure is indeed assessing the caregiving behavioural system. In Edhborg et al. (2011) and Siddiqui and Hägglöf (2000) the infants were too young at the time of participation to assess whether the maternal bond or maternal interaction were related to child

attachment, a follow up of these studies would be of interest to understand if the child's attachment security was related to the antenatal attachment and/or the postnatal measures of bonding or maternal interaction.

2.3.3.4 Antenatal and postnatal bonding. In Portugal, Figueiredo and Costa (2009) also used a bonding questionnaire, the Portuguese version of the 'New Mother-to-Infant Bonding Scale' (Taylor, Atkins, Kumar, Adams, & Glover, 2005), which was adapted to be used both 3 months before birth and 3 months after birth. The researchers investigated associations between maternal stress, anxiety, depression, and emotional involvement with the infant both before and after birth. They hypothesized that a decrease in the mother's anxiety, depression, and cortisol would occur after birth, along with an increase of emotional involvement with her infant after birth. While anxiety and cortisol levels did decrease after birth, depression levels did not. However, emotional involvement (bonding) with the infant did decrease after birth, contrary to the researchers' initial hypothesis. Paired sample *t*-tests of the Total Bonding scale suggested that scores from 3 months before delivery ($M = 2.69$, $SD = 0.21$) and 3 months after delivery ($M = 2.50$, $SD = .18$) were statistically different ($t(90) = 8.443$, $p < .001$), suggesting that the mother's bond actually decreased after giving birth. Figueiredo and Costa (2009) propose that this may be due to the mother being more positively invested in the 'imaginary child' (p. 149), whereas once the actual child is there, the woman will experience more difficulties with motherhood. Unfortunately, the researchers did not report the presence or absence of correlations between the two time points, which makes it difficult to determine if the level of antenatal bonding with the foetus is related to the level of postnatal bonding with the child.

2.4 Discussion

This purpose of this review was to examine the literature to date to understand the contribution of antenatal relationship representations on postnatal attachment or caregiving relationships between mothers and children. While the results of this review show that research in the area of understanding ways in which different constructs of attachment measured during pregnancy can indeed provide predictive information about attachment relationships after birth, what is missing is a link between the two areas of research.

Traditional attachment theorists continue to follow Bowlby's notion that the term 'attachment' should be reserved for a relationship descriptive of a child's tie to his or her mother, while parental-foetal attachment theorists ignore that point and argue that an attachment is instead an emotional bond. Walsh (2010) has suggested that this discrepancy in definitions would not be so important if parental-foetal attachment theorists did not assert that their theories are grounded in Bowlby's work. In this review, only one study which did report measures of traditional attachment (in this case of caregiving) and parental-foetal attachment was located (Arnott & Meins, 2008), and this study found that there was not a relationship between parent-infant antenatal attachment and postnatal mind-mindedness, a construct of caregiving which follows Ainsworth's (1967) description of maternal sensitivity.

Parental-foetal attachment theorists have worked for many years to create accessible tools which can be used in several settings, including health care settings to identify parents who may have early problems bonding with their foetus. A large gap in the work of parental-foetal attachment theorists is the lack of studies published which link this early, antenatal relationship and child attachment quality to his or her parent. Traditional attachment theorists have managed to make connections between their antenatal measurements of maternal

representations and postnatal measures of child attachment quality to his or her mother, but the use of interview methodologies during pregnancy in the work of traditional attachment theorists is a limitation, as these methodologies require extensive training. If the antenatal period is a time where relationship difficulties may be identified, it is important that we have accessible tools that interventionist and practitioners can use.

2.4.1 Future Directions

There remains a gap in the knowledge as to what antenatal relationships can tell us about postnatal relationships; the findings are mixed. Traditional measures of attachment continue to report correspondence levels similar to those which were originally reported and subsequently lead to van IJzendoorn's (1995) 'transmission gap' and have continued to be present in concurrent measurement of correspondence (Verhage et al., 2015). Antenatal attachment theorists do seem to be able to predict something about the postnatal relationship, however without actually measuring the child's attachment security, it is presumptive to assume that the antenatal relationship that they are measuring is of importance to the postnatal relationship between mother and child.

2.4.2 Strengths of This Review

While researchers from differing disciplines continue to have an interest in the relationship between women and their unborn children, we can expect that the types of studies they run will continue to provide us with differing results which are hard to compare to one another. However, as Cooper (1982) described, reviews of this sort can bring together the current state of knowledge in a large area of interest. This review reported on the current findings of researchers interested in the maternal-foetal relationship and its longitudinal correlates and proposed areas that still require further research to help all scholars in the field

understand the implications of the maternal-foetal relationship on the subsequent maternal-child relationship.

2.4.3 Limitations of This Review

An integrative review has the drawback of being unable to provide direct comparisons of results from studies as their methodological approaches differ. This area of interest would be greatly benefited by meta-analytic calculations to determine the amount of influence that the antenatal relationship has on the postnatal relationship between mother and child. Such calculations and statistical comparisons were beyond the scope of the current review and such a review would likely not be able to include as many studies as this review covered.

2.4.4 Conclusions

This review is meant to provide the reader with a cohesive and integrative picture of the different areas of parent-child relationship research which is seeking to investigate and understand how antenatal representations of parent-foetal relationships can influence the quality of child-parent relationships after birth. This area of research continues to be of importance as researchers and clinicians work to understand what processes during pregnancy are most important to the relationship postnatally as way to inform antenatal education and intervention. This review confirms that the best approach to determine what antenatal relationships can tell us about postnatal relationships is to combine the more traditional Bowlbian attachment theory and antenatal attachment theory together to understand what is best explaining the developing relationship.

Table 1. *Articles included in review*

Article	Participants	N in final data collection	Length of study	Attachment or Caregiving Antenatal Measures	Attachment or Caregiving Postnatal Measures	Relationship Between Antenatal and Postnatal
Arnott & Meins (2007)	Expectant couples in 3rd trimester of pregnancy	18 M-C dyads and 15 F-C dyads	± 15 months	Adult Attachment Interview	Mind-Mindedness & Strange Situation	Yes for secure dyads
Arnott & Meins (2008)	Expectant couples in their 3rd trimester of pregnancy	17 couples and 4 solo mothers	± 6 months	Maternal Antenatal Attachment Scale & Antenatal Mind-Mindedness	Mind-Mindedness	No for MAAS to Mind-Mindedne Yes for Ante to Postnatal M-M
Atkinson et al. (2009)	Mothers in 3rd trimester of pregnancy	47 M-C dyads	±15 months	Working Model of the Child Interview & Adult Attachment Interview	Emotional Stroop task & Strange Situation	Yes for AAI and SSP, postnatal WMCI and SSP. No for antenatal WMCI and SSP
Benoit & Parker (1994)[a]	Mothers in last month of pregnancy and their own mothers	77 triads (grandmother, mother, infant)	13 months	Adult Attachment Interview	Strange Situation	Yes
Benoit et al. (1997)[a]	Mothers in 3rd trimester of pregnancy	81 M-C dyads	± 15 months	Working Model of the Child Interview	Working Model of the Child Interview & Strange Situation	Yes
Crawford & Benoit (2009)	Mothers in 3rd trimester of pregnancy	35 M-C dyads	±15 months	Working Model of the Child Interview-Disrupted Scale & Adult Attachment Interview	AMBIANCE and Strange Situation	Yes (Only measured Unresolved)

Table 1. *Continued*

Article	Participants	N in final data collection	Length of study	Attachment or Caregiving Antenatal Measures	Attachment or Caregiving Postnatal Measures	Relationship Between Antenatal and Postnatal
Damato (2004)	Mothers who were pregnant with twins	139 Mothers	± 10 months	Prenatal Attachment Inventory	Maternal Attachment Inventory	Yes
Dayton et al. (2010)[b]	Mothers in their 3rd trimester of pregnancy	164 M-C dyads	±15 months	Working Model of the Child Interview	Measure of parenting behaviour	Yes
Edhborg et al. (2011)	Mothers in their 3rd trimester of pregnancy	672 Mothers	± 5 months	Prenatal Attachment Inventory	Postnatal Bonding Questionnaire	Yes
Figueiredo & Costa (2009)	Mothers between 21 and 28 weeks gestation	91 Mothers	± 5 months	New Mother to Infant Bonding Scale (Portuguese Version)	New Mother to Infant Bonding Scale (Portuguese Version)	Differences between ante and postnatal but did report concordan
Fonagy et al. (1991)[c]	Mothers in 3rd trimester of pregnancy	96 M-C dyads	±15 months	Adult Attachment Interview	Strange Situation	Yes
Heinicke et al. (2006)	At risk pregnant mothers during pregnancy	57 M-C dyads	± 26 months	Adult Attachment Interview	Attachment Q-Sort	Yes for autonomous mothers
Hughes et al. (2006)	Mothers in their 3rd trimester of pregnancy with previous stillbirth	31 M-C dyads	±15 months	Adult Attachment Interview	Strange Situation	Yes for unresolv mothers
Huth-Bocks et al. (2004)	Mothers in their 3rd trimester of pregnancy	206 M-C dyads	± 16 months	Adult Attachment Interview and Working Model of the Child Interview	Strange Situation	Yes for both AA and WMCI

Table 1. *Continued*

Article	Participants	N in final data collection	Length of study	Attachment or Caregiving Antenatal Measures	Attachment or Caregiving Postnatal Measures	Relationship Between Antenatal and Postnatal
Huth-Bocks et al. (2011)[b]	Mothers in their 3rd trimester of pregnancy	173 M-C dyads	± 16 months	Working Model of the Child Interview	Strange Situation	Yes
Jacobvitz et al. (2006)	Mothers in their 3rd trimester of pregnancy	116 M-C dyads	± 27 months	Adult Attachment Interview	Sensitivity and Frightening Behaviour	Yes for frighteni behaviour, but n sensitivity
Lannert et al. (2013)	Mothers in their 3rd trimester of pregnancy	180 Mothers	±15 months	Working Model of the Child Interview	Working Model of the Child Interview	Yes
Müller (1996)	Mothers in their 'latter part of pregnancy'	196 Mothers	± 4 months	Prenatal Attachment Inventory	Maternal Attachment Inventory	Yes
Siddiqui and Hägglöf (2000)	Mothers in their 3rd trimester of pregnancy	100 Mothers	± 5 months	Prenatal Attachment Inventory	En face interaction between M-C	Yes for some maternal behavic but not all
Steele et al. (1996)[c]	Expectant couples in their 3rd trimester of pregnancy	90 triads (mother, father, child)	± 21 months	Adult Attachment Interview	Strange Situation with M at 12 mo. and F at 18 mo.	Yes for both mot and father
Theran et al. (2005)[a]	Mothers in their 3rd trimester of pregnancy	189 M-C dyads	± 16 months	Working Model of the Child Interview	Working Model of the Child Interview & Maternal Sensitivity scale	Yes
Ward and Carlson (1995)	Adolescent mothers in their 3rd trimester of pregnancy	72 M-C dyads	± 18 months	Adult Attachment Interview	CARE Index and Strange Situation	Yes for AAI and SSP and for AAI and sensitivity o CARE

Note: Articles noted with superscripts reported on the same samples.

Chapter 3: Study 2: The Caregiving Experiences Questionnaire: A cross-cultural validation

3.1 Introduction

Since the 1980s, researchers have been empirically investigating the relationship between attachment and parenting. It was originally presumed that a parent's own state of mind regarding attachment (Main et al., 1985) was directly linked to his or her child's attachment to them. As explained earlier, the Adult Attachment Interview (AAI; George et al., 1984, 1985, 1996) was created specifically to predict the link between parental representations of attachment and the child's attachment to his or her parent by measuring the parent's representational state of mind regarding attachment. It was suggested that the parent's ability to appraise their own childhood experiences and to organize those experiences into their current functioning influenced their behavioural interactions, and therefore their responsiveness to the attachment needs of their own children (Main et al., 1985).

The AAI does not measure parental responsiveness and studies which did measure adult attachment and parental responsiveness found conflicting results. Later meta-analyses found that although there was concordance of approximately 75% between the parent's state of mind regarding attachment and the child's quality of attachment towards his or her parent, the link was not through parental responsiveness as proposed (van IJzendoorn, 1995). Instead, van IJzendoorn explained that the parent's state of mind regarding attachment only explained 12% of the variance in the parent's responsiveness to his or her child. While the parent's state of mind regarding attachment was related to their responsiveness in free play and instructional interactive tasks between parent and child, it was not the mediating factor between the parent's state of mind regarding attachment and the child's quality of attachment (van

IJzendoorn, 1995). This finding led van IJzendoorn to propose that there was not a direct intergenerational transmission of attachment and that there was a 'transmission gap' which should be investigated. The phenomenon of the transmission gap has continued to be of interest to researchers since its first proposal, and recently, Verhage and colleagues (2015) have repeated van IJzendoorn's original meta-analysis with the inclusion of another 20 years of research in the area of adult attachment, parental responsiveness, and child attachment. They report that although they found a slightly smaller effect size for the relationship between a parent's state of mind regarding attachment and the child's attachment to them than van IJzendoorn (1995) originally reported, the association is still significant and the transmission gap continues to be evident in this area of research.

3.1.2 Investigating the transmission gap. During the late 1980s and 1990s, researchers were already investigating this gap. In the last two decades of the 20th century, many attachment researchers began developing interview measures to assess the parental contribution to the attachment relationship (see George & Solomon, 2008a for a full review). Interview measures such as the Parental Development Interview (Aber et al., 1985) and the Working Model of the Child Interview (Zeanah et al., 1994), have remained the most common method of studying parental representations of caregiving and understanding how those representations influence the quality of a child's attachment security. The time and cost of training, transcription, and coding of interviews has meant that the measures of the parental contribution to the attachment relationship and of caregiving are not always accessible to clinicians and researchers who are interested in this area.

3.1.2.1 Measuring the caregiving behavioural system. One interview approach returned to Bowlby's (1982) distinction between the attachment behavioural system and the

caregiving system. George and Solomon (2008a) explained that other methods of studying the parental contribution to the attachment system had not considered Bowlby's assertion that parents' behaviour and response to their children is organised by its own behavioural system; the caregiving behavioural system. Following this line of thinking, they proposed that the development of the caregiving behavioural system is a time when the parent is 'making a shift away from seeking protection and proximate care from attachment figures (the function and goal of attachment for the child) to providing protection, comfort, and care for the child (the function and proximate goal for the parent)' (George & Solomon, 2008a, p. 834). They stressed that caregiving representations are importantly influenced by the parent's experiences with the child, and are not simply an overlay of adult attachment onto the child as early research with the AAI had proposed. To measure the caregiving behavioural system, George and Solomon (1989a) adapted an existing measure, the Parent Development Interview (PDI; Aber, Slade, Berger, Bresgi, & Kaplan, 1985). While the questions of the PDI and the Caregiving Interview are similar, George and Solomon (2008a) suggest that it is the scales of analysis, not the actual interview that differentiate the Caregiving Interview (George & Solomon, 1989a) from measures such as the PDI.

The scales of the Caregiving Interview are derived from Bowlby's (1980) proposal that defensive processes allow the individual's representational model (in this case of caregiving) to integrate new information into its existing working model. Bowlby's model of defence was influenced by both psychoanalysis and information-processing theories (Bowlby, 1988). He argued that attachment (or in this case caregiving) needs which should be attended to are filtered by defensive processes sometimes causing the needs to be altered or sometimes causing them to be excluded completely before entering conscious thought. Attachment

defences develop from a young age and are seen in behavioural responses in children. These defences become more representational as we become older and become more capable thinking about attachment relationships in a representational manner. George and Solomon (2008a) followed Bowlby's defensive processes as building blocks in developing the scales they used to understand caregiving states of mind. Caregiving defences function in a similar fashion to attachment defences, filtering caregiving stress before it enters conscious thought. Defences are explained in further detail in Chapter 1, section 1.2.2.1.

George and Solomon's (2008a) model of caregiving scales represents four defensive processes; three which are organised and one which is disorganised. The caregiving scale which is organized and secure, *flexible integration* (termed 'secure base' in George and Solomon's (1989b, 1999) earlier work), is most commonly associated with parents of children who have secure attachments. Flexible integration is seen when parents are able to balance their own needs with those of their child and reflects enjoyment in the caregiving relationship (George & Solomon, 1989a, 2008a, 2016; Solomon & George, 1999).

There are two scales which are organized, yet insecure: *deactivation* and *cognitive disconnection*. Deactivation (termed 'rejection' in George and Solomon's (1989b, 1999) early work) is the defensive exclusion process that filters parenting distress from conscious awareness, often prominent in parents with children who have an insecure-avoidant attachment pattern. Deactivation is seen when parents devalue attachment and caregiving experiences and often discourage closeness in the caregiving relationship (George & Solomon, 1989a, 2008a; Solomon & George, 1999). Cognitive disconnection (termed 'uncertainty' in George and Solomon's (1989b, 1999) early work) splits affect and experience, leading to a heightened activation of the caregiving system because caregivers are confused

about the parent-child relationship and how to care for their child. This defence is often prominent in parents of children who show an ambivalent-resistant attachment pattern. Cognitive disconnection is apparent in interviews when parents are unable to turn away from their child's distress (George & Solomon, 1989a, 2008a; Solomon & George, 1999). These organised representations help caregivers to achieve their functional goal of providing protection to their children; whereas caregiving states of mind which are disorganized can hinder the caregiver from providing protection to their children.

Caregiving states of mind which are seen as disorganized are described by Solomon and George (2011), following Bowlby (1980), as segregated systems. Bowlby described segregated systems, in relation to disordered mourning and/or trauma, as a way in which the mind excludes painful or traumatising thoughts from consciousness as a form of protection of the self. Bowlby (1980) wrote that while some people can go many years in a segregated state, it is actually a breakdown of defences which will eventually likely lead to behaviour which is 'ill-organized and dysfunctional' (p. 346). There are two subcategories of segregated systems: *dysregulation* and *constriction*. Dysregulation occurs when a parent's mind is flooded by anger or fear and he or she feels vulnerable, out of control, helpless, and unable to provide adequate care for the child. Constriction is seen when the parent is unable to even engage in a conversation about caregiving. These parents often describe their child as being so perfect that they do not even require care, describing a role reversed relationship where the child is responsible for the parent's happiness. Parents who show either form of segregated systems as their most prominent defensive process during the caregiving interview often have children who are disorganized in the Strange Situation.

3.1.2.2 Using questionnaires in attachment and parenting research. Questionnaires are often used in measures of adult attachment, particularly in the study of adult romantic attachment as often studied by social psychologists. The ability to reach a larger participant pool, the time saved in training, transcription, and coding is all accounted for by a standardized questionnaire. The use of questionnaires in assessing attachment has not always been accepted by all attachment researchers. In the 1980s, when attachment researchers became interested in adult attachment, this interest diverged into two streams; (1) the intergenerational transmission of attachment and (2) the study of attachment in close relationships. The intergenerational transmission of attachment has been studied primarily by developmental psychologists, while the study of attachment in close relationships has been researched primarily by social psychologists.

The most notable difference between the two streams is how they each measure attachment. In adult attachment, developmental psychologists often use interview methodology like the AAI to ask questions about previous relationships. They have argued that this process allows them to assess adults' unconscious processes of emotion regulation and representation in a way that cannot be done with self-report measures (George & West, 1999; Jacobvitz, Curran, & Moller, 2002). Social psychologists have mostly utilized self-report measures, starting in 1987 when Hazan and Shaver used a typology measure where a participant chose which of three descriptions sounds most like themselves. Later, this research progressed to more current measures which are two dimensional measuring attachment related anxiety and avoidance (e.g. The Experiences of Close Relationships - Revised; Fraley, Waller, & Brennan, 2000). Shaver, Mikulincer and Gan (2002) have argued that self-report measures can indeed reveal information about unconscious implicit processes, particularly

when used in combination with behavioural observation or implicit priming techniques, even though the measure literally asks explicit questions.

The two streams have remained relatively separate, with little (but some) research being done to understand how the two streams might be related (for reviews see Shaver, Mikulincer, & Gan, 2002; Shaver & Mikulincer, 2004). Most of the disagreement about the two lines of research comes from developmental psychologists who continue to argue that the social psychology perspective of attachment is not actually measuring the same concept, as there have been quite a few mixed findings regarding the convergent and concurrent validity of the self-report measures to the AAI (Jacobvitz et al., 2002). This divergence between fields in attachment research has been said to have possibly impeded the progress of adult attachment research (Bernier & Dozier, 2002).

Despite these disagreements, it is widely recognized that the use of questionnaires allows researchers to reach a larger participant pool, save time in training, transcription, and coding of interviews, and therefore can be seen as an advantageous research tool. The time and cost constraints are not the only implications. Richman, Kiesler, Weisband, and Drasgow (1999) ran a meta-analysis of 61 studies which measured a non-cognitive assessment (such as personality assessment or symptom inventory) and measures of social desirability. They found that computerized questionnaire based measures reduced the tendency of participants to answer in a manner which would be most socially acceptable. Possible reasons for this may be the increased anonymity of a questionnaire or during an interview, the interviewer may unknowingly present nonverbal cues that the participant reads as directive to answer in a particular way (Richman et al., 1999).

Very few studies have been published in relation to parenting questionnaires and social desirability, however Peters and Fox (1993) did find that social desirability, as measured by the Marlow-Crowne Social Desirability Scale (Crowne & Marlowe, 1960), was not significantly correlated with measures of parenting expectations. Moreover, a paper by Morsbach and Prinz (2006), which reviewed a group of common parenting questionnaires, has reported that although some parenting measures can be vulnerable to social desirability, several studies reported moderate concordance between questionnaire responses and behavioural observations in many questionnaires, suggesting that either the social desirability distortion is low or that the distortion is just as likely in behavioural observations as well.

3.1.2.2 Creating a caregiving questionnaire. In an effort to develop a questionnaire methodology that followed a developmental psychology focus of attachment, George and Solomon (2011) created the Caregiving Helplessness Questionnaire (CHQ) based on responses to the Caregiving Interview (George & Solomon, 1989b). The CHQ was created to better understand the specific defensive processes of segregated systems. The questionnaire was created using a construct approach (Loevinger, 1957 as cited in Clark & Watson, 1995) and included 45 items which were mothers' verbatim responses to The Caregiving Interview which were reflective of disorganised caregiving. Principal component analysis with varimax rotation eliminated 28 of the items and eventually led to a discriminated questionnaire which had three subscales and a total of 17 questions. Correlations between the discriminated items and maternal reports of stress as reported on the Parenting Stress Index (Abidin, 1995) and maternal reports of child behaviour problems as reported on the Child Behavior Checklist (Achenbach & Edelbrock, 1990) showed promising predictive validity. After seeing the promise of the CHQ, the researchers suggested that further work was required to attempt to

measure the organized defensive processes, as this measure had only examined the disorganised defences (George & Solomon, 2011).

Following this, J. Brennan and George (in prep) created the Caregiving Experiences Questionnaire (CEQ). The CEQ was created in a similar vein to the CHQ, utilising a construct approach. The researchers, along with input from the second author of the CHQ, created a pilot questionnaire with 95 statements taken verbatim from several samples of Caregiving Interviews and the Caregiving Rating Manuals (George & Solomon, 1989b/1999/2008b) . Each item was a generic statement designed to capture mothers' evaluations of self, child, and the parent-child relationship that has been empirically associated with the defensive processing patterns that differentiate mothers' caregiving representational regulation as associated with child attachment (George & Solomon, 1989a, 2008a). Five dimensions were constructed which were associated with the defensive processes explained earlier: flexible integration (enjoyment), deactivation (discourages closeness), cognitive disconnection (heightened), dysregulation (helplessness), and constriction (role reversal). Items reflected each of the five defensive processes. Principal component analysis with varimax was used to discriminate the appropriate questions for each scale (J. Brennan 2012; J. Brennan & George, in prep).

The US sample who took the pilot CEQ included 246 mothers of children ages 1.5-5 years old who were mostly white, educated, married, and upper middle class. Initial predictive validity for the discriminated questions was determined by measuring the correlation between each of the scales on the CEQ and the Parenting Stress Index – Short Form (Abidin, 1995) and the Child Behaviour Checklist (Achenbach & Edelbrock, 1990). The organized and secure scale, termed '*Enjoyment*', which was developed based on flexible integration, was

associated with decreased reports of maternal stress and child behaviour problems, while the organized insecure scales of '*Discourages Closeness'* which was developed based on deactivation and '*Heightened*' which was developed based on cognitive disconnection were both associated with reports of higher maternal stress and child behaviour problems. The two dysregulated scales were developed from the CHQ; '*Helplessness*', was associated with increased reports of maternal stress and child behaviour, while the other disorganized scale, '*Role Reversal'* was associated with decreased reporting of these problems, as would be expected in a mother who was constricted, as these mothers have trouble describing themselves as a parent and often describe a child who does not require care. Table 2 shows the links between the original scales from the Caregiving Interview and the scales for the CEQ.

Table 2. *Links between attachment classification and caregiving scales.*

Child Attachment Classification	Caregiving Interview Scale	Caregiving Experiences Questionnaire Scale
Secure	Flexible Integration	Enjoyment
Insecure-Avoidant	Deactivation	Discourages Closeness
Insecure-Resistant	Cognitive Disconnection	Heightened
Disorganised	Helplessness or Child Caregiving	Helplessness or Role Reversal

N.B. Child attachment classifications are only offered for example, there is not a direct link between caregiving representations and child attachment classification.

3.1.2.3 Purpose of cross cultural validity. While English is the most common language in both the United States (US) and the United Kingdom (UK), there are some dialect differences between the two cultures. Geisinger (1994) has suggested that some assessments require adaptation even when the language largely remains the same. He goes on to suggest that any time a measure is used in a population which differs from the original sample used for development, the validity of the instrument should be assessed with the new population. Following the recommendations of the American Education Research Association's Standards

for Educational and Psychological Testing, Geisinger (1994) suggested the adapted assessment should be tested to ensure that the assessment measures the same qualities in both languages (in this case vernacular) and that the new version will continue to afford the same type of information as the assessment provided in the original development.

3.1.3 Goals of the cross-cultural study. Following these recommendations, adaptations to the vernacular of the CEQ were made (described below) and the following aims were addressed to identify the utility of the measure with a UK population:

1. To assess the reliability of the adapted CEQ in a British population by measuring the internal consistency of the scales in a UK sample.
2. To assess whether the adapted CEQ would show the same predictive validity found in the US sample. The current study utilized the same self-report measures of maternal stress and child behaviour problems as found in J. Brennan's (2012; J. Brennan & George, 2016) original study. The hypotheses of the current study were thus identical to the original study:
    a. The enjoyment and role reversal scales of the CEQ will be negatively correlated with reports of maternal stress (on the PSI-SF) and child behaviour problems (on the CBCL 1.5-5).
    b. The discourages closeness, heightened, and helplessness scales will be positively correlated with reports of maternal stress (on the PSI-SF) and child behaviour problems (on the CBCL 1.5-5).
3. To measure the factor structure of the CEQ item responses in a sample of British mothers and determine if that was similar to the scales developed in the US study.

3.2 Method

3.2.1 Scoping Work Prior to Study

Geisinger (1994) proposes that a measure can be adapted on a question by question basis when the overall tone of the questionnaire still makes sense in the population in which its validity is being tested. To ensure that the Caregiving Experiences Questionnaire (CEQ; J. Brennan & George, in prep) was valid for use in the United Kingdom, the questionnaire was administered to five native British speakers, all women between the ages of 24-29 years old, in its original form and asked if there were any words that would need to be changed. As a result of this, two small changes were made to the instrument: changing the word 'mom' to 'mum' and changing the phrase 'my child can get so demanding' to 'my child can be so demanding.' These were the only changes suggested and they were both suggested by all five native British English speakers.

3.2.2 Participants

A total of 150 mothers of children ages 1.5-5.92 years (M = 3.41, SD = 1.23) who spoke British English as their first language were recruited between January 2015 and March 2016. The participants ranged in age from 22-49 years old (M = 34.92, SD = 5.55). Despite the original US study and the current study being recruited in very similar ways, there were some significant demographic differences (See Table 3). There were no significant differences between the current sample and the US sample in regards to maternal age ($t(387) = .498$, $p = .619$). However, children in the UK sample (M = 3.41, SD = 1.23) were significantly older than the children in the US sample (M = 2.95, SD = 1.14; $t(394) = 3.78$, $p < .001$). Mothers in the UK were significantly more likely to have male children and be white, while they were less likely to have a university degree, be married, or report an annual household income of over £52,000. Chi Squared Goodness of Fit tests revealed significant differences in all of the

categorical demographic variables except whether the child was an only child or not (See Table 6). Not all participants completed all measures. Of the 150 mothers who completed the CEQ, 145 completed the CEQ and CBCL (96.7%) and 140 completed the CEQ, CBCL, and PSI (93.3%). There were no statistically significant demographic differences between the mothers who completed all measures and the mothers who did not.

Table 3. *Differences between UK sample and original US sample demographics*

	UK %	US %	X^2(df)
Child Gender			20.51(1)***
Male	62.7	44.3	
Female	37.3	55.7	
M has uni degree	42.7	89.4	345.70(1)***
Mother is White	96	75.2	34.80(1)***
Mother is married	64.7	86.2	58.47(1)***
Income			62.39(2)***
<£5,199 - 20,799	20	6.1	
£20,800-£51,99	47.3	39.8	
>£52,000	32.7	54.1	
Only Child	47.3	47.2	.001(1)

Chi Squared Goodness of Fit and *** p<.001

3.2.3 Measures

3.2.3.1 Parental caregiving. Parental caregiving was measured with the UK version of the Caregiving Experiences Questionnaire (CEQ; J. Brennan & George, in prep) (Appendix A). The questionnaire contains 40 items with five scales; 'Enjoyment' (items = 8), 'Discourages Closeness' (items = 5), 'Heightened' (items = 5), 'Helplessness' (items = 14), and 'Role Reversal' (items = 8). Items were developed using the Caregiving Interviews from several samples and the Caregiving Interview Rating and Classification Manual (George & Solomon, 1989b/1999/2008b). Each item is a generic statement designed to capture mothers' evaluations of self, child, and the parent-child relationship that has been empirically associated with defensive processing patterns that differentiate mothers' caregiving states of mind as associated with child attachment (George & Solomon, 1989b/1999/2008b). Scales

reflected each of the five defensive processes of caregiving defined by George and Solomon (2008a). Example items from each scale include: 'When s/he gets up in the morning, just to see the smile on his or her face – I know that s/he loves me, s/he trusts me' ('Enjoyment'; UK sample α = .55, US α = .82). 'Sometimes I say, 'I can't do this right now. I need time to relax' ('Discourages Closeness'; UK sample α = .53, US α = .60). 'I get sad when I realize that my child won't stay a baby forever' ('Heightened'; UK sample α = .70, US α = .75). 'I feel helpless as a mother' ('Helplessness'; UK sample α = .85, US α = .89). 'My child goes out of his way to be sensitive and tuned in to me and others' ('Role Reversal'; UK sample α = .74, US α = .77). As mentioned earlier, for the purposes of the UK validity study, the word 'mom' was changed to 'mum' and 'my child can get so demanding' was changed to 'my child can be so demanding'. Mothers were asked to think about their relationship with their youngest child who fit the age criteria (1.5-5 years) as they responded to the questionnaire items. They were asked to rate how closely each statement described their parenting experience with that child. Items were rated on a 5-point scale (1 = *not at all characteristic* to 5 = *very characteristic*).

3.2.3.2 Child behaviour problems. Maternal reports of child behaviour problems were assessed with The Child Behaviour Checklist (CBCL; Achenbach & Edelbrock, 1990) (Appendix B), a standardized measure that asks parents about a range of children's emotional and behavioural problems. The CBCL yields two child problem scales: 'Internalizing' (UK sample α = .84, US α = .91) and 'Externalizing' (UK sample α = .85, US α = .90). Achenbach and Edelbrock (1990) report internal consistency between .68 and .92 for each of the scales on the CBCL. The present study utilized the maternal report form. The assessment asks parents to evaluate a list of 99 problems. The items are rated on a 3-point scale for frequency within the past 2 months (0 = *Not true,* 1 = *Sometimes or somewhat true*, and 2 = *Very true or often*

true). Sample behaviours include, 'Avoids looking others in the eye' ('Internalizing') and 'Demands must be met immediately' ('Externalizing'). The assessment measures a variety of empirically based syndrome scales and DSM-oriented scales which are consistent with DSM-5 diagnostic categories. Additionally, a separate set of subscales can be calculated which will yield Internalizing and Externalizing scores which were used in this study. The 'Internalizing' and 'Externalizing' subscales are useful as the raw scores can be transformed to t-scores in order to measure the scores against norms and the manual provides clinical ranges for these subscales. The measure has been translated in over 50 languages and is used worldwide.

3.2.3.3 Parental stress. Maternal stress was measured with The Parenting Stress Index-Short Form (PSI-SF; Abidin, 1995) (Appendix C), a standardized 36-item measure that assesses the possibility of dysfunctional parenting and predicts the potential for parental behaviour problems and child adjustment difficulties. The short form consists of 36 items that were derived directly from the PSI full length test. The full-length version of the PSI consisted of 120 items rated on a 5-point Likert type scale and has been translated in over 20 languages to be used across the world. The questionnaire includes a very diverse sample of potential influences on parenting. The full-length measure yields 13 subscales and is considered to be a very comprehensive model (Reitman, Currier, & Stickle, 2002). However, the length of the full test was considered to be too time consuming, particularly when employed in a battery of tests. Therefore, Abidin (1995) developed a brief screening measure of parenting stress, the PSI-SF. In a study of the factor structure and validity of the measure, researchers found that PSI-SF scores were related to the parent's emotional health, their parenting behaviours, and reports of children's externalizing behaviour (Haskett et al., 2006). Abidin (1995) has reported internal consistencies of the scales ranging from .80-.91. There are three scales in the PSI-SF:

'Parental Distress' (UK sample α =.88, US α = .86), 'Difficult Child' (UK sample α =.76, US α = .82) and 'Dysfunctional Parent-Child Interaction' (UK sample α =.67, US α = .80), along with a total stress score (UK sample α=.89, US α = .91). Items are rated on a 5-point rating scale (1 = *strongly disagree* to 5 = *strongly agree*). Example items include 'There are quite a few things that bother me about my ('Parental Distress), 'My child gets upset easily over the smallest thing' ('Difficult Child'), and 'When I do things for my child, I get the feeling that my efforts are not appreciated very much' ('Dysfunctional Parent-Child Interactions').

3.2.4 Procedure

This study was a replication of the original US validation study for the CEQ (J. Brennan, 2012; J. Brennan & George, in prep). Participants were recruited online via parenting websites and social media. The advertisement said that participants must speak British English as their first language. All advertisements had the survey link directly in the advertisement. The first page informed the participant of the purpose of the research and explained that by moving forward in the survey, the participant was giving informed consent.

3.3 Results

3.3.1 Preliminary Analyses

Preliminary analyses were conducted to determine if the participant variables (mother and child age, child gender, and mother's education) were related to the defensive processing scales or the dependent variables (maternal stress and reported child behaviour problems). As the data were not normally distributed, non-parametric tests were used throughout preliminary analyses (see Table 4 and 5). Spearman's rho correlations showed maternal age was significantly negatively related to all the CEQ scales except for 'Helplessness', and also related to the 'Internalizing' subscale of the CBCL (suggesting older mothers reported lower

levels of internalizing behavioural problems). Child age was negatively correlated with the CEQ 'Enjoyment' scale, such that mothers of older children reported less enjoyment (See Table 4). A Mann-Whitney U Test revealed a significant difference on the 'Heightened' scale for gender: mothers of boys reported higher levels (Md = 3.0, n = 94) than mothers of girls (Md = 2.6, n = 56; U = 1999.5, z = -2.47, p = .014, r = -.20). There were significant differences in the education levels of mothers when it came to the scales of 'Enjoyment' (U = 2134, z = -2.39, p = .017, r = -.19), 'Discourages Closeness' (U = 2130, z = -2.38, p = .017, r = .19), 'Heightened' (U = 2079 z = --2.567, p = .010, r = .21), and 'Role Reversal' (U = 1860, z = -3.40, p = .001, r = -.28). Mothers who had completed a university degree endorsed items higher on the 'Enjoyment', 'Discourages Closeness', 'Heightened', and 'Role Reversal' than as mothers with less education. A Kruskal-Wallis Test revealed significant differences in income and the all subscales of the CEQ other than 'Helplessness', there were no differences across income groups for the dependent variables of child behaviour problems or maternal stress (See Table 5). Other than the relationships between the 'Internalizing' subscale and child age, no other significant relationships were found for the demographic variables described above and the dependent variables from the CBCL or the PSI-SF. Because of these relationships, child gender, maternal education, and household income were controlled for in the correlational analyses of the independent and dependent variables.

Table 4. *Relationship of maternal and child age and CEQ and CBCL*

	E	DC	H	Hs	RR	CBCL Int	CBCL Ext	CBCL Total
Maternal Age	-.172*	-.227**	-.188**	-.116	-.241**	-.213*	-.137	-.144
Child Age	-.261**	.040	-.107	.159	-.004	.123	-.100	-.023

Spearman's Rho * p < .05 and ** p<.01
NB. No differences were found for the demographic variables and the PSI.
E = 'Enjoyment' DC = 'Discourages Closeness' H = 'Heightened' Hs = 'Helplessness'
RR = 'Role Reversal', CBCL Int = Child Internalizing Behaviours, CBCL Ext = Child Externalizing Behaviours

Table 5. *Differences in CEQ scales by income groupings.*

Income	<£5,199-£20,799	£20,800-£51,999	>£52,000	X^2
Enjoyment	Md = 4.88	Md = 4.75	Md = 4.75	8.17(2)*
Discourages Closeness	Md = 2.20	Md = 2.20	Md = 1.80	11.34(2)**
Heightened	Md = 3.30	Md = 2.280	Md = 2.60	7.174(2)*
Role Reversal	Md = 4.125	Md = 3.875	Md = 3.50	16.157(2)***

3.3.2 Internal reliability of the CEQ in a UK Sample.

The first aim of this study was to assess the reliability of the adapted CEQ in a British population by measuring the internal consistency of the scales in a UK sample. Internal consistency is most often determined by calculating Cronbach's alpha. Pallant (2016) recommends that in general, an alpha over .7 is considered acceptable, but that an alpha above .8 is preferable. Pallant goes on to suggest that Cronbach's alpha is sensitive to the number of items per scale and recommends instead that the mean of inter-item correlations is examined in scales with less than 10 items. Briggs and Cheek (1986) recommend that the mean of the inter-item correlations be between .2 and .4. They suggest that a score of lower than .1 means that the items are not representative of a similar construct and therefore do not likely belong in a scale together, but that a mean of higher than .5 means that the items on the scale are redundant. As all scales, except 'Helplessness' had fewer than 10 items, both Cronbach's alpha and the mean of the inter-item correlations are presented in Table 6. The items which had unacceptable Cronbach's alphas also did not meet Briggs and Cheek's (1986) threshold for the mean of the inter-item correlations either, with the 'Enjoyment' and 'Discourages Closeness' scales both having means less than .2. The two scales were not improved by removing items. This meant that the 'Enjoyment' and 'Discourages Closeness'

scales did not show the appropriate internal consistency for use in a UK sample (H1) of mothers of children ages 1.5-5 years of age.

Table 6. *Internal consistency of CEQ scales*

Scale	Number of items	Cronbach's alpha	Mean of inter-item correlations
Enjoyment	8	.55	.133
Discourages Closeness	5	.53	.183
Heightened	5	.70	.321
Helplessness	14	.85	.347
Role Reversal	8	.74	.269

3.3.3 Predictive Validity

The second aim of this study was to assess whether the adapted CEQ would show the same predictive validity found in the US sample. The current study utilized the same self-report measures of maternal stress and child behaviour problems as found in J. Brennan's (2012; J. Brennan & George, 2016) original study. Spearman's rho was calculated to measure the CEQ scales with each of the dependent variables to test these hypotheses and these analyses are discussed in the results below (See Table 7). However, as demographic variables cannot be controlled for in non-parametric tests, partial Pearson's r correlations were also calculated to determine if controlling for the significant demographic variables would account for the discrepancies in the relationship from what was seen in the US sample (see Table 8).

It was hypothesised that CEQ 'Enjoyment' and 'Role Reversal' would be associated with lower reports of maternal stress and child behaviour problems (H2a). This hypothesis was not fully supported. 'Enjoyment' was significantly, negatively correlated with the PSI-SF subscale of 'Parental-Child Dysfunctional Interaction' (r_s = -.214, n = 150, p = .011), but not any other subscales. 'Role Reversal' was not significantly correlated with any of the parenting stress or child behaviour subscales.

It was hypothesised that CEQ 'Discourages Closeness', 'Heightened', and 'Helplessness' would be associated with higher reports of maternal stress and child behaviour problems (H2b). This hypothesis was partially supported. 'Discourages Closeness' was significantly, positively correlated with all parenting stress subscales; 'Parental Distress' (r_s = .287, n = 150, p = .001), 'Parent-Child Dysfunctional Interaction' (r_s = .365, n = 150, p = .001), 'Difficult Child' (r_s = .310, n = 150, p < .001), and total stress (r_s = .346, n = 150, p < .001). It was also significantly correlated with maternal reports of child behaviour problems; 'Internalizing' (r_s = .213, n = 145, p = .007) and 'Externalizing' (r_s = .342, n = 145, p < .001). The 'Heightened' scale was not significantly correlated with any of parenting stress or child behaviour subscales. 'Helplessness' was also positively, significantly correlated with all parenting stress subscales; 'Parental Distress' (r_s = .567, n = 150, p < .001), 'Parent-Child Dysfunctional Interaction' (r_s = .382, n = 150, p < .001), 'Difficult Child' (r_s = .436, n = 150, p < .001), and total stress (r_s = .609, n = 150, p < .001). It was also significantly correlated with maternal reports of child behaviour problems; 'Internalizing' (r_s = .334, n = 150, p < .001) and 'Externalizing' (r_s = .454, n = 150, p < .001).

3.3.4 Factor Analysis of the CEQ

The third aim of this study was to measure the factor structure of the CEQ item responses in a sample of British mothers and determine if that was similar to the scales developed in the US study (H3). Although the sample size in this study did not meet the sample size criteria set forth for confirmatory factor analysis (CFA) or exploratory factor analysis (EFA), the tests were explored to understand the underlying factor structure of the UK version of the CEQ. This portion of the study replicated a recent Danish validity study of the measure (Røhder et al., 2018). The original five-dimension model of the CEQ was tested using confirmatory

factor analysis (CFA) using R (2016) and goodness of fit was evaluated following recommendations from Hu and Bentler (1999). The factor structure of the UK version was different from the US version and were not a good fit (RMSEA = .09, SRMR = .11).

Therefore, post hoc exploratory factor analysis (EFA) was employed to determine the underlying factor structure of the UK version of the CEQ. Following recommendations from Pallant (2016), the data themselves were found to be suitable for EFA by an inspection of the correlation matrix which revealed many coefficients of .3 and above, as well as a Kaiser-Meyer-Olkin (Kaiser, 1970) measure of sampling adequacy of .624 (recommended to be above .6) and a Bartlett's Test of Sphericity (Bartlett, 1954) significance of $p < .001$.

Table 7. *Relationship of CEQ scales and dependent variables (PSI-SF and CBCL Subscales)*

PSI – SF Domains	Enjoyment	Discourages Closeness	Heightened	Helplessness	Role Reversal
Parent Distress[a]	-.062	.287**	.039	.567**	-.046
Parent-Child Dysfunctional Interaction[a]	-.214*	.365**	.031	.382**	-.104
Difficult Child[a]	-.066	.310**	.073	.436**	-.045
Total Stress[a]	-.117	.346**	.065	.609**	-.068
CBCL 1.5-5 year domains					
Internalizing[b]	.054	.213*	.046	.334**	.082
Externalizing[b]	.001	.342**	.082	.454**	-.083

Spearman's rho correlations * p < .05 and ** p<.01
Note. N's differ for the CEQ, PSI-SF, and the CBCL because not all mothers in the sample completed all measures. [a]*n= 150;* [b]*n= 145*

Table 8. *Relationships between CEQ scales and dependent variables controlling for demographic variables which were related to each scale as described above.*

PSI – SF Domains	Enjoyment	Discourages Closeness	Heightened	Helplessness	Role Reversal
Parent Distress[a]	-.073	.290***	.139	.643***	-.090
Parent-Child Dysfunctional Interaction[a]	-.229**	.286**	.129	.494***	-.126
Difficult Child[a]	-.088	.239**	.103	.415***	-.073
Total Stress[a]	-.133	.335**	.154*	.652***	-.112
CBCL 1.5-5 year domains					
Internalizing[b]	-.059	.079	.031	.299***	.013
Externalizing[b]	-.007	.270**	.064	.494***	-.127

Pearson's partial correlations * p < .05 and ** p<.01 *** p<.001
Note. N's differ for the CEQ, PSI-SF, and the CBCL because not all mothers in the sample completed all measures. [a]*n= 150;* [b]*n= 145;*

The first EFA found that 14 factors were above the cut-off value of 1.00 (Pallant, 2016) and explained between 17-73% of the variance, however scree plot (Cattell, 1966) indicated a break after the third factor, suggesting a 3-factor solution. This was further supported by the results of a Horn's (1965) parallel analysis (as cited in Watkins, 2006) which found three factors with eigenvalues larger than the corresponding randomly generated criterion values for a data matrix of the same size with 40 variables and 150 respondents. Therefore, a second EFA was run with three factors retained which explained 28.95% of the variance. The interpretation of the three factors was not consistent with the five factors from the original US sample (see Table 9). Thirty-four of the original items loaded onto three components, six items did not load onto any components. The three factors intermix the five original scales to produce one scale reflective of a role reversed relationship, one of caregiving helplessness, and one which was reflective of sentimentality/guilt.

3.3.5 Post-hoc Analyses

As differences between the UK sample and US sample demographics were noted (see Table 3 above), in order to understand the differences between the samples, independent t-tests compared the difference between the UK participants' responses and the US participants' responses on each of the scales of the CEQ and the dependent variables of the PSI-SF and the CBCL. To correct for multiple comparisons, the Bonferonni correction method was calculated ($\alpha/11 = .004$), which meant that some differences were not significant after correction. UK mothers had significantly lower scores on the CEQ scales of 'Discourages Closeness' ($t(394) = -3.681$, $p < .001$), 'Heightened'($t(394) = -4.368$, $p < .001$), and 'Helplessness' ($t(394) = -3.372$, $p = .001$) (see Table 10 for differences).

Table 9. *Summary of principal component analysis of the CEQ in a UK sample*

Item	Factor Loadings		
	1	2	3
I think about my child constantly when we've been separated for awhile. I really don't know what to do without him or her for very long. (H)	**.673**	.238	-.305
My child is amazing. I am in awe of him or her. (RR)	**.627**	-.145	-.029
My child and I are so close we can almost tell each other's feelings. We're really tuned into each other. (RR)	**.613**	-.116	.081
My child and I are really close. I can just sit there and tell him or her if I had a bad day and s/he understands. (RR)	**.545**	-.089	.068
I am lonely when my child and I are separated. (H)	**.514**	.194	-.281
My child is really gifted. (RR)	**.506**	-.009	.238
My child cheers me up if I am sad or angry. S/he makes me smile and feel better. (RR)	**.500**	.068	-.210
My child is just as happy and excited to see me as I am to see him or her after we have been away from each other for a while. (E)	**.493**	-.053	.015
I'm so lucky to have my child. S/he is a miracle – the best gift I ever had. Being a mother is wondrous. (RR)	**.491**	-.233	-.327
My child goes out of his way to be sensitive and tuned in to me and others. (RR)	**.479**	.019	.097
I am delighted when I see my child's face. (E)	**.472**	-.062	-.310
When I'm away from my child, I've got to do something else so s/he isn't on my mind. (H)	**.401**	-.023	-.153
S/he can mess things up just to be demanding and get attention. Children know what is going on and will purposely act up to test you. (DC)	.285	.243	.047
I get sad when I realize that my child won't stay a baby forever. (H)	.252	.104	-.061
My child is my top priority. (E)	.206	-.032	-.098
My child is so happy when s/he can do something on his own. S/he has a huge smile on his or her face like "I'm so proud, mom, I'm so proud of myself." (E)	.185	-.061	.040
There are a lot of times when I cannot control or restrain my child. (Hs)	-.136	**.673**	-.184
My child can get so wound up and out of control and I don't want to take him or her anywhere. (Hs)	-.057	**.658**	-.077
I feel helpless as a mother. (Hs)	.052	**.615**	.096
My child can get wild and out of control. (Hs)	-.145	**.550**	.065
My child pushes me away or ignores me a lot. (DC)	.032	**.531**	.002
Sometimes I think my child would be better off if I weren't there and somebody else could do better. (Hs)	-.063	**.527**	.082
I get out of control and there's nothing I can do about it. (Hs)	.230	**.469**	.405

Table 9. *Continued*

Item	Factor Loadings		
	1	2	3
Life is chaotic and my child makes me feel out of control. (Hs)	-.262	**.430**	.127
I feel like I'm walking on eggshells when I am with my child. (Hs)	-.134	**.388**	-.012
It frightens me when my child is angry and I plead with him or her to stop. (Hs)	.142	**.361**	.141
My child is a real part of me. I can't imagine what it would be like to live without him or her. (RR)	.252	**-.355**	-.354
I'm not inclined to give my child many hugs and kisses when s/he gets hurt. S/he's going to get hurt the rest of his or her life, so s/he might as well get used to it. (DC)	.035	**.337**	-.084
I feel that my child is worth all the love and attention I give him or her. (E)	.252	**-.305**	-.058
Sometimes being a parent seems like a battle and if my child won't cooperate, one of us must give in. (Hs)	.060	**.304**	.100
When I'm angry at my child, I have to leave the room so I don't explode. (Hs)	.082	.219	**.614**
Being away from my child makes me feel guilty. (H)	.146	.294	**-.586**
Sometimes I just lose it and scream at him or her or punish too harshly. (Hs)	-.090	.023	**.474**
Sometimes I say, "I can't do this right now." I need time to relax. (DC)	-.002	.016	**.468**
I am scared of my child. (My child scares me.) (Hs)	-.014	.333	**.410**
When s/he gets up in the morning, just to see the smile on his or her face – I know that s/he loves me, s/he trusts me. (E)	.347	-.038	**-.393**
My child can get so demanding. It's particularly annoying when s/he makes demands after I've just done something special for him or her. (DC)	-.141	.204	**.345**
I get overwhelmed because my child always needs my help and cannot handle problems on his or her own. (DC)	.101	.253	**.338**
I enjoy being with my child when s/he is learning. (E)	.199	.095	-.220
My child deserves my love and attention, especially when he or she is not feeling well. (E)	-.138	-.173	-.213
Eigenvalues	6.347	3.685	1.547
% of variance	15.867	9.212	3.867

Principal Axis Factoring Oblimin Rotation with Kaiser Normalization

Table 10. *Differences in scale scores across samples.*

	US		UK			
Subscale	M	SD	M	SD	t	p
Parental Caregiving						
Enjoyment[a]	4.69	.394	4.71	.278	.492	.623
Discourages Closeness[a]	2.28	.618	2.05	.582	-3.681*	.000
Heightened[a]	2.58	.813	2.95	.794	4.368*	.000
Helplessness[a]	1.73	.611	1.55	.461	-3.372*	.001
Role Reversal[a]	3.68	.646	3.79	.560	1.681	.083
PSI – SF Domains						
Parent Distress[b]	27.88	8.632	25.66	9.340	-2.329	.020
Parent-Child Dysfun Interact[b]	18.80	4.793	17.90	3.900	-1.967	.050
Difficult Child[b]	25.60	7.330	23.98	5.743	-2.368	.018
Total Stress[b]	72.11	17.279	67.54	15.549	-2.560	.011
CBCL 1.5-5 year domains						
Internalizing[c]	45.47	11.118	44.48	9.780	-.887 (ns)	.376
Externalizing[c]	45.71	10.208	44.07	8.215	-1.730 (ns)	.085

Independent t-tests. *$p < .004$ (per Bonferroni correction) $df^a = 394$, $df^b = 368$, $df^c = 38$

3.4 Discussion

The goal of this study was to assess the cross-cultural reliability and validity of the CEQ by measuring the internal consistency, predictive validity, and determining the factor structure of the questionnaire in a UK sample. The internal consistency of the scales were similar for four of the five scales, however, while the 'Enjoyment' scale was a strong scale in the US sample ($\alpha = .82$), the UK sample had an alpha of .55, which is considered to be an unacceptable value (Cortina, 1993). Further, the mean of the inter-item correlation of .133 did not meet Briggs and Cheeks' recommendation of between .2 and .4. The 'Discourages Closeness' scale also did not show acceptable internal consistency in this sample ($\alpha = .53$), nor was the mean of the inter-item correlation of .183 acceptable. However, it had not been a particularly strong scale in the US sample either ($\alpha = .60$).

The predictive validity hypotheses were only partially supported. Based on the current sample, only two of the five scales ('Discourages Closeness' and 'Helplessness') on the CEQ were significantly associated with maternal reports of child behaviour and maternal stress in this UK sample, despite the other three scales all showing associations in the US study. As mentioned above, the internal consistency of the 'Discourages Closeness' scale was quite poor in both samples, it is therefore surprising that it did show such significant associations with maternal reported stress and child behaviour problems in the current study. Again, in the US sample, even though the 'Discourages Closeness' was not a very strong scale, it showed significant, positive correlations (.46 - .60) with all scales of maternal stress and child behaviour problems.

The factor structure of the CEQ varied from the US sample, which had five scales, while the UK sample only had three. The US sample only took the pilot questionnaire of 95

items, which was then subjected to Principal Component Analysis, so further research will need to be conducted using the 40 items questionnaire with five scales to see if the factor structure will remain the same when they are the only items administered. A Danish cross-cultural validity study of the CEQ recently ran an exploratory factor analysis with oblimin rotation and found a 4-factor model which resembled the US dimensions, apart from the 'Discourages Closeness' scale folding into the 'Helplessness' scale (Røhder et al., 2018). The three factors in the UK sample seem to reflect a scale which describes a role reversed relationship whereby the mother describes her child as perfect and not requiring care, a scale which reflects mothers feeling out of control or helpless as parents, and one that reflects a type of sentimentality, characterised by caregiving guilt and heightened caregiving. Similarly, the three dimensions/scales that showed acceptable reliability were Role Reversal, Helplessness, and Heightened caregiving.

The differences between the results in the UK sample from the post-hoc analyses when compared to the US sample leads to at least three possible interpretations of what may be happening. The first is that the CEQ is not a suitable measurement and the original research is not suitable for replication. However, this measure has been used in a number of masters' theses in the United States which have found similar results to the original study (C. George, personal communication, December 12, 2014) and when the CEQ was translated and validated in a Danish following a similar procedure to the current study, Røhder el al. (2018) found similar predictive validity for the measurement, with the Danish scales as described above.

Second, perhaps there are fundamental differences in parenting between countries. An extensive search of the literature has not found any published research regarding the cross-

cultural differences in parenting appraisals between the US and the UK. The closest study found was a meta-analysis of cross-cultural differences in attachment in childhood which was nearly three decades old (van IJzendoorn & Kroonenberg, 1988). In the meta-analysis, only one study from the United Kingdom was included and that sample did have higher rates of secure patterns of attachment in young children (75% as compared to the expected 67%). However, the analysis did not report whether this difference was significant.

The third interpretation to consider is the differences between the samples. Although both samples were collected online, by advertising to parenting groups and social media, the demographics of the sample did vary significantly in many ways. This led to the post-hoc analyses comparing the scores on subscales for the two samples. The UK sample had fewer mothers with degrees and who reported lower household income (controlling for differences in currencies). Because both education and income were found to be related with the CEQ scales, it seems fitting that a difference of mean scores between the two samples might be expected on the scales of the CEQ, but does not necessarily explain the difference in the underlying component structure.

No studies reporting differences between parenting representations in the US and the UK were found in the literature. This leads to the question – are we taking the language similarities for granted? Although the predominant language in both countries is English, it seems that there may in fact be differences; even if the differences in the CEQ scales can be accounted for in the demographic differences in the sample, the discrepancy between the reports of maternal stress between samples is not necessarily accounted for by demographic differences and merits further research.

3.4.1 Strengths of the Current Study

It is not uncommon for researchers to use measurements that have been designed in other countries, other cultures, or predominately used with differing populations, particularly if the language remains largely the same. This study did not work under the assumption that two countries which share a common language would report similar feelings about being a mother. This study examined the measurement in a variety of ways to truly understand what parenting processes may be different in the UK and whether the CEQ is a proper measure for assessing these differences.

3.4.2 Limitations of the Current Study

While the sample size of the current study was large enough for some of the statistical methods employed, it was not large enough for CFA or EFA. Therefore, the results of these analyses should be taken with caution. Replication of this study with a much larger sample would allow for a better investigation of the underlying factors of the measure in a UK population. The results of this study are compared in this chapter to the results found in the original validation study of the measure, therefore, to move beyond just the cross-cultural validity of the instrument, it would be of interest to investigate cross-cultural parenting representations between US and UK mothers by matching mothers on socio-economic factors to determine if the differences may be attributed to errors in measurement or if the differences may in fact be cultural.

3.4.3 Conclusion

The results of this study indicate that not all of the CEQ scales replicate in a UK sample. The only scales found valid for use in a sample of mothers with young children in the UK are ‘Heightened,’ ‘Helplessness,’ and Role Reversal.’ The CEQ is used in the next three

studies presented in this thesis. In ‘Becoming a Mother: The Beginning’ the CEQ is transformed into a forecasting measure to be used antenatally where women who are pregnant are asked to consider what they expect it will be like to be a parent. As this is the first time that the measure is being used with a population of pregnant women, all scales will be assessed for internal consistency and reliability on the antenatal version specifically. In ‘Becoming a Mother: The Child’s First Year,’ and ‘Becoming a Mother: The Mother’s First Year’ the sample are mothers of children 11 to 15 months of age. Because of the findings of this study, only the original ‘Heightened,’ ‘Helplessness,’ and ‘Role Reversal’ scales will be examined, as they are the only scales from this sample which have shown internal consistency in a UK sample. Further validation and reliability research is required with this measure, both in the US population where it was designed and in cross-cultural work. J. Brennan and George are preparing a study to collect further data on the CEQ in the US in order to run a confirmatory factor analysis and to replicate their original findings.

Chapter 4: Study 3: Becoming a Mother: The Beginning

4.1 Introduction

As researchers have had different interests in attachment relationships during the antenatal period (such as attachment representations, parenting representations, and maternal-foetal attachment), the nature of the research that they have conducted has varied as well. Currently, as demonstrated in the integrative review (Study 1: Chapter 2), most research regarding antenatal relationships has remained divided between researchers who measure antenatal attachment (the relationship with the foetus) and researchers who measure parental attachment representations (or other parenting representations). However, a few studies which combine the interests do exist. Mikulincer and Florian (1999) found that women with secure romantic attachment styles bonded more positively with their unborn child than women with insecure romantic attachment styles. Walsh et al. (2014) found similar results; that attachment anxiety was negatively correlated with antenatal representations and the quality of the relationship the woman has with her foetus. Their research also added to our understanding by finding that responsive caregiving to one's partner mediated the relationship between insecure-avoidance and antenatal representations. The goal of this chapter is to present a study which extends the work of Walsh et al. (2014) by also investigating the relationships of parental caregiving and relationship satisfaction with antenatal representations.

As seen in the integrative review (Study 1: Chapter 2), there is very little literature which focuses on both maternal-foetal relationships and the more traditional Bowlbian attachment. Therefore, the literature review in this chapter begins by discussing the associations between both romantic attachment and parenting and couple caregiving and parenting. This research provides a background to the current study which seeks to understand

the associations of these constructs with maternal-foetal relationships and with parental caregiving representations during the antenatal period. As most of the parental caregiving representation research has been carried out with developmental psychology attachment researchers, the links among parental caregiving and romantic attachment and couple caregiving have not yet been studied.

4.1.1 Attachment style and parenting relationships. Hazan and Shaver's (1987) original description of romantic attachment proposed that individuals' attachment style influenced the way in which they experience love and romantic relationships. Thirty years of research since this original proposition has continued to support the premise that adult romantic attachment style influences the adult's emotional response and cognitive experience of emotions (K. A. Brennan & Shaver, 1995; Edelstein, 2008; J. A. Feeney, 1999; Mikulincer & Shaver, 2007).

Maternal romantic attachment style has been associated with mothers' reports of closeness to their children and how they interact with their children. Rholes, Simpson, and Blakely (1995) measured maternal romantic attachment dimensions of avoidance and anxious-ambivalence, maternal support, maternal reports of child behaviour, mothers' affective well-being, relationship satisfaction, and mothers' reports of closeness to their child in 44 dyads of preschool aged children and their mothers. The results indicated that mothers with avoidant attachment styles reported feeling less close to their children and this effect was not related to their relationship satisfaction with their partner in anyway. Anxious-ambivalent attachment style was also related to maternal reports of closeness to their child, however this relationship was mediated by relationship satisfaction as well as the degree of ambivalence in each individual. These findings suggest that insecure romantic attachment is associated with

mothers' subjective emotional experiences of their children. In addition to these associations, researchers were interested in understanding if the romantic attachment of mothers also impacted the mothers' caregiving behaviours.

4.1.2 Attachment style, caregiving, and parenting. In a study of maternal romantic attachment style, psychological distress, parenting stress, and caregiving behaviours in 137 infant-mother dyads, Mills-Koonce et al. (2011) examined the hypothesis that insecure attachment styles would be associated with less sensitive and more negative caregiving in interactions when the child was 6- and 12-months old. Further, the researchers anticipated that an interaction between maternal attachment style and the measures of psychological distress and stress would lead to more pronounced effects on maternal caregiving behaviours. The researchers had such a small subsample of anxious-ambivalent mothers that they restricted their analyses to avoidant and secure mothers only. They found that avoidant attachment style was associated with less sensitive caregiving behaviours, but not more negative behaviours as hypothesized. They further found that although both psychological distress and parenting distress were related to less sensitive and more negative caregiving behaviours, only psychological distress independently negatively predicted sensitive caregiving behaviours in avoidant mothers. Mills-Koonce et al. attribute this finding to the possibility that the negative impact of parenting stress on caregiving behaviour is already accounted for by higher levels of psychological distress. Taken together, the findings of this study suggest that avoidant mothers provide less sensitive care to their infants, which is further impacted by higher levels of psychological distress.

While research has found a link between attachment styles and subjective emotional experiences of parenting, as well as parenting behaviours, the mechanism between attachment

style and parenting is still somewhat unclear. Millings et al (2013) investigated whether responsive caregiving to romantic partners might possibly explain the link by measuring attachment style, couple caregiving style, and parenting styles (following Baumrind's model of parenting styles, as cited in Millings et al., 2013). The study included 122 couples with children ages 7-8 years old and found that both attachment anxiety and attachment avoidance had significant indirect associations with all three types of parenting styles, all of which were mediated by caregiving responsiveness to partner. Direct associations between attachment anxiety and both permissive and authoritarian parenting styles were also found to be significant, suggesting that although caregiving responsiveness to partner had a mediating effect, there was still a direct connection between attachment anxiety and the two less optimal parenting styles. This direct effect was not seen for attachment avoidance. Attachment security (lower levels of both attachment avoidance and attachment anxiety) was indirectly associated with the optimal style of authoritative parenting and was mediated, again, by responsive caregiving to partner. These findings suggest that the romantic attachment and couple caregiving research also supports the notion that attachment and caregiving styles are related to attitudes towards parenting. Dix (1991) has suggested that most measures of parental emotions are impacted by the parents' attitude towards how they are supposed to or want to feel, which suggests that measuring parental attitudes is not actually that far removed from measuring parental subjective emotional experiences. As couple caregiving representations are meant to be reflective of the caregiving behavioural system, it may also be likely that parental caregiving representations are associated with parenting emotions, however this has not yet been studied. These two conceptualisations of the caregiving

behavioural system need to be studied together in order to understand if there are links between the two systems.

4.1.3 Attachment styles and maternal-foetal relationships. As mentioned at the beginning of this chapter, Mikulincer and Florian (1999) examined the associations between maternal romantic attachment style and antenatal attachment. In a cross-sectional study of 260 primiparous Israeli-Jewish women in all three trimesters of pregnancy, the researchers assessed maternal romantic attachment style and the quality and cognitive aspects of their bond with their foetus. As they expected, women's romantic attachment style was related to bonding with their foetus. Specifically, secure women were more strongly attached to their foetus than both anxious and avoidant women in the first and second trimester, however, in the 3rd trimester, women who were anxiously attached did not significantly differ in the strength of their attachment than women who were securely attached. Gestational age was found to be a significant predictor of the strength of the bond for both secure and anxious attachment styles, while women who were avoidantly attached showed higher levels of bonding in the 2nd trimester than they did in either the 1st or 3rd. The finding for secure and anxious women is supported in other research which finds gestational age to be an important predictor variable of antenatal attachment (i.e. Canella, 2005; Yarcheski et al., 2009). The finding of higher levels of bonding in the second trimester for avoidantly attached women differed from this well-known gestational effect. The researchers explained that people with avoidant attachment styles often employ distance related coping mechanisms during times of attachment related stress. In a follow-up longitudinal study, the Mikulincer and Florian (1999) found that indeed, women report higher psychological distress during the 1st and 3rd trimesters than they do in the 2nd trimester. They suggest that women with avoidant attachment styles are

more likely to feel less distress during the second trimester and therefore may relax their distance related coping mechanisms, allowing them to form a stronger bond with their foetus. This research supports the view that there seems to be a relationship between attachment styles and antenatal attachment, however it does not attempt to determine what mechanisms might be involved in this relationship.

4.1.4 Caregiving and maternal-foetal relationships. Similar to Millings et al.'s (2013) investigation of the possible mediating effect of responsive couple caregiving style on parenting styles, Walsh et al. (2014) investigated the role of responsive couple caregiving in the associations between attachment and the maternal-foetal relationship. The researchers asserted that following attachment theory, the term attachment relates to seeking care from someone, while caregiving suggests providing care to someone, a distinction often neglected in the antenatal attachment literature. Therefore, they proposed that the associations between maternal romantic attachment and antenatal attachment would be indirect and would be mediated by responsive couple caregiving. They also examined other predictors of antenatal attachment including mental health, gestational age, and parity. In a cross-sectional study of 263 women in all three trimesters of pregnancy, Walsh et al. (2014) found that the association between attachment related avoidance and antenatal attachment was fully mediated by responsive caregiving to partner, but did not find the same relationship for attachment related anxiety and antenatal attachment. This is in line with the findings of Mikulincer and Florian (1999) who found that anxiously attached women develop a maternal-foetal bond which is not significantly different from the bond that securely attached women develop by their 3rd trimester of pregnancy, and it is likely that when controlling for gestational age, these similarities are seen as an overall general finding. Walsh et al. (2014) point out that their work

focused on couple caregiving, but that future work should look to assess the caregiving behavioural system from other standpoints in order to further understand if the associations observed in this study were related to the caregiving system overall or specifically to responsive caregiving to a partner. Following their proposition, the current study examined both couple and parental caregiving in relation to antenatal attachment.

4.1.5 The current study. The current study sought to replicate and extend Walsh et al.'s (2014) research by also investigating if parental caregiving is related to antenatal attachment in similar ways that couple caregiving is. Additionally, where each of the studies above have reported on adult romantic attachment, the current study also employed a measure of adult state of mind regarding attachment, to see if this separate construct of adult attachment would be related to the antenatal relationship. The mother's relationship satisfaction with her partner will also be measured to understand if that impacts her antenatal attachment or parental caregiving. Specifically, the following main and secondary research questions were addressed:

Main research questions:

1. Will there be a relationship between antenatal parental caregiving representations and antenatal attachment?
    a. It is expected that there will be a relationship between the antenatal parental caregiving system and antenatal attachment. As couple caregiving is a measure of the caregiving behavioural system (Carnelley, Peitromonaco, & Jaffe, 1996; Kunce & Shaver, 1994; Walsh et al., 2014) which has shown to be related to antenatal attachment (Walsh et al, 2014), then it would be expected that

parental caregiving, which is also a construct of the caregiving behavioural system will also show a meaningful relationship.

2. Are parental caregiving representations and couple caregiving representations related to one another? If they are related, do they measure separate constructs?
    a. It is expected that if both constructs are measures of the caregiving behavioural system, there will be a relationship between the two constructs (Carnelley et al., 1996; George & Solomon, 2008a; Kunce & Shaver, 1994; Walsh et al., 2014). However, it is expected that each is measuring a distinct concept that is dependent upon the relationship which it is asking about.
3. Is couple caregiving related to antenatal attachment representations in this sample?
    a. Following the findings of Walsh et al. (2014) it is expected that responsive couple caregiving representations, but not compulsive couple caregiving, will be associated with antenatal attachment representations.
4. Will the mother's attachment security (state of mind regarding attachment) impact her caregiving towards partner, parental caregiving, or antenatal attachment?
    a. This is an exploratory research question, as all previous research in this area has only published correlations between adult romantic attachment and antenatal attachment (Mikulincer & Florian, 1999; Walsh et al., 2014) or adult romantic attachment and couple caregiving (Millings et al., 2013; Walsh et al, 2014) it is unknown if state of mind regarding attachment will be linked with any of these concepts.

Secondary research questions:

5. Is the mother's romantic attachment related to her antenatal attachment?

   a. It is expected that maternal romantic attachment related avoidance will be negatively correlated with overall antenatal attachment. Mikulincer and Florian (1999) found that avoidant attachment was negatively associated with antenatal attachment during the 3rd trimester, but not anxious attachment. Walsh et al. (2014) found a significant negative correlation between attachment anxiety and some of the antenatal attachment scales, however, once controlling for couple caregiving effects of this correlation were not significant, suggesting that the correlation was not robust.

6. Is relationship satisfaction related to antenatal attachment, couple caregiving, or antenatal parental caregiving?
   a. It is expected that relationship satisfaction will be meaningfully related to antenatal attachment, couple caregiving, and parental caregiving representations as measured during pregnancy. Condon and Corkindale (1997) have found that high levels of relationship satisfaction correlate with higher levels of antenatal attachment. Responsive couple caregiving has been demonstrated as a predictor of marital satisfaction (J.A. Feeney, 1996). Bowlby (1969/1982) suggested that a mother's relationship with her partner directly influences her ability to care for her child, suggesting an expected link between parental caregiving and relationship satisfaction.
7. Are symptoms of antenatal depression and/or antenatal anxiety related to antenatal attachment or antenatal parental caregiving?
   a. It is expected that these factors will be significantly related to the mother's antenatal attachment. Condon and Corkindale (1997) report that depressive

symptomology (as measured by the EPDS) impact quality of attachment. Although, Yarcheski and colleagues (2009) have reported that meta analysis of current studies suggests that the effect size is low. Walsh et al. (2014) found that general mental health was significantly correlated with antenatal attachment, but that pregnancy specific anxiety was not correlated with antenatal attachment. They also found significant associations between both general mental health and pregnancy specific anxiety, and couple caregiving. Additionally, George and Solomon (2011) have reported a significant positive correlation between caregiving helplessness and depressive symptoms reported by mothers.

4.2 Method

4.2.1 Participants

A total of 41 primiparous women in their 3rd trimester of pregnancy were included in the following analyses. The total number of in-person participants in this sample was 26; 17 specifically for this time point and nine who were recruited for a longitudinal study following them until their child was 1-year old and (described in Study 6: Chapter 7). Additionally, 15 women participated online specifically for this study from the UK (n=3), Europe (n=3), Australia (n=1), North America (n=7), and Africa (n=1). Forty-seven women began the online study, only 12 completed the online study in its entirety the other 3 had completed 2/3's of the questionnaires and were included in the analyses.

In-person participants were recruited through local Facebook and Twitter advertisements, flyers around the community, and through antenatal classes. Online participants were recruited through global Facebook and Twitter posts and posts on parenting websites such as Baby Centre, Berkley Parents Network, Netmums, and Raising Children

Network. The age of the participants ranged from 22-40 (*M* = 30.76*, SD* = 4.02). The participant's gestational age ranged from 28-40 weeks (*M* =33.34, *SD* = 3.97). The sample was quite homogenous in terms of demographic factors; 90.2% of women identified as white, 95.1% reported that they were either married or cohabitating with the child's other parent, 82.9% reported having a university education or higher, and 56.1% reported having an annual income higher than £52,000 (or the US or Australian equivalent of that amount).

4.2.2 Measures

A list of which measures were taken by in-person participants and online participants can be seen in Table 11 at the end of this section.

4.2.2.1 Caregiving. This study measured both antenatal parental caregiving and couple caregiving. Antenatal parental caregiving focused on the mother's predictions of herself as a caregiver to her future child. Couple caregiving focused on the mother's appraisal of herself as a caregiver to her partner.

4.2.2.1.1 Parental caregiving. Parental caregiving was measured with an antenatal adaptation of the Caregiving Experiences Questionnaire (CEQ; J. Brennan & George, in prep). The measure assesses mothers' caregiving representational regulation which is believed to be related to caregiving defensive processes. The original version of this measure is described in further detail in Chapter 3. Each item is scored on a 5-point Likert type scale from 1 (*not at all characteristic)* to 5 (*very characteristic*). The CEQ has five scales which each reflect a different dimension of representation; 'Enjoyment' (α=.84), 'Discourages Closeness' (α=.28), 'Heightened' (α=.75), 'Helpless' (α=.76), and 'Role Reversal' (α=.75). As the 'Discourages Closeness' scale reliability was unacceptable, the scale was not included in analyses. The antenatal adaption of the measure changed the statements to reflect what

mothers might expect to happen after the birth of their child (e.g. 'Being away from my baby will make me feel guilty' ('Heightened') and 'I know I will be delighted when I see my baby's face.' ('Enjoyment'). This method of forecasting has been used in previous attachment research which has adapted interview measures to be used during pregnancy (i.e. Working Model of the Child Interview; Benoit et al., 1997).

4.2.2.1.2 Couple caregiving. Couple caregiving was measured with The Caregiving Questionnaire (CQ; Kunce & Shaver, 1994) (Appendix D). The CQ is a 32-item self-report questionnaire which assess caregiving in romantic relationships. The questionnaire yields four dimensions, 3 positive and 1 negative: 'Proximity' (α=.77), 'Sensitivity' (α=.87), 'Cooperation' (α=.86), and 'Compulsion' (α=.83). 'Proximity' is defined as the participant's willingness and ability to be physically close to his or her partner to show them support (e.g., 'When my partner cries or is distressed, my first impulse is to hold or touch him/her.'). 'Sensitivity' is defined as the participant's ability to recognize the nonverbal cues of his or her partner (e.g., 'I am very attentive to my partner's nonverbal signs for help and support.'). 'Cooperation' is defined as the participant's capacity to assist his or her partner without being controlling (e.g., 'I always respect my partner's ability to make his/her decisions and solve his/her own problems.'). 'Compulsion' is the participant's propensity to become over involved in the problems of his or her partner (e.g., 'I tend to get overinvolved in my partner's problems and difficulties.'). Each item is scored on a 6-point Likert-type scale from 1 (*strongly disagree*) to 6 (*strongly agree*). Scores are averaged for each dimension. A 'Responsive' caregiving index can be computed by combining the three positive scales (J.A. Feeney, 1996). As this study was following a similar procedure to that of Walsh et al. (2014), the 'Responsive' caregiving index (α=.81) and the 'Compulsive' caregiving scale (α=.83)

were utilised in analyses to be able to compare the current findings to that of the previous study.

4.2.2.2 Antenatal attachment. The mother's antenatal attachment was measured using the Maternal Antenatal Attachment Scale (MAAS; Condon, 1993) (Appendix E). The MAAS is a 19-item, multiple choice questionnaire which yields two scales of attachment: 'Quality' of attachment (α= .78) and 'Intensity of Preoccupation' with the foetus (α=.74). An example of 'Quality' is 'In the past two weeks I have felt the baby inside me is dependent on me for its wellbeing.' An example of 'Intensity' is 'In the past two weeks I have thought about, or been preoccupied with the baby inside me.' These two scales can also be combined to derive a global attachment score (α=.84).

4.2.2.3 Adult attachment. Adult attachment was assessed through two different methods which measured both attachment state of mind regarding attachment and romantic attachment.

4.2.2.3.1 Adult state of mind regarding attachment. Currently, the only way to measure adults' state of mind regarding attachment is through interview methods (e.g. Adult Attachment Interview, George et al., 1985, 1986, 1996; Adult Attachment Projective, George et al., 1997). Ravitz et al. (2010) provides a review of the lack of empirical links between interview and questionnaire measures. Therefore, state of mind regarding attachment was only measured for the 26 in-person participants, as there is not a current questionnaire that can replace this method.[1]

[1] Online participants were administered the Reciprocal Attachment Questionnaire (RAQ; West, Sheldon, & Reiffer, 1987), however the measure was highly correlated with the measure of adult romantic attachment, similarly to what had been found previously by West, Spreng, Casares-Knight, Rose, and Leiper, (1998) suggesting that the two measures were not measuring distinct constructs. As such, the RAQ was therefore dropped from the analyses.

Adult attachment representations were assessed in the in-person sample using the Adult Attachment Projective (AAP; George et al. 1997). The AAP is a method to assess state of mind regarding attachment in adults. Adults are assigned to an attachment classification group based on their narrative responses to eight pictures. Participants were shown a series of simple line drawings, one neutral picture (children playing with ball) and eight pictures depicting attachment related scenes (i.e. separation, solitude, death). They were asked to explain what was happening in the picture, what led up to the events, what the characters were thinking or feeling, and what will happen next. The responses were coded following a detailed and systematic coding system. The narrative is scored for internalized secure base, agency of self or synchrony (depending on the picture), and the use of defensive processes. The AAP assesses the same four attachment classifications that the AAI (George et al., 1984, 1985, 1996) yields; secure, dismissing, preoccupied, and unresolved. Convergent validity between the AAP and AAI is reported to be 86% (George & West, 2001). All AAP transcripts were coded by the researcher who was trained for coding by Carol George.

4.2.2.3.2 Adult romantic attachment. Romantic attachment was measured with the Experiences of Close Relationship – Revised questionnaire (ECR-R; Fraley et al., 2000) (Appendix F). The ECR-R is a 36-item questionnaire designed to measure adult romantic attachment. The questionnaire yields two scales: 'Anxiety' (α=.94) and 'Avoidance' (α=.94). An example of the 'Anxiety' subscale is 'I worry that romantic partners won't care about me as much as I care about them.' An example of the 'Avoidance' subscale is 'I prefer not to be too close to romantic partners.' Items are rated on a 7-point Likert –type scale from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Scores are then averaged for each scale.

4.2.2.4 Relationship satisfaction. Relationship satisfaction was measured with the Relationship Assessment Scale (RAS; Hendrick, 1988) (Appendix G). The RAS is a 7-item self-report measure of relationship satisfaction. Sample items include 'How good is your relationship compared to most?' and 'In general, how satisfied are you with your relationship?' Items are rated on a 5-point Likert-type scale ranging from 1 (*low satisfaction*) to 5 (*high satisfaction*). Items are reverse coded where necessary and a total continuous scale is derived where higher scores equal higher levels of satisfaction (α=.78).

4.2.2.5 Antenatal mental health. The pregnancy specific mental health of participants was assessed for antenatal depression and pregnancy specific anxiety.

4.2.2.5.1 Antenatal depression. Antenatal depression was measured with the Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987) (Appendix H). The EPDS is a 10-item standardized, self-report, multiple choice questionnaire used in the screening of postnatal depression which has also been validated for use during pregnancy (Murray & Cox, 1990). Items on the questionnaire correspond to clinical depressive symptoms. The questionnaire does not include questions about the somatic symptoms of depression that other scales emphasize, as these may be common to women during pregnancy and the postnatal period as a result of normal physiological changes. An example question is 'I have looked forward with enjoyment to things' where the four possible responses range from *as much as I ever did* to *hardly at all.* Items are reversed coded where necessary and the score is then summed to determine a total depression score (α=.84).

4.2.2.5.2 Antenatal anxiety. Antenatal anxiety was measured with the Pregnancy Anxiety Questionnaire (PAQ; Rini, Dunkel-Schetter, Wadhwa, & Sandman, 1999) (Appendix I). The PAQ is a 10-item self-report questionnaire designed to measure pregnancy specific

worries and concerns. Sample items include 'I am concerned (worried) about taking care of a new baby' and 'I am confident in having a normal childbirth.' Items are rated on a 4-point Likert-type scale ranging from 1 (not at all) to 4 (very much). Items are reversed coded where necessary and the score is then summed to determine a total anxiety score (α=.82).

4.2.3 Procedure

Ethical approval for the longitudinal study was first obtained through National Health Service Cambridge South NRES committee. The University of East Anglia School of Psychology Ethics Committee also approved the longitudinal study, and later, an amendment for this cross-sectional component of the study, both in person and online.

Table 11. *Explanation of measures used for each sample.*

Construct	In person N = 26	Online N = 15
Caregiving		
Parental Caregiving	CEQ (J. Brennan & George, In prep)	CEQ
Couple Caregiving	CQ (Kunce & Shaver, 1994)	CQ
Antenatal Attachment	MAAS (Condon, 1993)	MAAS
Adult Attachment		
Romantic Attachment	ECR-R (Fraley et al. 2000)	ECR-R
State of Mind Attachment	AAP (George & West, 1999)	
Relationship Satisfaction	RAS (Hendrick, 1988)	RAS
Antenatal Mental Health		
Antenatal Depression	EPDS (Cox et al., 1997)	EPDS
Pregnancy Specific Anxiety	PAQ (Rini et al., 1991)	PAQ

In-person participants were offered the option of meeting the researcher at their home or at the university. There were no differences between locations (p = .189, Fisher's Exact Test) for the projective measure. The researcher first described the purpose of the research and then provided the participant with an information sheet which contained frequently asked questions about the study, information on how their data would be kept confidential, information about how to withdraw from the study after participation, along with a reminder that they could withdraw from participation at any time during the study as well, and contact

information for the researcher, researcher's supervisor, and Head of School and the Ethics Committee at UEA School of Psychology. The participant was asked to provide informed consent to participate. In keeping with a request from the NHS ethics board, in person participants were asked to provide the contact information of their GP or midwife so that if they disclosed the desire to harm themselves, the researcher would be able to contact their GP via telephone within 36 hours or less to ensure proper follow-up care would be received. Participants were also provided with a list of local mental health and parenting resources and told that if they should find that participation brought up any concerns for them, they should contact their midwife or GP in the first instance, but that they could also contact the listed resources. Finally, following the initial discussion, participants took part in the study. The attachment assessment task was audio recorded. Administration of the attachment assessment and questionnaires was counterbalanced to ensure that there was no order effect.

Online participants first saw a welcome page which had all the same text as the information sheet that in person participants had received. The next page explained the details about how online data was specifically kept anonymised, for instance, the IP address of the user was captured to ensure that they only took part in the research one time, but the IP address was not used to identify the participant in anyway and was deleted from the data before any data was analysed. This page was the consent page which was noted by saying 'By answering the questions that follow it is assumed that you consent to take part and for your data to be used in academic research and for publications.'

4.3 Results

4.3.1 Analysis Plan

First, independent t-tests and chi-squared tests were run to check for differences between in-person participants and online participants on all demographic variables and dependent measures. The online participants only differed significantly from the in-person participants on demographics in terms of ethnicity; while all in-person participants identified as white, 4 (26.6%) of online participants identified as non-white (2 'mixed' and 2 'other') (p = 0.013, Fisher's Exact Test). There were no significant differences for other demographic variables such as income (p = 0.176, Fisher's Exact Test), education (p = 0.232, Fisher's Exact Test, or marital status (p = 0.519, Fisher's Exact Test).

There were significant differences on some of the dependent measures between online and in-person participants. Independent t-tests compared the difference between the in-person participants' responses and the online participants' responses on each of the dependent variables. To correct for multiple comparisons, the Bonferonni correction method was calculated ($\alpha/14 = .003$). Online participants had significantly higher scores on the parental caregiving scale of 'Discourages Closeness' ($t(39) = 4.030$, $p < .001$) and romantic attachment scale of 'Avoidance' ($t(39) = -4.666$, $p < .001$). In-person participants reported higher levels of antenatal attachment 'Quality' ($t(36) = 4.913$, $p < .001$) and overall antenatal attachment ($t(36) = 4.668$, $p < .001$). (See Table 12)

Next correlations and t-tests were run to examine any relationships between maternal demographic factors and the dependent variables. Correlations revealed that maternal and gestational age were not significantly related to any of the dependent variables. Independent samples t-tests revealed that the only significant difference was for ethnicity (specifically the dichotomous variable of white or non-white) and relationship satisfaction ($t(36) = 3.236$, $p = .003$), as well as antenatal depression ($t(36) = -4.956$, $p < .001$), where the two non-white

participants who completed these measures reported less relationship satisfaction and higher antenatal depressive symptoms.

As ethnicity was shown to cause differences on the different dependent variables, correlations between the dependent variables were analysed both as bivariate correlations with no factors controlled and partial correlations controlling for ethnicity. Due to the large number of correlations being run, in order to lower the chances Type I errors, Bonferroni's corrected *p*-level was calculated as α/k (.05/14 = .003). Hypotheses testing of the dependent variable scales is explained using the partial correlations. Due to the small sample size of in person participants, a nonparametric version of an ANOVA, a Kruskal-Wallis test, was chosen to test the exploratory research question regarding state of mind regarding attachment and the dependent variables of antenatal attachment, couple caregiving, and parental caregiving.

4.3.2 Hypothesis Testing

The results of both the bivariate and the partial correlations between the dependent variables and antenatal attachment are presented in Tables 13 and 14.

4.3.2.1 Relationship between antenatal parental caregiving and antenatal attachment. It was hypothesized that there would be a significant relationship between antenatal parenting representations, as measured on the CEQ and antenatal attachment as measured on the MAAS (H1). Two of the four parental caregiving scales were significantly related with antenatal attachment. When controlling for ethnicity, 'Enjoyment' was significantly positively related to overall antenatal attachment ($r(31) = .716$, $p < .001$), 'Quality' ($r(31) = .713$, $p < .001$), and 'Intensity' ($r(31) = .582$, $p < .01$). 'Role Reversal' was also significantly positively correlated with overall antenatal attachment ($r(31) = .639$, $p < .001$), 'Quality' ($r(31) = .631$, $p < .001$), and 'Intensity' ($r(31) = .540$, p - .001) in the partial

correlations. Neither ‘Heightened’ nor ‘Helplessness’ were significantly related to any of the antenatal attachment scales after controlling for significant demographic variables.

4.3.2.2 Relationship between parental caregiving and couple caregiving. It was hypothesized that parental caregiving representations as measured by the CEQ would be significantly related to couple caregiving representations as measured by the CQ (H2). After adjusting the critical *p*-value with the Bonferroni correction, none of the associations between parental caregiving and couple caregiving met the adjusted level of significance.

4.3.2.3 Relationship between couple caregiving and antenatal attachment. It was hypothesized that there would be a relationship between antenatal attachment as measured by the MAAS and responsive couple caregiving as measured by the CQ, but not compulsive caregiving as measured by the CQ (H3). After adjusting the critical *p*-value with the Bonferroni correction and controlling for ethnicity, the associations between responsive caregiving and antenatal attachment did not meet the adjusted level of significance.

4.3.2.4 State of mind regarding attachment and antenatal attachment, couple caregiving, and parental caregiving. This exploratory research question sought to understand if differences in women’s state of mind regarding attachment were related to differences in their reports of antenatal attachment, couple caregiving, or parental caregiving (H4). A Kruskal-Wallis test found no significant relationships between maternal state of mind regarding attachment (4-way classification) and the dependent variables of couple caregiving, parental caregiving, and antenatal attachment as seen in Table 15. There was a trend towards significance for couple caregiving responsiveness ($p = .078$), where women who were unresolved reported the lowest scores on caregiving responsiveness to partner. This suggests that if the sample was larger, there may have been an effect for unresolved.

Table 12. *Differences between samples on dependent measures.*

	In-person		Online			
Subscale	M	SD	M	SD	t	p
Antenatal Parental Caregiving						
Enjoyment[a]	4.70	.217	4.300	.751	2.048	.088
Discourages Closeness[a]	1.80	.355	2.29	.399	4.030	<.001*
Heightened[a]	3.00	.657	2.94	.815	.229	.820
Helplessness[a]	1.69	.433	2.04	.558	-2.242	.031
Role Reversal[a]	3.79	.499	3.21	.717	2.979	.005
Couple Caregiving						
Responsive Caregiving[a]	4.72	.519	3.67	1.947	2.040	.059
Compulsive Caregiving[a]	3.20	.793	3.80	1.049	-1.956	.058
Romantic Attachment						
Avoidance[a]	1.85	.910	3.15	.757	-4.666	<.001*
Anxiety[a]	2.04	.918	2.65	1.082	-1.907	.064
Relationship Satisfaction	30.26	4.486	27.58	6.430	1.492	.144
Antenatal Attachment						
Quality[a]	46.15	2.693	40.66	4.482	4.913	<.001*
Intensity[a]	30.96	3.052	37.26	4.992	2.600	.017
Total[a]	81.69	4.756	72.00	8.594	4.668	<.001*
Antenatal Mental Health						
Antenatal Depression[b]	5.30	3.575	8.41	5.350	-2.122	.041
Pregnancy Anxiety[b]	17.72	3.470	21.33	5.466	-2.449	.019

Independent t-tests. *$p < .003$ (per Bonferroni correction) $df^a = 39$ and $df^b = 37$

Table 13. *Direct associations between dependent variables*

	Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1	Att Anxiety[a]													
2	Att Avoid[a]	.698**												
3	CGRespons[a]	-.168	-.387*											
4	CGCompuls[a]	.540**	.324*	-.078										
5	RelSatisfac[b]	.635**	-.555**	.146	-.422									
6	Enjoyment[a]	-.097	-.387*	.273	-.151	.096								
7	Heightened[a]	.230	-.040	.200	.271	-.088	.474**							
8	Helpless[a]	.252	.285	-.206	.364*	-.305	-.116	.221						
9	Role Rev[a]	-.028	-.300	.431**	-.023	-.005	.666**	.428**	-.406**					
10	AN Dep[b]	.569**	.523**	-.279	.477**	-.650**	.052	.220	.381*	-.100				
11	AN Anx[b]	.221	.224	-.128	.285	-.073	-.061	-.007	.412*	-.288	.341*			
12	AN Ax[a]	-.179	-.443**	.297	-.264	.270	.742**	.203	-.365*	.662**	-.191	-.180		
13	Q AN Ax[a]	-.293	-.452**	.206	-.279	.349*	.728**	.255	-.366*	.650**	-.285	-.304	.901**	
14	I of AN Ax[a]	-.053	-.336*	.287	-.189	.086	.623**	.101	-.275	.532**	-.010	-.006	.902**	.640**

Pearson's bivariate correlations 2-tailed significance * $p < .05$, ** $p<.01$. [a]df = 41, [b]df = 38

Bonferroni's adjusted *p*-level was .003. All underlined values did not meet the adjusted criteria

N.B. Att = Romantic attachment, CG = Couple caregiving, RelSatisfac = Relationship satisfaction, Enjoyment, Heightened, Helplessness, Role Rev = Parental caregiving, AN Dep = Antenatal depression, AN Anx = Antenatal Anxiety, AN Ax = Antenatal attachment, Q = Quality, I = Intensity

Table 14. *Associations between dependent variables after controlling for significant demographic variables*

	Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1	Att Anxiety[a]													
2	Att Avoid[a]	.656**												
3	CGRespons[a]	-.493**	-.629**											
4	CGCompuls[a]	.469**	.227	-.075										
5	RelSatisfac[b]	-.589**	-.521**	.192	-.306									
6	Enjoyment[a]	-.161	-.402*	.397*	-.158	.086								
7	Heightened[a]	.262	.050	.058	.233	-.256	-.409*							
8	Helpless[a]	.345*	.294	-.177	.310	-.289	-.012	.237						
9	Role Rev[a]	-.005	-.243	.327	.052	-.103	.731**	.433**	-.293					
10	AN Dep[b]	.494**	.464**	-.376*	.318	-.519**	.101	.241	.359*	.017				
11	AN Anx[b]	.213	.217	-.129	.285	-.051	-.055	-.013	.409*	-.283	.394*			
12	AN Ax[a]	-.292	-.522**	.422**	-.229	.214	.716**	.214	-.296	.639**	-.114	-.173		
13	Q AN Ax[a]	-.305	-.460**	.362*	-.190	.235	.713**	.296	-.289	.631**	-.120	-.301	.915**	
14	I of AN Ax[a]	-.227	-.465**	.433**	-.232	.116	.582**	.088	-.258	.540**	-.051	-.009	.916**	.687**

Pearson's partial correlations controlling for ethnicity, marital status, education, and income. [a]n = 41, [b]n = 37, df = 31

2-tailed significance * p < .05, ** p<.01

Bonferroni's adjusted *p*-level was .003. All underlined values did not meet the adjusted criteria

N.B. Att = Romantic attachment, CG = Couple caregiving, RelSatisfac = Relationship satisfaction, Enjoyment, Heightened, Helplessness, Role Rev = Parental caregiving, AN Dep = Antenatal depression, AN Anx = Antenatal Anxiety, AN Ax = Antenatal attachment, Q = Quality, I = Intensity

	Secure (n=11) Md	Dismissing (n=6) Md	Preoccupied (n=5) Md	Unresolved (n=4) Md	X^2	*Sig*
CG Respon	4.71	5.00	5.00	4.21	6.81 (3)	.078
CG Compuls	2.75	2.81	3.13	3.44	3.54 (3)	.316
Enjoyment	4.75	4.75	4.63	4.50	4.34 (3)	.227
Heightened	2.80	3.00	3.00	3.20	1.16 (3)	.762
Helpless	1.43	1.75	1.75	1.86	2.52 (3)	.472
Role Rev	4.00	3.88	3.50	3.88	3.40 (3)	.335
AN Ax Tot	84.0	81.5	78.0	83.0	1.28 (3)	.733
AN Ax Qual	48.0	46.0	46.0	47.0	2.00 (3)	.573
AN Ax Inten	31.0	31.5	32.0	31.0	0.16 (3)	.984

Kruskal-Wallis H Test. n=26

N.B., CG = Couple caregiving (Responsiveness and Compulsion), RelSatisfac = Relationship satisfaction, Enjoyment, Heightened, Helplessness, Role Rev = Parental caregiving, AN Ax = Antenatal attachment, Q = Quality, I = Intensity

Table 16. *Differences in dependent measures by security or insecurity*

	Secure (n=11) Md	Insecure (n=15) Md	*U*	*Sig*
CG Respon	4.71	4.92	59.00	.222
CG Compuls	2.75	3.13	68.50	.466
Enjoyment	4.75	4.63	59.50	.225
Heightened	2.80	3.00	74.50	.675
Helpless	1.43	1.64	63.00	.308
Role Rev	4.00	3.88	51.50	.184
AN Ax Tot	84.0	82.0	63.50	.321
AN Ax Qual	48.0	46.0	56.00	.164
AN Ax Inten	31.0	31.0	81.50	.958

Mann-Whitney U Test. n=26

N.B., CG = Couple caregiving (Responsiveness and Compulsion), RelSatisfac = Relationship satisfaction, Enjoyment, Heightened, Helplessness, Role Rev = Parental caregiving, AN Ax = Antenatal attachment, Q = Quality, I = Intensity

Table 17. *Hierarchical regression analysis predicting overall antenatal attachment.*

	B	*SE B*	β
Step 1			
Constant	81.40	5.79	
Avoidance	-3.03	1.18	-0.40*
Responsiveness	0.84	0.93	0.142
Step 2			
Constant	36.59	8.92	
Avoidance	-1.59	0.87	-.021
Responsiveness	-0.26	0.71	-0.04
Enjoyment	7.23	2.16	0.47**
Role Reversal	3.73	1.80	0.30*

N. B. R^2 = .22 for Step 1; ΔR^2 = .41 for Step 2 (p < .001). * p < .05, ** p<.01 n = 41
Avoidance = Adult Attachment Avoidance, Responsiveness = Couple Caregiving Responsiveness, Enjoyment and Role Reversal = Parental Caregiving

Following the lead of previous attachment research (Fonagy et al. 1999; Steele et al. 1999) the four classifications were collapsed into a 2-way group of secure-insecure, this is standard practice with smaller research samples. Mann-Whitney U tests revealed that there were no significant relationships between maternal state of mind regarding attachment (secure-insecure) and the dependent variables of couple caregiving, parental caregiving, and antenatal attachment as seen in Table 16.

4.3.2.5 Relationship between maternal romantic attachment and antenatal attachment. It was hypothesized that maternal romantic attachment 'Avoidance', but not attachment 'Anxiety', as measured by the ECR-R would be significantly related to antenatal attachment as measured by the MAAS (H5). This hypothesis was supported. After controlling for ethnicity and the adjusted critical *p*-value, maternal romantic attachment 'Avoidance' was significantly negatively correlated to overall antenatal attachment ($r(31) = -.522$, $p = .001$), but not the individual scales of 'Quality' and 'Intensity'. Maternal romantic attachment 'Anxiety' was not significantly correlated with any antenatal attachment scales.

4.3.2.6 Associations between relationship satisfaction and antenatal attachment and caregiving. It was hypothesized that relationship satisfaction as measured by the RAS would be significantly related to antenatal attachment (MAAS), couple caregiving (CQ), and antenatal parental caregiving (CEQ) (H6). There were no significant correlations among relationship satisfaction and antenatal attachment scales, couple caregiving responsiveness, or any antenatal parental caregiving scale.

4.3.2.7 Pregnancy specific mental health symptoms and antenatal attachment and parental caregiving. It was hypothesized that antenatal depression symptoms (EPDS) and pregnancy specific anxiety (PAQ) would be significantly related to antenatal attachment (MAAS) and antenatal parental caregiving (CEQ) (H7). After controlling for ethnicity and the adjusted critical *p*-value the pregnancy specific mental health variables (depression and anxiety) were not associated with any antenatal attachment scales or antenatal parental caregiving scales.

4.3.3 Exploratory Analyses

Given the significant associations between antenatal attachment and the scales of parental caregiving 'Enjoyment' and 'Role Reversal', 'Responsive' caregiving to partner, and romantic attachment related 'Avoidance', further analyses were run to help explain which of these variables was the most predictive of antenatal attachment. A hierarchical multiple regression was used to determine the ability of parental caregiving 'Enjoyment' and 'Role Reversal' to predict overall antenatal attachment above and beyond the previously identified predictors of attachment related 'Avoidance' and 'Responsive' caregiving found in Walsh et al.'s, (2014) study. 'Responsive' couple caregiving and attachment 'Avoidance' were entered in the first step and explained 22.8% of the variance. When parental caregiving 'Enjoyment'

and ‘Role Reversal’ were added in step 2, they increased the variance of the model to 63.5%, ($F(4, 35) = 15.203$, $p < .001$). In the final model, only the parental caregiving scales were significant (see Table 17).

4.4 Discussion

The main goal of this study was to investigate if antenatal parental caregiving representations would be related to antenatal attachment, as couple caregiving representations had been found to be a mediating link between adult romantic attachment and antenatal attachment. Two scales of parental caregiving representations did show a positive significant relationship with antenatal attachment. Higher scores on parental caregiving ‘Enjoyment’ and ‘Role Reversal’ both led to higher scores on the antenatal attachment 'Quality’, ‘Intensity’, and overall attachment scales. Typically, higher antenatal attachment scores are considered to mean that the mother has a stronger investment in her relationship with her foetus (Condon, 1993). Further, when explored in a hierarchical multiple regression, parental caregiving ‘Enjoyment’ and ‘Role Reversal’ both predicted overall antenatal attachment after controlling for attachment related ‘Avoidance’ and ‘Responsive’ caregiving to partner. The ‘Heightened’ parental caregiving scale and the parental caregiving ‘Helplessness’ scale were not significantly related to antenatal attachment. The ‘Enjoyment’ scale of the parental caregiving measure represents mothers who are balanced and value their role as caregivers (J. Brennan & George, in prep). Therefore, the positive relationship between the two scales of ‘Enjoyment’ and ‘Role reversal’ and antenatal attachment is empirically sound and supports the hypothesis. Parental caregiving ‘Role Reversal’ is meant to be reflective of dysregulated caregiving that constricts a parent’s ability to think about their role as a caregiver, therefore describing their child in an idealized manner which is often not reflective of a balanced description of

caregiving (J. Brennan & George, in prep). The positive relationship between this scale as it has been conceptualized and antenatal attachment is surprising. However, it is possible that women are imagining their child and their experiences of caregiving in an idealized manner because they have yet to experience this role and the fantasy of caregiving and of their imagined child is actually still idealized.

'Heightened' parental caregiving is a manifestation of some anxiety and uncertainty about the role of caregiver, so it would be expected that there might be a negative relationship between this scale and the quality and intensity of antenatal attachment. Interestingly, there were no significant associations, but even the low effect associations that were present were in a positive direction. Parental caregiving 'Helplessness' is reflective of caregiving dysregulation where the caregiver is so overwhelmed by caregiving stress that they abdicate care or become out of control. This scale has been the strongest predictor of maternal stress and maternal reported child behaviour problems in previous research (J. Brennan & George, in prep, Røhder et al, 2013; see validity study in Chapter 3). When no demographic variables were controlled for, parental caregiving 'Helplessness' was negatively correlated with both the 'Quality' of the antenatal attachment and overall antenatal attachment as would be expected. However, once ethnicity was controlled for the association was no longer significant. These results support the concept of antenatal parental caregiving representations being related to antenatal attachment, however they do not fully support the hypothesis and therefore mean that further research on parental caregiving representations and antenatal attachment must be done to truly understand if there is a relationship.

The hypothesised relationship between parental caregiving and couple caregiving was initially supported, finding that parental caregiving 'Enjoyment' was positively related to

‘Responsive’ couple caregiving and parental caregiving ‘Helplessness’ was positively related to couple caregiving ‘Compulsiveness’. However, again, after correcting the critical significance value for multiple tests, this finding was not significant, most likely due to the small sample size. This continues to be an area that requires further research with a larger sample size in order to fully understand if this association is present. To my knowledge, this is the first study to measure parental caregiving representations and couple caregiving representations, although couple caregiving has been found to be associated with parenting (e.g. Millings et al., 2013).

In support of Walsh et al.’s (2014) proposition that antenatal attachment is actually a concept which is reflective of caregiving representations, not attachment representations, this study also found that ‘Responsive’ partner caregiving was significantly related to antenatal attachment representations. However, this association was no longer significant after correcting for multiple tests. Unfortunately, due to the very small sample size of this study, it was not possible to investigate if couple caregiving ‘Responsiveness’ is a mediating factor between attachment related ‘Avoidance’ and antenatal attachment as Walsh et al. had found. It is important that this study be replicated to further explore the notion that the caregiving behavioural system is most likely what influences the antenatal relationship between a woman and her foetus.

Finally, the lack of differences in couple caregiving, parental caregiving, and antenatal attachment across different attachment classifications was not an unexpected finding. Ravitz et al. (2010) provides a review of adult attachment measures and explains that interview based measures (such as the Adult Attachment Projective) often do not correlate with the questionnaire measures used in romantic attachment, or in this case, romantic caregiving (for

further discussion of this, please see Study 2: Chapter 3 section 3.1.2.2), so it would not be surprising that the AAP would not correlate with couple caregiving. Currently, to my knowledge, there have been no reported studies which have measured the expectant mothers' state of mind regarding attachment and her feelings towards her unborn baby. Some studies have found links between her state of mind regarding attachment during pregnancy and her child's attachment security after birth (See Study 1: Chapter 2 for a review), others have measured her state of mind regarding attachment during pregnancy and measured her caregiving representations through interview methodology, but this is the first study to measure state of mind regarding attachment and a parental caregiving questionnaire.

The anticipated relationship between adult romantic attachment 'Avoidance' and antenatal attachment was supported in this sample, as was the hypothesis that there would not be a relationship between adult romantic attachment 'Anxiety' and antenatal attachment. This sample comprised women in their 3rd trimester of pregnancy, so based on the findings of Mikulincer and Florian (1999) and Walsh et al. (2014) it was not anticipated that attachment anxiety would have a direct relationship with antenatal attachment. This finding replicates the previous research, lending further support to the notion that adult attachment avoidance is a related to the antenatal relationship.

Relationship satisfaction was not related to antenatal attachment, couple caregiving, or parental caregiving after controlling for ethnicity and the adjusted significance level. This did not support the original hypotheses, which suggested that they would all be related. This was a surprising finding, as couple caregiving 'Responsiveness' and antenatal attachment have both been linked with relationship satisfaction in previous samples (Condon & Corkindale, 1997; J.A. Feeney, 1996). However, the hypothesised association between relationship satisfaction

and parental caregiving was based on a theoretical assumption originally defined by Bowlby (1969/1982) and later explained by George and Solomon (2008a), but to my knowledge, remained untested prior to this study. Condon and Corkindale used the Dyadic Adjustment Scale (Spanier, 1976) to measure the relationship satisfaction. This measure comprises four subscales; 'Satisfaction', 'Consensus', 'Affectional Expression', and 'Cohesion'. These four scales can also be combined to create a total score. While both 'Quality' and 'Intensity' of antenatal attachment were significantly correlated to the total adjustment score, neither were significantly associated with the 'Satisfaction' subscale, the global (overall) antenatal attachment scale was significantly related to the 'Satisfaction' subscale, however the effect size was very small (.17) suggesting that this effect may be difficult to detect in smaller sample sizes. J.A. Feeney (1996) found that while couple caregiving 'Responsiveness' and marital satisfaction were indeed associated, her study measured both partners and it appears that it was partners' 'Responsive' caregiving that predicted marital satisfaction. So, it is likely, that the hypothesised links between relationship satisfaction and the dependent variables of antenatal attachment, couple caregiving, and parental caregiving are more nuanced than was investigated in the current study. This may be better studied with reports from both partners on relationship satisfaction and couple caregiving as J.A. Feeney did.

The associations between antenatal depression and couple caregiving are in line with the findings of Walsh et al. (2014) who found that good mental health was positively related to 'Responsive' couple caregiving and negatively related to 'Compulsive' couple caregiving. The current study found that higher reports of antenatal depression symptoms was negatively correlated with 'Responsive' couple caregiving and positively correlated with 'Compulsive' couple caregiving. Both pregnancy anxiety symptoms and antenatal depression symptoms

were positively related to parental caregiving 'Helplessness'. This finding supports previous research by George and Solomon (2011) who found that maternal helplessness in mothers of children aged 1.5-11 was related to higher reports depressive and anxious symptomology. There were no significant relationships between antenatal mental health and the other parental caregiving scales. Nor was there a significant association between antenatal mental health and antenatal attachment. Given that both Condon and Corkindale (1997) and Walsh et al. (2014) had found relationships between anxiety symptoms and antenatal attachment, it is surprising that the relationship here was not significant. However, there was a trend towards significance for a negative correlation between pregnancy related anxiety and quality of antenatal attachment (p = .075). Both Condon and Corkindale and Walsh et al.'s studies found that the strongest relationships with anxiety were found in the 'Quality' subscale.

4.4.1 Strengths of the Current Study

The current study appears to be the first study to attempt to blend the multiple theoretical orientations of attachment research by measuring the antenatal relationship from the developmental, social psychological, and antenatal attachment perspectives. By examining the relationships between these orientations, we can see that both parental and couple caregiving are both contributors to a mothers' developing relationship with her child-to-be, which suggests that the antenatal relationship is very likely an extension of her caregiving behavioural system. Identifying this underlying mechanism is imperative in determining methods of intervention.

4.4.2 Limitations of the Current Study

The most obvious limitation of this study is the sample size, this restricted the statistical analyses, meaning that the study was unable to fully replicate the previous research

(i.e. testing 'Responsive' couple caregiving as a mediating variable). The principal reason for the small sample size is most likely the restrictions for inclusion in the study; women had to be in the 3rd trimester of pregnancy with their first child, living with their partner, and have a low-risk pregnancy. Future research should consider how these restrictions for inclusion may also restrict their recruitment and determine if they are necessary to the construct being studied.

Testing so many variables at once also meant that there was a possibility of detecting a relationship that was not actually present, this was accounted for by Bonferonni corrections, however the corrections themselves create another possible error – not detecting a relationship that may be present because the corrections are so stringent. As it was of interest to study how these variable interacted, the best way to move forward on this in future research is to ensure a much larger sample size than the current study. Due to the small sample size, caution should be taken when interpreting the significance of the findings based on probability alone, the effect size (*r*) also merits consideration in determining the strength of the associations. In all correlations, which were deemed significant based on their probability (*p*), the associations were also quite strong, suggesting a large effect size.

Additionally, the homogeneity of the sample makes generalisability difficult. This was a very high functioning, non-clinical sample, therefore it is hard to draw any clinical implications from the findings. Similar research should be done with women who are low SES and with women who have been diagnosed with severe mental illness. Finally, by only including participants in the 3rd trimester of pregnancy, this study found no effects of gestational age, as this has been found to be a common predictor of antenatal attachment (Condon & Corkindale, 1997; Mikulincer & Florian, 1999; Yarcheski et al., 2009; Walsh et

al., 2014), it would be of interest to understand how gestational age may impact parental caregiving representations throughout pregnancy as well.

4.4.2 Conclusion

This study aimed to replicate and extend the findings of Walsh and colleagues (2014) by also investigating the contribution of parental caregiving to the antenatal relationship. The current study did indeed find very similar associations to those that were found by Walsh and colleagues and these findings lend further support to the notion that antenatal representations are not likely a product of the attachment relationship, which serves the evolutionary goal of *seeking* protection for the purposes of our own survival, but instead more likely the product of a caregiving relationship, which serves the evolutionary goal of *providing* protection to ensure the survival of our offspring.

Chapter 5: Study 4: Becoming a Mother: The Child's First Year

While the mother is experiencing a transition during her first year of being a mother, individual differences in her experience may impact her child's attachment to her. The security of a child's attachment has been found to be related to parental caregiving (see George & Solomon, 2008a for a review), parenting stress (Jarvis & Creasey, 1991), and relationship satisfaction (P. Howes & Markman, 1989). Additionally, although there do not appear to be any published studies which report the associations of either romantic attachment or couple caregiving and child attachment security; romantic attachment and couple caregiving have each been studied as contributing to parenting behaviours, emotions, and cognitions (see Jones et al., 2015 for a review). The goal of the study presented in this chapter was to investigate the impact of the mother's adult romantic attachment, couple and parental caregiving representations, relationship satisfaction and parental stress on the security of her child's attachment to her.

5.1 Introduction

5.1.1 Parental caregiving and attachment. Parental caregiving representations have been studied in various, theoretically linked, yet empirically different ways. Researchers have developed interviews such as the Parent Development Interview (Aber et al., 1985), the Working Model of the Child Interview (Zeanah et al., 1994), and the Caregiving Interview (George & Solomon, 1989b/1999/2008b) which have each shown concordance with children's attachment security. Specifically, of interest to this study is the Caregiving Interview, as the questionnaire measure of parental caregiving used in the current study was derived from maternal responses to the Caregiving Interview.

In two papers reporting on a single study, George and Solomon (1989a, 1996) have reported strong associations between maternal caregiving security and child attachment security as measured with the Strange Situation Paradigm (Ainsworth et al., 1978). With a sample of 32 mothers and their 6-year old children, the researchers found that flexible integration (which is referred to as caregiving 'Enjoyment' in the CEQ) was most closely related to the secure attachment classification for children. Deactivation (referred to as 'Discourages Closeness' in the CEQ) was most closely related to insecure-avoidant attachment classifications in children. Cognitive Disconnection (referred to as 'Heightened' in the CEQ) was most closely related to insecure-ambivalent attachment classifications in children. Finally, 'Helplessness' was most closely related to controlling classifications in children. The controlling classification is analogous to the disorganised classification in younger children. There were classification matches 81% of the time (kappa = .75, t= 7.20, $p < .001$). This suggests that there should be individual differences in parental caregiving representations based on children's attachment security.

5.1.2 Parenting stress and attachment. Jarvis and Creasey (1991) have suggested that parenting stress may be related to infant attachment security because undue stress may cause the parent to be more psychologically unavailable to their child. In a sample of 32 mother-father-infant triads, the researchers assessed parental coping mechanisms as possible mediators between parenting stress and child attachment security when their child was 18-months old. The researchers measured attachment with the Attachment Q-Set (Waters & Deane, 1985), stress with the Parenting Stress Index (Abidin, 1995), and a questionnaire related to types of coping. The researchers found moderate negative correlations between overall parenting stress and child attachment security (-.40 for mothers and -.51 for fathers),

suggesting that the more stress reported by the parents, the less secure the child's attachment to mother and father. Positive reappraisal (e.g., 'I came out of the experience stronger than I went in') was found to be the only significant mediator between parenting stress and child attachment security, acting as a buffer for children whose parents had reported high levels of parenting stress. Jarvis and Creasey's (1991) findings suggest that there should be differences in maternal reported parenting stress between children's attachment groups.

5.1.4 Relationship satisfaction and attachment. P. Howes and Markman (1989) studied couples' relationship satisfaction across the transition to parenthood to determine if it impacted child attachment. The researchers conducted a longitudinal study which followed 150 couples before marriage and continued to follow them and their families over time. Before marriage the couples reported on relationship satisfaction, conflict, and communication. During one of the follow up points, 20 of the couples with children ages 1-3 were assessed again for relationship satisfaction, marital conflict, communication and additionally, for child attachment security (as assessed by the Q-Set; Waters & Deane, 1985). The results indicated that mother's reports of both pre-marital and post-marital relationship satisfaction were related to her child's attachment security. When the mother reported higher levels of relationship satisfaction, her child was rated higher for security on the Attachment Q-Set. These results suggest that there should be individual differences in maternal relationship satisfaction between children's attachment groups.

5.1.5 Self-report measures of attachment and parenting. Jones et al. (2015) compiled an extensive review of studies which measured parent's self-reported attachment styles and parenting behaviours, emotions, and cognitions. While this review did not specifically target the transition to parenthood, it brought together the evidence of more than

60 studies which have examined parental romantic attachment and the associations with parenting. The researchers suggest that the review provides compelling evidence to suggest that self-reported attachment styles are related to parenting outcomes in general. While most infant-parent *attachment* research has followed the developmental psychology tradition of measuring adult attachment as the state of mind regarding attachment (see Literature review chapter 1.2.2.3 for a further review), rather than romantic attachment, the study of *parenting* is often measured in both ways. Jones et al. explain that although there is a lack of association between measures of romantic attachment and state of mind regarding attachment, there is often overlap in the attachment related constructs that each of them are associated with and suggest that parenting is a construct that overlaps as well. This suggests that although developmental attachment researchers have studied parenting and social psychological attachment researchers have studied parenting, there remains a gap in the literature which tries to understand what, if any, associations there might be between self-reported measures of romantic attachment and caregiving to the security of the child's attachment to his or her mother.

5.1.6 The current study. Given that the relationships between self-report measures of adult attachment and children's attachment security are not currently reported in the literature, the current study aimed to measure individual differences in maternal reported romantic attachment and couple caregiving of mothers of children with different attachment classifications. Additionally, the current study also investigated individual differences in parental caregiving representations, maternal reported parenting stress, and relationship satisfaction between mothers with children of differing attachment classifications. Specifically, the research asked the following research questions:

1. Are differences in adult romantic attachment related to differences in infant attachment?
    a. There does not appear to be any published research which reports measuring infant attachment and the mother's adult romantic attachment. Therefore, this remains an exploratory research question.
2. Are differences in couple caregiving related to differences in infant attachment?
    a. Again, there does not appear to be any published research which reports measuring infant attachment and the mother's couple caregiving representations. Therefore, this also remains an exploratory research question.
3. Are differences parental caregiving related to differences in infant attachment?
    a. It is predicted that there will be significant differences in maternal parental caregiving representations across infant attachment groups. George and Solomon have previously reported that mothers' caregiving representations (as measured with an interview) are associated with the security of their child's attachment to them at 5 years old (George & Solomon, 1989a, 1996; Solomon & George, 1999).
4. Are differences in parenting stress related to differences in infant attachment?
    a. It is hypothesised that parenting stress will be significantly different across infant-mother attachment groups, specifically the parent-child dysfunctional interaction scale, which is reflective of the mother's perception of her interactions with her child. Coyl, Roggman, and Newland (2002) have found that when mothers are dissatisfied with their interactions with their child (as

measured with the parent-child dysfunctional interaction scale) it is associated with infant attachment security.

5. Are differences in maternal relationship satisfaction with partner related to differences in infant attachment?
    a. Following from P. Howes and Markman (1989) it is expected that there will be individual differences between attachment groups, with mothers of secure children reporting the highest levels of relationship satisfaction.

5.2 Methods

5.2.1 Participants

Nineteen first-time mothers of children between the ages of 11 and 15 months (M = 12.32, SD = 1.293) were included in the following analyses. These mothers were recruited from two different methods; Six of the mother-child dyads had been recruited for a longitudinal study (see Study 6: Chapter 7) following mothers from their 3rd trimester of pregnancy (note: one participant's observational measure was interrupted and therefore could not be coded, so she is not included in this analysis). Thirteen of the mother-child dyads were recruited specifically for this study, leading to a sample of 19. Participants who were part of the longitudinal study were recruited Facebook and Twitter advertisements, flyers around the community, and through antenatal classes during their pregnancy. Participants who were only part of this study were recruited through letters sent home through local nurseries, The Norfolk Bump, Baby, and Toddler Show, flyers in the local community, and through participant referrals.

The mothers ranged in age between 28 and 37 years (M = 33.0, SD = 3.00). The majority of participants identified as white (89.5%), married (63.2 %), and educated with at

least a university degree or higher (84.2%). More than half the sample (63.2%) reported and income higher than £52,000 while only one participant reported an income below £15,599.

5.2.2 Measures

5.2.2.1 Caregiving. This study measured both parental caregiving and couple caregiving. Parental caregiving focused on the mother's appraisals of herself as a caregiver to her child. Couple caregiving focused on the mother's appraisal of herself as a caregiver to her partner.

5.2.2.1.1 Parental caregiving. Mother's parental caregiving was measured using the Caregiving Experiences Questionnaire (CEQ; J. Brennan & George, in prep). This measure is described in detail in Chapter 3. The total measure comprises five scales ('Enjoyment', 'Discourages Closeness', 'Heightened' caregiving, 'Helplessness', and 'Role Reversal'), however, following the validity study in Chapter 3, only three of the scales were found to be valid in a UK population, therefore, only those three were suitable for analysis in this study. The validity study found that the 'Heightened' scale had an acceptable internal reliability of $\alpha = .70$, however in this particular study, the internal reliability was $\alpha = .23$ which is extremely poor, therefore, this scale was also excluded from the analyses which are presented in the results portion of this chapter. The 'Helplessness' scale ($\alpha=.80$) is reflective of dysregulated caregiving and is prominent when mothers feel overwhelmed by caregiving stress (e.g. 'I feel helpless as a mother'). The 'Role Reversal' scale ($\alpha=.78$) is also reflective of dysregulated caregiving, but these mothers have blocked caregiving distress from their conscious thought and therefore explain their children in an idealised manner, suggesting that they do not cause any caregiving stress to the mother and in fact, almost help to provide care to the mother in

her times of stress (e.g. ‘My child and I are so close. I can just sit there and tell him or her if I had a bad day and s/he understands’).

5.2.2.1.2 Couple caregiving. Mothers’ caregiving to their partners was assessed using the Caregiving Questionnaire (CQ; Kunce & Shaver, 1994). The CQ is a 32-item questionnaire designed to assess individual differences in adults’ romantic caregiving systems. Items are scored on a 6-point Likert-type scale from 1 (*strongly disagree*) to 6 (*strongly agree*). Scores are averaged for each scale. The CQ is comprised of 4 scales, 3 positive and 1 negative: ‘Proximity’, ‘Sensitivity’, ‘Cooperation’, and ‘Compulsive’ caregiving. J. A. Feeney (1996) found that the three positive scales are generally highly correlated with one another and recommended combining proximity, sensitivity, and cooperation to achieve a responsive caregiving scale. This scale has been used in studies which measured attachment and caregiving to partner (J. A. Feeney, 1996; Millings & Walsh, 2009). In this study, the three positive scales were also correlated (*r* ranging from .354-.582, all significant), so the positive scales were collapsed to create a ‘Responsive’ caregiving scale (α = .88). The ‘Responsive’ and ‘Compulsive’ caregiving scales were used for the analyses in this study. The negative scale, ‘Compulsive’ caregiving (α = .81), is reflective of the mother’s propensity to become overly invested in her partner’s problems, (e.g. ‘I tend to take on my partner’s problems – and then feel burdened by them’).

5.2.2.2 Maternal parenting stress. Mother’s parental stress was measured with the Parenting Stress Index – Short Form (Abidin, 1995). This is a standardized measure used in both clinical work and research which measures three scales: ‘Parental Distress’ (α = .93), ‘Parent-Child Dysfunctional Interaction’ (α = .68), and ‘Difficult Child’ (α = .69). These scales can be added together to derive a Total Stress Score (α = .90). Mothers rated each

statement on a 5-point rating scale (1 = *strongly disagree* to 5 = *strongly agree*). The 'Parental Distress' scale is reflective of the mother's own perception of her parenting competence, her relationship with her partner and other social support networks, and other stressors in her life which are impacted by her being a mother (e.g. 'I feel trapped by my responsibilities as a parent') The 'Parent-Child Dysfunctional Interaction' scale is reflective of the mother's perceptions of the interactions between herself and her child as meeting her expectations (e.g. 'My child smiles at me much less than I expected'). The 'Difficult Child' scale reflects the mother's assessment of her child's temperament and behaviour (e.g. 'I feel that my child is very moody and easily upset'). The PSI-SF is validated for mothers aged 18-60 with children between the ages of 1 month and 12 years.

5.2.2.3 Adult attachment. Adult attachment for this study was measured as adult romantic attachment with the Experiences of Close Relationships – Revised questionnaire (ECR-R; Fraley et al., 2000). The ECR-R is a 36-item questionnaire designed to measure adult romantic attachment. The questionnaire yields two scales: 'Anxiety' ($\alpha = .90$) and 'Avoidance' ($\alpha = .92$). Mothers rated each statement on a 7-point rating scale (1 = *Strongly Disagree* to 7 = *Strongly Agree*). Attachment 'Anxiety' is reflective of how much mothers may worry that their partners will be available to them (e.g. 'When my partner is out of sight, I worry that he or she might become interested in someone else'). Attachment 'Avoidance' is reflective of the amount of intimacy and dependence that a mother is comfortable with in her relationship (e.g. 'I prefer not to show a partner how I feel deep down'). Scores are averaged for each scale.

5.2.2.4 Relationship satisfaction. Relationship satisfaction was measured with the Relationship Assessment Scale (RAS; Hendrick, 1988). The RAS is a 7-item self-report

measure of relationship satisfaction. Items are reverse coded where necessary and a total continuous scale is derived where higher scores equal higher levels of satisfaction. Further description of this measure can be found in Chapter 4, Section 4.2.2.4.

5.2.2.5 Child attachment. The security of the child's attachment with his or her mother was assessed with the Strange Situation Paradigm (SSP; Ainsworth et al., 1978). The SSP is a validated laboratory assessment to measure the quality of the child-parent attachment. During the assessment, the child is introduced to moderate stressors including a stranger entering the room, the mother leaving the child with the stranger, and the mother leaving the child alone in the room. The mother is able to see the child on a computer from the next room via the recording cameras during times of separation. The assessment consists of eight episodes in total, each meant to last 3 minutes, however, if the child becomes overly distressed during the separations from the mother, the mother is sent back into the room early.

The important area of focus for understanding the child's attachment security is not how upset they become at the separation, instead it is the balance between attachment and exploratory behaviour during the two reunions when the mother returns to the room. The video of the entire observation is coded, yet specific attention is paid to the two reunions (3 minutes each). The author coded the videos and was trained by Judith Solomon. Ainsworth's original classification system included three groups of attachment behaviour: secure, insecure-avoidant, and insecure-ambivalent based on how children balanced these two systems. Later, the category of disorganized was introduced (Main & Solomon, 1986, 1990) Each of these classification are further explained in the literature review 1.1.2 (organised) and 1.2.1 (disorganised).

5.2.3 Procedure

Mother-child dyads who lived in the Norfolk, UK area who responded to recruitment materials were first screened by telephone or email to ensure that they met the inclusion criteria which were that this was their first child, their child had not been diagnosed with any developmental disabilities, they lived with their partner, and they were willing to come to the university to take part. The study was described to mothers by saying that during their visit, we will see how their child reacts to their comings and goings. This was said in email by stating: 'We do this to see how your child handles this type of situation in a new place and to understand a little bit about how you and your child are together. Additionally, another person, who your child has not met will come in and out of the room as well. The situation is designed to be an imitation of real life, by including very brief separations between you and your child, as well as the introduction of new people to your child. We will be video recording this observation and you will be able to see your child the entire time – even during the separation. You will also be asked to fill out a few questionnaires regarding your experiences as a mother over this first year and about other significant relationships in your life. The observation usually lasts approximately 20-30 minutes and the questionnaires take approximately 20-30 minutes, but I suggest that you plan a total of 90 minutes for the appointment to be on the safe side.' Phone conversations followed a similar description of the procedure.

When participants arrived at the university, they were met and directed to the warm up/play room in the Developmental Dynamic Laboratory in the School of Psychology. There, the research was then described to the parent again, the parent was provided with an information sheet about the study which contained frequently asked questions about the study, information on how their data would be kept confidential, information about how to withdraw

from the study after participation, along with a reminder that they could withdraw from participation at any time during the study as well, and contact information for the researcher, researcher's supervisor, and Head of School and the Ethics Committee at UEA School of Psychology. The participant was asked to provide informed consent for both themselves and their child to participate. In keeping with a request from the NHS ethics board, participants were asked to provide the contact information of their GP or paediatrician so that if they disclosed the desire to harm themselves or their child, the researcher would be able to contact their GP or paediatrician via telephone within 36 hours or less to ensure proper follow-up care would be received. Participants were also provided with a list of local mental health and parenting resources.

Once participation began, mothers started by completing questionnaires. They remained in the warm up room with their child and I tried to engage their child with toys and minimise distractions for their mothers to the best of my ability. While this meant that mothers were not able to complete the forms in a distraction-free setting, this method was chosen so as not to put any further separation distress on the child, as they would shortly be taking part in the Strange Situation Paradigm (SSP; Ainsworth et al., 1978). Following completion of the questionnaires, the SSP procedure was explained in detail to the mother, along with a reminder that she would not need to memorise this because the stranger would give her cues. She and her child were then escorted into the observation room where the SSP was run. Following the SSP, the mother and child were thanked by offering the child a small toy (bath toy or board book) to thank them for their participation and they were escorted back to their car.

5.3 Results

5.3.1 Analysis Plan

As the sample was small, non-parametric versions of ANOVA and t-tests were chosen (Kruskall-Wallis and Mann Whitney-U respectively). Kruskall-Wallis tests examined the differences in a 4-way classification (secure, avoidant, ambivalent, and disorganised), however since the distribution of insecurity was so small (n = 7) Mann Whitney-U tests were also calculated to examine the differences in a 2-way classification (secure and insecure). There is not an option to control for significant demographic variables in these non-parametric tests, so no demographic variables were controlled for. However, mothers who were white reported significantly lower scores on the parental caregiving 'role reversal' domain than their two non-white counterparts ($t(17) = -2.262$, $p = .037$) and mothers who had university level educations or higher reported lower levels of attachment related avoidance than the three mothers with less than a Bachelor's degree education ($t(17) = 2.621$, $p = .018$).

5.3.2 Hypothesis Testing

Table 18 presents the results of the Kruskall-Wallis Test, which evaluated the differences in attachment groups at the level of all four classifications on measures of adult attachment, couple caregiving, parental caregiving, relationship satisfaction, and parenting stress. Table 19 presents the Mann Whitney-U which evaluated the differences in attachment groups at the level of two-way (secure vs. insecure) respectively for the same outcome variables.

5.3.2.1 Romantic attachment and child attachment. The relationship between infant attachment and mother's adult romantic attachment did not have an a priori hypothesis, instead this study sought to explore the relationship (H1). There were no differences in either a 4-way attachment classification or a 2-way attachment classification for either attachment

'Anxiety' or 'Avoidance'. This suggests that child attachment classifications are not likely related to differences in maternal romantic attachment.

5.3.2.2 Couple caregiving and child attachment. The relationship between infant attachment and mother's couple caregiving scores did not have an a priori hypothesis, instead this study sought to explore the relationship (H2). Maternal couple caregiving scores (caregiving responsiveness and caregiving compulsiveness) did not differ between attachment groups on either a 4-way attachment classification or a 2-way attachment classification. Again, this suggests that the differences in child attachment classifications are not likely related to maternal couple caregiving representations.

5.3.2.3 Parental caregiving and child attachment. It was hypothesised that there would be significant differences in mother's reports of their parental caregiving representations across attachment groups (H3). While parental caregiving 'Helplessness' did not differ across 4-way or 2-way groups, parental caregiving 'Role Reversal' was significantly different in the 2-way comparison (U= 14.0, p = .017): mothers of secure children had significantly higher scores on parental caregiving 'Role Reversal' than mothers of insecure children. Therefore, this hypothesis was partially supported.

5.3.2.4 Parenting stress and child attachment. It was hypothesised that there would be significant differences in maternal reports of parental stress across attachment groups, particularly the 'Parent-Child Dysfunctional Interaction' scale (H4). However, there were no significant differences in any of the stress subscales or total stress score in the 4-way or 2-way comparisons. This hypothesis was not supported.

Table 18. *Differences in dependent measures by child attachment security classifications*

	Secure (n=12) Md	Avoidant (n=4) Md	Resistant (n=1) Md	Disorganised (n=2) Md	X^2	Sig
Att Anxiety	1.86	1.92	4.61	2.33	4.78(5)	.189
Att Avoid	1.42	1.22	4.83	2.14	4.04(5)	.258
CGRespons	4.81	4.81	3.33	4.49	4.17(5)	.243
CGCompuls	3.25	2.56	4.63	2.63	4.63(5)	.201
RelSatisfac	33.0	33.0	17.0	31.5	3.76(5)	.289
Helpless	1.18	1.14	1.43	1.25	1.35(5)	.717
Role Rev	4.29	3.62	3.25	3.44	6.06(5)	.109
Stress PD	20.5	13.0	52.0	24.0	3.88(5)	.274
Stress PCDI	14.0	14.0	17.0	14.0	1.72(5)	.634
Stress DC	18.0	18.0	23.0	18.0	0.96(5)	.812
Total Stress	56.0	43.0	92.0	72.0	3.16(5)	.367

Kruskal-Wallis H Test.

N.B. Att = Romantic attachment (Anxiety and Avoidance), CG = Couple caregiving (Responsiveness and Compulsion), RelSatisfac = Relationship satisfaction, Helplessness and Role Rev = Parental caregiving, Stress PD = Parental Distress, Stress PCDI = Parent-Child Dysfunctional Interaction, Stress DC = Difficult Child.

Table 19. *Differences in dependent measures by security or insecurity*

	Secure (n=12) Md	Insecure (n=7) Md	*U*	Sig
Att Anxiety	1.86	2.06	31.0	.351
Att Avoid	1.42	1.67	31.5	.374
CGRespons	4.81	4.54	28.0	.236
CGCompuls	3.25	2.62	28.5	.252
RelSatisfac	33.0	33.0	42.0	1.00
Helpless	1.18	1.21	42.0	1.00
Role Rev	4.29	3.50	14.0	0.17*
Stress PD	20.5	24.0	24.0	.902
Stress PCDI	14.0	14.0	24.5	.950
Stress DC	18.0	18.0	24.0	.901
Total Stress	56.0	56.0	24.5	.951

Mann-Whitney U Test. n=19, * $p < .05$

N.B. Att = Romantic attachment (Anxiety and Avoidance), CG = Couple caregiving (Responsiveness and Compulsion), RelSatisfac = Relationship satisfaction, Helplessness and Role Rev = Parental caregiving, Stress PD = Parental Distress, Stress PCDI = Parent-Child Dysfunctional Interaction, Stress DC = Difficult Child.

5.3.2.5 Relationship satisfaction and child attachment. It was hypothesised that there would be individual differences in relationship satisfaction between attachment groups, with mothers of secure children reporting the highest levels of relationship satisfaction. There were no significant differences across groups in a 4-way or 2-way comparison.

5.4 Discussion

The main goal of this study was to examine maternal variables which were associated with differences in infant attachment. Specifically, there is a lack of literature regarding the relationship between self-report measures of maternal romantic attachment and caregiving and the child's security of attachment. This study did not find significant differences in romantic attachment or couple caregiving scores for mothers of secure versus insecure infants. This

may be one reason why we do not see published research which measures self-report romantic attachment or couple caregiving and child attachment, the publication bias may lead to non-significant results not being published. Of course, it is also possible that the differences in the orientation of the researchers who study each area (developmental psychologists and social psychologists) may have led to the two areas not converging previously. Either way, this study did not find a relationship between self-report measures of maternal romantic attachment or maternal couple caregiving and infant attachment security.

Contrary to previous research, no differences were found across attachment groups for parental stress. This may be down to sample size. Pallant (2016) suggests that in order to be sure that a non-significant result is actually a result of no differences between groups, one should ensure that they have at least 80% statistical power. Small samples lead to lower statistical power and in the case of the Parenting Stress Index – Short Form, this sample of 19 only resulted in power between 7% and 39%, meaning that this sample was not large enough to sufficiently measure differences between groups.

One scale of parental caregiving did show individual differences between child security and insecurity: parental caregiving 'Role Reversal'. Interestingly, while this scale is meant to be reflective of dysregulated caregiving that causes the mother to be constricted and unable to see the negative in her child – it was mothers of secure children who endorsed these items higher. Taken together with the findings of the validity study (Study 2: Chapter 3) and the antenatal study (Study 3: Chapter 4) it is very likely that this scale is failing to measure its intended construct in UK samples. Although this scale remains internally consistent and seems to be a strong scale because of that, it does not seem to be demonstrating construct

validity, as the associations have consistently been significantly related to positive outcome variables, rather than the anticipated dysregulation.

There were no differences between attachment groups for maternal reports of relationship satisfaction. Again, it is possible that this is related to the sample size, as this sample did not have adequate power (7%). However, P. Howes and Markman's (1989) study also measured children's attachment security with a continuous scale from the Attachment Q-Set, so it is also hard to generalize the results to a categorical classification measure.

5.4.1 Strengths of the Current Study

Due to the lack of published research which examined mothers' adult attachment and caregiving in relation to their own children's attachment security, this study was comprehensive exploration of the relationship amongst these constructs as called for by Jones et al.'s (2014) review. As researchers continue to try and understand the distinctions amongst theoretical orientations towards attachment, it is important to understand the ways in which the constructs do converge. The use of the Strange Situation Paradigm alongside the self-report measures is currently the only way to know if these self-report measures are related to the security of the child's attachment.

5.4.2 Limitations of the Current Study

As has been the case in previous chapters, the sample size of this study is its greatest limitation, particularly as seen with low statistical power. While the distribution of security was similar to what is found in other studies (63%; van IJzendoorn, 1988), that left only seven cases of insecure attachment, meaning there was little room to recognise small differences between groups. As with the antenatal study, the restrictions of inclusion in the study to first time mothers, with children between the ages of 11 and 15 months, who lived locally and with

their partner meant women who showed interest in the study, yet were lone parents or those who had other children were unable to take part. The lack of a reliable parent-report measure of child attachment also meant that it was not possible extend this study beyond the local area by utilising the internet, as child attachment could not be measured online. This is not a limitation that is restricted to this study: the availability of a valid and reliable measure is something that would allow for the expansion of attachment research in many studies.

5.4.3 Conclusion

The main goal of this study was to examine possible child attachment group differences in maternal relationships and representations of their lives as parents. Although only one difference was found in this study, for parental caregiving 'Role Reversal', it is well known that maternal experiences impact children. Therefore, future research must try to clarify what maternal processes are most closely related to child developmental outcomes in order to be able to know how and when to help new families.

Chapter 6: Study 5: Becoming a Mother: The Mother's First Year

Although pregnancy is the beginning of the transition to parenthood, after birth the first year caring for the child continues to be a major transition for new parents. Bowlby (1973) suggested that during pregnancy, but also when caring for very young children, women are likely to show more frequent and/or urgent attachment behaviour towards their partners than they might have done prior to this time. He explained that this might seem as though the woman was being overly dependent on her partner, but that the exaggerated care-seeking behaviour is normal and does not appear to change her personality permanently. Other researchers have suggested that this change in care-seeking behaviour is not limited to women, but in fact, new parents in general (Belsky, 1985; Levy-Shiff, 1994; Rholes, Simpson, Campbell, & Grich, 2001; Simpson, Rholes, Campbell, & Wilson, 2003). A mother's mood state and perception of support during this time of transition has been consistently related to her parenting behaviours (Fleming, Ruble, Flett, & Shaul, 1988; Mills-Koonce et al., 2011; Shin, Park, & Kim, 2006). Therefore, the goal of the study presented in this chapter is to investigate the relationships between the mother's adult romantic attachment, couple and parental caregiving representations, and parental stress to understand how these processes are impacted by the transition to motherhood during the first year. Additionally, this study measures these constructs together for the first time to understand how each of the constructs are related to one another.

6.1 Introduction

Several studies have suggested that adult romantic attachment styles are related to individual differences in support seeking during times of stress (e.g. Mikulincer & Florian, 1995; Ognibene & Collins, 1998; Simpson, Rholes, & Nelligan, 1992). The transition to

parenthood is seen by many as a time of great upheaval and stress that can often lead to increased conflict within the romantic relationship[2] (Belsky, 1985; Christopher, Umemura, Mann, Jacobvitz, & Hazen, 2015; Levy-Shiff, 1994; Paley, Cox, Harter, & Margand, 2002; W Steven Rholes et al., 2001). In adult romantic attachment research, the partner is seen as a person that you both seek care from and give care to. Therefore, it would stand that during the transition to parenthood which is a stressful time, one of the most important relationships to understand would be the partner relationship between the co-parents.

6.1.1 Romantic attachment and relationship satisfaction. Research has heavily focused on the relationships between partners. Möller, Hwang, and Wickberg (2006) suggested that studying adult romantic attachment during times of stress is more provides more information than studying it when the couple is not under stress, as stress activates the attachment system. They also proposed that the transition to parenthood was an ideal time to study relationship quality as well, as the couple will be relying upon one another during this transition. They hypothesized that parents who reported both low attachment related anxiety and low avoidance (secure) would report higher relationship satisfaction than their peers who reported higher attachment related anxiety, avoidance, or both (all three being classified as insecure). The researchers recruited 251 parent couples in Sweden when their infants were between 2 and 20 weeks old. The sample consisted of both first (62%) and second time parents. The participants filled out measures of relationship quality and adult attachment. They found that the hypothesis for security was not supported, low attachment related anxiety and avoidance was not related to higher ratings of relationship satisfaction, similar to was

[2] This process has been often researched as marital satisfaction, but due to the rise in the number of couples who are cohabitating without marrying, this chapter will refer to the construct as relationship satisfaction.

found in the antenatal study in this thesis (Study 3: Chapter 4). In Möller et al.'s (2006) study, parents who reported insecurity in attachment did report significantly higher relationship dissatisfaction. When further examining the differences between first and second time parents, the researchers originally hypothesised that the links between adult romantic attachment and relationship satisfaction would be stronger for first time parents, as the second-time parents had already experienced the transition to parenthood. However, attachment security was predictive of relationship satisfaction in second time parents, but not in first. The researchers propose that while adding a child to a family for the first time is stressful, adding a second child to the family may be even more stressful to the family system, and therefore the couple's attachment needs and relationship.

Rholes et al. (2001) predicted that individual differences in attachment related avoidance and ambivalence (also termed anxiety in other work) would be related to women's perceptions of spousal support and relationship satisfaction. They predicted that women with more attachment related ambivalence would perceive their husbands to be less supportive, both before and after birth, and that they would report less satisfaction with their marriage. They did not believe that women who were high in attachment related avoidance would have similar associations, as avoidant individuals tend to seek less support during times of stress (Mikulincer & Florian, 1995; Simpson et al., 1992). The researchers followed 106 couples from 6 weeks prior to giving birth to 6 months after giving birth. They measured women's romantic attachment, their perceptions of and their partners' reports of spousal support, and both partners' assessment of relationship satisfaction. The overall finding was consistent with the main hypotheses that women who were high in attachment related ambivalence (described as attachment related anxiety by other researchers) perceived their husbands to be less

supportive both during pregnancy and in the first 6 months of parenthood and reported lower relationship satisfaction at both time periods as well. The relationship between ambivalence and relationship satisfaction was even more pronounced for women who reported lower spousal support, which further decreased during the transition, suggesting that perceived support moderates the relationship between attachment related ambivalence and relationship satisfaction. Interestingly, the correlations between attachment related ambivalence and relationship satisfaction were higher during the postpartum period than they were during the antenatal period. Rholes et al. suggested that this is theoretically supported, as stressful situations should elicit attachment behaviour which may otherwise be inactive. However, most do agree that pregnancy is also a time of upheaval and stress (see previous chapters for further support), which would mean that the antenatal period should also elicit attachment behaviour. Also consistent with their hypotheses, they found that attachment related avoidance was not associated with either women's perceived spousal support or their relationship satisfaction. They suggest that it is possible that the lack of association between the two may indicate that the transition to parenthood does not activate the attachment system of women who show high levels of attachment related avoidance.

In a separate study, reporting on the same sample, Simpson et al. (2003) examined the variability of attachment related ambivalence and avoidance across the transition to parenthood. As discussed in Chapter 1 (section 1.2.1), internal working models of attachment are believed to be adaptable and flexible. Bowlby (1980) suggested that when we are presented with information that contrasts our current working model, we adjust our model to accommodate the new information. The transition to parenthood represents a new and unknown time for each member of the couple, therefore it is possible that women who have

expectations of their partner which were congruent with their working models during pregnancy, may find that during the postpartum period, if their partner behaves in a way that is incongruent with their internal working model of attachment, it may lead to a change in the model in order to accommodate the new dynamics of their relationship. For example, if a woman reports high attachment related ambivalence during pregnancy and low perceived support, but her partner is more supportive than she expected during the postpartum period, it would be expected that she would report lower attachment related ambivalence during the postpartum period, as her model of herself as someone who receives support and her model of her partner as someone who gives support should influence her internal working model of attachment.

Simpson et al. (2003) predicted that women who were ambivalent and perceived their partner as less supporting or more rejecting of them would report higher levels of attachment related ambivalence during the postpartum period than they did during the antenatal period, as this model would be reinforced. Further, they hypothesised that if women who reported high levels of avoidance perceived themselves as seeking care from their partner and in turn perceived their partner as supportive, they would report less avoidance during the postpartum period. As hypothesised, Simpson et al. did find that women's levels of attachment related ambivalence did change from the antenatal to postpartum period, relating to their perceptions of support and rejection. Women who reported high levels of avoidance, but rated themselves as seeking more care from their partner in the postpartum period reported lower levels of avoidance during the postpartum period, but the change in avoidance was not related to women's perceptions of their partners' support or rejection. Simpson et al. propose that this finding means that for women with high attachment related avoidance, it is the woman's

perception of her own behaviour that influences changes in her internal working model of attachment, not perceptions of her partner's behaviour, as was seen with ambivalence. This could be related to the differing value of attachment relationships seen across adult attachment styles. Griffin and Bartholomew (1994) describe the differences in models of self and other that are affected by attachment related avoidance and anxiety (ambivalence). They suggest that individuals who report high levels of attachment related anxiety, but low levels of avoidance build very positive models of other, but not of self. If this is true, then women who report higher levels of ambivalence may not see themselves as worthy of care, therefore do not expect support from their partner and receiving that care reinforces their positive model of others, but also helps to change their negative model of self. Conversely, Griffin and Bartholomew describe individuals with high levels of attachment related avoidance, but not anxiety, have a positive model of self, yet a negative model of others. In this case, it is possible that women who reported higher levels of avoidance did not expect support from their partner and generally did not seek support, so when they did seek support, there were changes to their models of others, but also changes to their models of self as they possibly became more confident in seeking support. Taken together, the findings of (Möller et al. (2006) Rholes et al. (2001) and Simpson et al., (2003) suggest that there are strong associations between romantic attachment and relationship satisfaction during the transition to parenthood that warrant further study.

6.1.2 Parenting stress and relationship satisfaction. Relationship satisfaction is not just important to the couple interaction during the transition to parenthood, it has also been associated with parental stress. Deater-Deckard and Scarr (1996) found that parents who expressed higher dissatisfaction in their relationship and less perceived support from others

reported higher overall parenting stress. Hess (2008) investigated the associations between relationship satisfaction and the specific components of parenting stress. She highlighted that previous work examining the two constructs has mainly focused on parents of children with disabilities (i.e. Oelofsen & Richardson, 2006) and had exclusively evaluated overall parental stress, rather than the different components of parenting stress. In a small sample of 27 couples, Hess found negative correlations between maternal relationship satisfaction and both overall parenting stress (as measured with the Parenting Stress Index – Short Form; Abidin, 1995) and the 'Parental Distress' subscale, which is reflective of the parent's perception of their own parenting competence and their relationship with their partner. Additionally, mother's ratings of relationship satisfaction were also significantly negatively correlated with father's overall parenting stress, the 'Parental Distress' subscale, and the 'Parent-Child Dysfunctional Interaction' subscale, which is reflective of parents' perceptions of their interactions with their children as meeting their expectations. This finding suggests that a mother's dissatisfaction in her relationship with her partner can have a negative impact on her partner's relationship with their child as well as her own, highlighting an additional consequence of parenting stress. An interesting piece that is missing from Hess' (2008) study was to understand if romantic adult attachment or couple caregiving might also be related to parenting stress, as those two couple constructs are also important to understand overall couple functioning.

6.1.3 The current study. Given that most studies have not measured all of the above variables which have been found to be important to the transition to parenthood together, the main goal of this study was to examine the associations among maternal variables of adult romantic attachment, couple caregiving, parental caregiving, parenting stress, and relationship

satisfaction, in order to understand the relationships between these variables during the first year of motherhood. Following the associations found in the antenatal study (Study 3: Chapter 4), this study sought to explore those associations in first-time mothers 1 year after their child was born, to see if the associations remain the same over the transition to motherhood. Specifically, the following research questions and hypotheses were addressed:

1. Are there associations between romantic attachment and couple caregiving during the first year of motherhood?
    a. Although there seem to be no reported studies which report couple caregiving during the transition to parenthood, studies which measure parents' romantic attachment and couple caregiving (e.g. Millings et al. 2013) report that there are associations for both attachment related anxiety and avoidance with 'Responsive' caregiving in parents of older children. Therefore, it is expected that both 'Anxiety' and 'Avoidance' will be meaningfully associated with 'Responsive' caregiving,
2. Will parenting stress be associated with romantic attachment?
    a. It is expected that both attachment related anxiety and avoidance will be significantly correlated with overall parenting stress and the parental distress domain. Trillingsgaard, Elklit, Shevlin, and Rikke (2011) report that maternal attachment related anxiety and avoidance are both positively related to parenting stress when the child is 12 months old. Numerous other studies have reported significant positive correlations between the two dimensions of attachment and parenting stress in other age groups as well (see Jones et al. 2014 for a full review). The 'Parental Distress' scale of

parenting stress is reflective of the mother's perception of her own competence as a mother, her relationship with her partner, and the availability of support in her life. Romantic attachment internal working models are said to be based on models of self and others (Griffin & Bartholomew, 1994). This would suggest that it is likely that both attachment 'Anxiety' and 'Avoidance' will be likely lead to higher reports of parenting stress on the 'Parental Distress' scale.

3. Will parenting stress be associated with couple caregiving?
    a. Again, there does not seem to be any published research that examines couple caregiving and parenting stress directly, therefore this remains an exploratory research question.
4. Will parenting stress be associated with parental caregiving?
    a. It is hypothesised that there will be a significant relationship between overall parenting stress and parental caregiving. Specifically, parental caregiving 'Helplessness' has previously been associated with higher reports of parenting stress in mothers (J. Brennan, 2012; J. Brennan and George, in prep; George & Solomon, 2011; and Study 2: Chapter 3 of this thesis).
5. Will relationship satisfaction be related to adult romantic attachment?
    a. It is hypothesised that attachment 'Anxiety', but not 'Avoidance', would be significantly associated with relationship satisfaction. During the transition to parenthood, Rholes et al. (2001) found that while attachment

ambivalence (anxiety) was related to relationship satisfaction and support seeking, attachment avoidance was not.

6. Will relationship satisfaction be related to couple caregiving?
    a. It is hypothesised that 'Responsive' couple caregiving will be associated with relationship satisfaction. Collins and B. C. Feeney (2000) found that couples who were satisfied with their relationship engaged in more supportive caregiving overall. They propose that relationship quality is an important predictor of couple caregiving. However, this association does remain unclear as J.A. Feeney (1996) found that relationship satisfaction was only related to partners' reports of 'Responsive' caregiving, not to own reports, she also did not find associations between 'Compulsive' caregiving and relationship satisfaction.
7. Will relationship satisfaction be related to parental caregiving?
    a. There has been no published research which measures relationship satisfaction and parental caregiving representations, therefore this remains an exploratory research question.

6.2 Method

6.2.1 Participants

Forty-eight first-time mothers of children between the ages of 11 and 15 months (M = 12.46, SD = 1.09) were included in the following analyses. Further recruitment information about the 19 of the 20 in-person participants can be found in Chapter 5 (Section 5.2.1). Additionally, another 28 mothers took part in the study online specifically for this study from the UK (n=3), Europe (n=3), North America (n=19), Australia (n=2), and Argentina (n=1).

While 55 women began the online study, only 28 completed the study in its entirety. Online participants were recruited through global Facebook and Twitter posts and posts on parenting websites such as Baby Centre, Berkley Parents Network, Netmums, and Raising Children Network (Australia).

The mothers ranged in age between 20 and 41 years (M = 31.88, SD = 4.15). The majority of participants identified as white (89.6%), married (79.2 %), and educated with at least a university degree or higher (77.1%). More than half the sample reported and income higher than £52,000 (or the US or Australian equivalent) while only 10.4% of the sample reported an income below £15,599. The only demographic difference between the in person and online sample was marital status, while 8 of the 20 in-person participants cohabitated rather than being married, only 2 of the 28 online participants cohabitated, leading to a significant difference between the two group (p = .010, Fisher's Exact Test).

6.2.2 Measures

Mothers completed questionnaires in this study identical to the questionnaires outlined in the previous chapter. Table 20 names the questionnaires, but descriptions can be found in Chapter 5 (Section 5.2.2).

Table 20. *Measures used in the current study.*

Construct	Measure
Caregiving	
Parental Caregiving	Caregiving Experiences Questionnaire (J. Brennan & George, in prep)
Couple Caregiving	Caregiving Questionnaire (Kunce & Shaver, 1994)
Parenting Stress	Parenting Stress Index – Short Form (Abidin, 1995)
Adult Attachment	Experiences of Close Relationships – Revised (Fraley et al., 2000)
Relationship Satisfaction	Relationship Assessment Scale (Hendrick, 1988)

6.2.3 Procedure

6.2.3.1 In-person procedure. The in-person procedure is described in further detail in the previous chapter in section 5.2.2.

6.2.3.2 Online procedure. Online participants first saw a welcome page which had all the same text as the information sheet that in person participants had received. The next page explained the details about how online data was specifically kept anonymised, for instance, the IP address of the user was captured to ensure that they only took part in the research one time, but the IP address was not used to identify the participant in anyway and was deleted from the data before any data was analysed. This page was the consent page which was noted by saying 'By answering the questions that follow it is assumed that you consent to take part and for your data to be used in academic research and for publications.'

6.3 Results

6.3.1 Analysis Plan

First, independent t-tests and chi-squared tests were run to check for differences between in person participants and online participants on all demographic variables and dependent measures. The online participants did not differ significantly from the in-person participants on the demographic variables of age, child's gender, maternal education, ethnicity, or maternal income. The only significant difference between the two groups on demographic variables was on marital status ($X^2(1) = 7.637$, $p = .006$) where more online participants were married (92.8%) versus in-person participants (60%). (See Tables 21 and 22 for details on non-significant results). The only difference between the two groups on dependent measures was on the Parental Stress Index – SF subscale of 'Parent-Child Dysfunctional Interaction' ($t(46) = -3.487$, $p = .001$) and total stress ($t(46) = -2.108$, $p = .05$),

where online participants reported higher levels of both (See Table 23 for details on non-significant results).

Next, correlations and t-tests were run to examine any relationships between maternal demographic factors and the dependent variables. The time that the mother was in her relationship was not significantly related to any of the dependent variables. However, maternal age was significantly positively correlated with relationship satisfaction ($r(46) = .37$, $p < .01$) and child's age was significantly positively correlated with the parenting stress scales of 'Parent-Child Dysfunctional Interaction' ($r(44) = .33$, $p < .05$) and 'Difficult Child' ($r(44) = .32$, $p < .05$) suggesting that as children get older, mothers report higher parenting stress. Significant differences were found for mothers who were university educated versus those who were not on the dependent variables of attachment 'Anxiety' ($t(46) = 2.731$, $p < .05$) and attachment 'Avoidance' ($t(46) = 2.235$, $p < .05$), where mothers with university educations reported lower scores on both scales. There were significant differences between groups of mothers who had boys versus girls on 'Parent Distress' ($t(42) = 2.629$, $p < .05$), total stress ($t(42) = 2.300$, $p < .05$), and couple caregiving 'Compulsion' ($t(46) = 2.112$, $p < .05$), on each of these scales, mothers of girls scored significantly higher than mothers of boys did. One-way ANOVA tests for differences in income found that income was associated with significant differences on 'Role Reversed' parental caregiving ($F(2, 45) = 4.565$, $p < .05$), adult romantic attachment 'Anxiety' ($F(2, 45) = 6.590$, $p < .01$), adult romantic attachment 'Avoidance' ($F(2, 45) = 6.372$, $p < .01$), couple caregiving 'Responsiveness' ($F(2, 45) = 6.115$, $p < .01$), and relationship satisfaction ($F(2, 45) = 5.143$, $p < .01$). Income was divided into three brackets; <£5,199 - £15,599 (lower), £15,600 - £51,999 (middle), and >£52,000 (upper). Post-hoc comparisons using the Tukey HSD test indicated that mothers in the middle-income

bracket reported significantly higher scores of 'Role Reversed' parental caregiving than mothers in the upper income bracket did, there were no differences between the lower income bracket and either middle or upper. Mothers in the lower income bracket reported significantly higher attachment anxiety than mothers in the upper income bracket did, although there were significant differences with either group compared to the middle group. Attachment 'Avoidance' was significantly higher for mothers in the lower income group than it was in either the middle or upper income brackets. The inverse was true for couple caregiving 'Responsiveness' and relationship satisfaction, where mothers in the lower income bracket reported significantly lower scores on both scales than did mothers in the middle or upper income brackets.

As education, income, child's gender, and maternal and child age were all shown to cause differences on the different dependent variables, correlations between the dependent variables were analysed both as bivariate correlations with no factors controlled and partial correlations controlling for education, income, child's gender, and maternal and child age. All specific hypothesis testing is described as partial correlations.

6.3.2 Hypothesis Testing

The results of both the bivariate and the partial correlations between the dependent measures are presented in Tables 24 and 25. Due to the large number of correlations being run, in order to lower the chances of Type I errors, Bonferroni's corrected *p*-level was calculated as α/k (.05/11 = .004). The results which were invalidated because of the corrections are underlined in the tables.

Table 21. *Differences between in-person and online sample demographic variables.*

	In-person		Online			
Demographic Variable	*M*	*SD*	*M*	*SD*	*t*	*p*
M Age	32.90	2.954	31.14	4.897	1.427	.160
C Age	12.30	1.261	12.57	.959	-.857	.401

Independent t-tests. Df = 46

Table 22. *Differences between in-person and online sample demographic variables*

	In-person %	Online %	X^2(df)
Child Gender			.010(1)
Male	55.0	53.5	
Female	45.0	46.5	
M has uni degree	85.0	71.4	1.216(1)
Mother is White	90.0	89.2	0.006(1)
Mother is married	60.0	92.8	7.637(1)*
Income			1.080(2)
<£5,199 - 20,799	5.0	14.2	
£20,800-£51,99	35.0	32.1	
>£52,000	60.0	57.1	

Chi Squared Goodness of Fit * p<.01

6.3.2.1 Romantic attachment and couple caregiving. It was hypothesised that both adult attachment 'Anxiety' and 'Avoidance' would be significantly related to 'Responsive' couple caregiving (H1). After controlling for significant demographic variables and using the adjusted critical *p*-value, both adult attachment 'Anxiety' ($r(37) = -.441$, $p = .004$) and 'Avoidance' ($r(37) = -.678$, $p < .001$) were negatively correlated with 'Responsive' couple caregiving, so that higher attachment-related 'Anxiety' and 'Avoidance' were associated with lower scores on 'Responsive' caregiving, therefore, the hypothesis was supported.

6.3.2.2 Parenting stress and maternal romantic attachment. It was hypothesised that both adult attachment 'Anxiety' and 'Avoidance' would be significantly associated the parental distress domain of parenting stress and overall parenting stress (H2). After controlling for the significant demographic variables and the adjusted critical *p*-value, attachment related anxiety ($r(37) = .644$, $p < .001$) and avoidance ($r(37) = .479$, $p = .002$)

were both significantly, positively correlated with the 'Parental Distress' subscale, supporting the hypothesis that attachment insecurity in mothers is associated with higher reports of 'Parental Distress'. Attachment related 'Anxiety' was significantly correlated with overall stress ($r(37) = .545$, $p < .001$), however the correlation between 'Avoidance' and overall stress did not meet the adjusted p-value ($r(37) = .429$, $p = .006$) and the correlation itself was between weak and moderate.

6.3.2.3 Parenting stress and couple caregiving. There was not an a priori hypothesis regarding the relationship between parenting stress and couple caregiving (H3). 'Responsive' caregiving was significantly negatively correlated with 'Parental Distress' ($r(37) = -.625$, $p < .001$) and total stress ($r(37) = -.613$, $p < .001$), suggesting that when mothers reported higher levels of 'Responsive' caregiving, they also reported lower 'Parental Distress' and overall parenting stress. 'Compulsive' caregiving was not correlated with any subscales of parenting stress.

6.3.2.4 Parenting stress and parental caregiving. It was hypothesised that parental caregiving 'Helplessness' would be associated with parenting stress (H4). After controlling for the significant demographic variables, parental caregiving 'Helplessness' was positively correlated with 'Parental Distress' ($r(37) = .571$, $p < .001$), 'Parent-Child Dysfunctional Interaction' ($r(37) = .501$, $p < .001$), 'Difficult Child' ($r(37) = .724$, $p < .001$), and total stress ($r(37) = .714$, $p < .001$), supporting the initial hypotheses. Parental caregiving 'Role Reversal' was not significantly related to parenting stress after the Bonferroni's adjustments were applied.

Table 23. *Differences between in-person and online samples for dependent measures.*

	In-person		Online			
Construct/Subscale	M	SD	M	SD	t	p
Adult Attachment						
Anxiety	2.19	1.080	2.55	1.481	-0.925	.360
Avoidance	1.96	1.094	2.40	1.065	-1.406	.166
Couple Caregiving						
Responsiveness	4.72	0.666	4.43	0.847	1.277	.208
Compulsion	3.18	0.956	3.16	0.973	0.063	.950
Relationship Satisfaction	30.40	4.739	29.07	5.010	0.926	.359
Parental Caregiving						
Helplessness	1.32	0.343	1.53	0.471	-1.688	.098
Role Reversal	3.96	0.581	3.70	0.687	1.358	.181
Parenting Stress						
Parental Distress	24.37	11.038	28.39	9.654	-1.261	.214
Parent-Child Dysfunctional Interact	14.87	2.362	19.07	5.550	-3.487	.001
Difficult Child	20.06	5.182	23.32	5.856	-1.849	.072
Total Stress	59.31	16.077	70.78	18.041	-2.108	.041

Independent t-tests. df = 46

Table 24. *Direct associations between dependent variables*

	Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1	Att Anxiety										
2	Att Avoid	.722**									
3	CGRespons	-.522**	-.729**								
4	CGCompuls	.476**	.289*	-.443*							
5	RelSatisfac	-.463**	-.582**	.565**	-.355*						
6	Helpless	.275	.019	-.257	.132	-.129					
7	Role Rev	-.007	-.055	.089	.203	-.143	-.033				
8	Stress PD	.675**	.527**	-.623**	.421**	-.448**	.633**	-.091			
9	Stress PCDI	.452**	.381*	-.479**	.086	-.243	.575**	-.282	.530**		
10	Stress DC	.275	.187	-.377*	.047	-.207	.763**	-.292	.566**	.689**	
11	Total Stress	.597**	.465**	-.608**	.278	-.389**	.764**	-.224	.897**	.801**	.834*

Pearson's bivariate correlations 2-tailed significance * $p < .05$, ** $p<.01$.
Bonferroni's adjusted *p*-level was .004. All underlined values did not meet the adjusted criteria.
N.B. Att = Romantic attachment, CG = Couple caregiving, RelSatisfac = Relationship satisfaction, Enjoyment, Heightened, Helplessness, Role Rev = Parental caregiving, AN Dep = Antenatal depression, AN Anx = Antenatal Anxiety, AN Ax = Antenatal attachment, Q = Quality, I = Intensity

Table 25. *Associations between dependent variables after controlling for significant demographic variables*

	Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1	Att Anxiety										
2	Att Avoid	.639**									
3	CGRespons	-.441**	-.678**								
4	CGCompuls	.330**	.142	-.351*							
5	RelSatisfac	-.568**	-.545**	.554**	-.356*						
6	Helpless	.173	-.124	-.224	.004	-.149					
7	Role Rev	-.169	-.267	.269	.209	-.041	-.037				
8	Stress PD	.644**	.479**	-.625**	.304	-.517**	.571**	-.221			
9	Stress PCDI	.351*	.350*	-.444**	-.123	-.285	.501**	-.408**	.472**		
10	Stress DC	.222	.162	-.380*	-.105	-.229	.724**	-.345*	.515**	.641**	
11	Total Stress	.545**	.429**	-.613**	.106	-.456**	.714**	-.358*	.884**	.768**	.815**

Pearson's partial correlations controlling for education, income, child gender, and maternal and child age.
2-tailed significance * $p < .05$, ** $p<.01$, $df = 37$
Bonferroni's adjusted *p*-level was .004. All underlined values did not meet the adjusted criteria
N.B. Att = Romantic attachment, CG = Couple caregiving, RelSatisfac = Relationship satisfaction, Enjoyment, Heightened, Helplessness, Role Rev = Parental caregiving, AN Dep = Antenatal depression, AN Anx = Antenatal Anxiety, AN Ax = Antenatal attachment, Q = Quality, I = Intensity

6.3.2.5 Relationship satisfaction and maternal attachment. It was hypothesised that attachment related 'Anxiety', but not 'Avoidance', would be significantly associated with relationship satisfaction (H5). In fact, relationship satisfaction was significantly negatively correlated with both 'Anxiety' ($r(37) = -.568$, $p < .001$) and 'Avoidance' ($r(37) = -.545$ $p < .001$), such that when women reported higher levels of relationship satisfaction, they reported lower levels of both attachment related 'Anxiety' and 'Avoidance'.

6.3.2.6 Relationship satisfaction and couple caregiving. It was hypothesised that 'Responsive' couple caregiving would be associated with relationship satisfaction (H6). The correlation between the two was significant ($r(37) = .554$, $p < .001$), supporting the hypothesis that women who reported higher levels of 'Responsive' caregiving to their partner would also report higher levels of relationship satisfaction.

6.3.2.7 Relationship satisfaction and parental caregiving. There was no a priori hypothesis regarding the relationship between parental caregiving and relationship satisfaction (H7). There were no significant correlations between relationship satisfaction and either parental caregiving 'Helplessness' or 'Role Reversal'.

6.4 Discussion

The main goal of this study was to expand the current understanding of women's experiences during their first year of motherhood. While adult romantic attachment has been studied during the transition to motherhood (i.e. Rholes, 2001; Simpson, 2003), no published studies which reported on the associations between couple caregiving and romantic attachment during this stressful period were identified. The associations between romantic attachment and 'Responsive' couple caregiving in parents has been previously identified in the literature (i.e. Millings et al. 2013) and in mothers-to-be in the antenatal study (Chapter 4). Therefore, it was hypothesised that there would be a significant

relationship between romantic attachment and couple caregiving, this hypothesis was supported in the current study. This relationship between attachment and caregiving is also theoretically sound, as Bowlby (1669/1982) suggested that the caregiving behavioural system is unique, yet related to, the attachment behavioural system.

Parenting stress is a common measure of parenting that has previously been studied in conjunction with self-report measures of adult attachment. As many other studies (see Jones et al., 2014 for a review) had found significant relationships between the two constructs, it was predicted that the associations would be present in the current sample as they experienced their first year as a mother. The 'Parental Distress' domain is the only domain of parental stress that does not focus on the child, but instead the parent. Therefore, it seemed most likely that this domain would be most closely associated with the mother's representations of herself in other relationships (i.e. romantic attachment and couple caregiving). This was supported with this sample as well. After controlling for the relevant demographic variables and adjusting the critical significance level, 'Parental Distress' was the only domain that was significantly related to attachment related 'Anxiety', 'Avoidance', and 'Responsive' couple caregiving. This domain seems to be tapping mother's representations of themselves in their relationship with their child, just as romantic attachment and couple caregiving measures their representations of themselves in their relationship with their partner.

Relationship satisfaction was associated with attachment related 'Anxiety', 'Avoidance', and 'Responsive' couple caregiving. These associations support and extend the adult attachment and couple caregiving literature to date (i.e. Collins & B.C. Feeney, 2000; J.A. Feeney, 1996). The extension of the literature is seen in the strong association between attachment related avoidance and relationship satisfaction. Previously, Rholes et al. (2001) found that while attachment ambivalence (anxiety) was related to relationship

satisfaction, attachment avoidance was not. They hypothesised that this could be because individuals who report high attachment avoidance do not seek support from their partners during times of stress and therefore, do not find their relationship to be satisfying. In this study, however, reports of attachment related 'Avoidance' remained rather low (mean of 2.21 on a scale of 1-7), so the association may be due to the fact that there were not many high reports of avoidance.

Relationship satisfaction was not correlated with parental caregiving representations. However, relationship satisfaction negatively correlated with the 'Parental Distress' domain of parenting stress, suggesting that as relationship satisfaction scores rose, reports of 'Parental Distress' fell. While it is not possible to make assumptions about the directionality of this association based on correlations, it is possible that if parental distress is reflective of the mother's representation of herself in her relationship with her child, perhaps her positive appraisal of her relationship with her partner helps her feel more confident as a parent. Cowan and Cowan (1992) explain that the quality of a couple's relationship provides a buffer between women's early relationships and those with their children, providing further evidence that the relationship a new mother has with her partner is related to her relationship with her child. Future research could also measure a mother's parenting self-efficacy along with parental caregiving representations and parenting stress to understand if parental distress may be related to her confidence in her own role as a parent.

6.4.1 Strengths of the Current Study

This study contributes to our current knowledge by proposing a new pathway to parenting stress: Parental Distress is related to adult attachment, parental and couple caregiving, and relationship satisfaction. These findings suggest possible entry points for intervention for new parents.

6.4.2 Limitations of the Current Study

Again, the major limitation of this study was the sample size. This has meant that only correlational associations were able to be identified instead of regression or path analysis which could help us to understand the directionality of these relationships better. The use of only self-report measures is also a limitation as there is no way to associate maternal reports with observer reports. In future research, this can be addressed in two ways: 1.) By only using an in-person sample and using both self-report and observation methods or 2.) By asking the child's other parent to also report on their experience of the first year. The latter method would allow the researcher to examine the correspondence between the parents' reports of romantic attachment, couple caregiving, and relationship satisfaction. This would make it possible to consider the contribution of the partners' representations to the mothers' representations of herself as a caregiver and a care-seeker. Finally, as seen in the antenatal study (Chapter 4) the use of Bonferonni corrections is also extremely stringent and in a sample of this size, leads to the possibility that significant associations are not being detected. Due to these stringent corrections, associations with moderate effect sizes were dismissed as not being significant. Again, because all of these variables are of interest, this would be best corrected with a larger sample size.

6.4.2 Conclusion

While the transition to parenthood has been an area of research that has received a lot of attention in psychology, there are still quite a few mechanisms that are unknown. This study brought together many different constructs that have been studied separately in an attempt to understand how women's representations of their relationships are related to one another during their first year of motherhood. The finding that all of the maternal variables of attachment, caregiving, and relationship satisfaction are associated with parenting stress further elucidates the importance of supporting new mothers in their

relationships to help buffer them from parenting stressors. Better understanding of these processes will help us to learn the ways in which women need support during this vulnerable period, with a goal of supporting new mothers to impact the developmental outcomes of their children.

Chapter 7: Study 6: Becoming a Mother: The Transition to Parenthood

As has been suggested in the literature review (Chapter 1), integrative review chapter (Chapter 2) and both the antenatal and one year chapters (Studies 3-5; Chapters 4-6), the best way to understand what is happening for mothers during the transition to motherhood is to follow them through the transition in a longitudinal study. The original intent of this thesis project was to have one large, longitudinal sample which was followed from the 3rd trimester of pregnancy until the child was 12 months old. However, recruitment issues led to a very small sample of mothers who took part in the longitudinal study. The study was therefore augmented with the cross-sectional studies described in the previous chapters (Studies 3-5: Chapters 4-6). The goal of this chapter is to provide descriptive information about the transition for each of the seven mothers who took part in all three data collection points of the longitudinal study.

7.1 Rationale for a Longitudinal Study

The development of the relationship between mother and foetus is an important consideration in the study of parenting. The relationship can only be truly explained when examined with a variety of measures employed within a longitudinal design. The limited longitudinal research examining antenatal attachment has not demonstrated whether antenatal attachment representations are predictive of later infant attachment relationships. This longitudinal study examined the antenatal relationship using measures of the mother's state of mind regarding attachment, romantic attachment, parental caregiving, romantic caregiving, and antenatal attachment. This study also examined the relationship after birth to determine how social-contextual factors such as depressive symptoms, pregnancy related anxiety, and relationship satisfaction affect a mother's developing relationship with her new child. Finally, this study employed the "gold standard" of

attachment measures, the Strange Situation Procedure (Ainsworth et al., 1978), to determine if any of the antenatal factors measured are in fact related to infant attachment.

7.1.1 The Current Study

The current study sought to examine the influence of antenatal representations on postnatal child attachment at 1 year of age. To better understand the patterns of maternal variables over the transition to motherhood, this study followed the woman from her 3rd trimester of pregnancy until her child was approximately 1 year old (11-15 months). The study had two aims, to examine the associations between antenatal attachment and postnatal relationships and the stability of constructs over the transition to motherhood. This was a very small sample which provides us with which case study data and the aims are achieved by describing each of the mother's experiences.

7.2 Methods

7.2.1 Participants

Women who were in their 3rd trimester of pregnancy with their first child, lived with a partner in the Norwich area, and had low-risk pregnancy were recruited through flyers in the local community, around the UEA, and at local antenatal classes. Ten women initially enrolled in the study, one withdrew 2 days after participating in the first data collection, one withdrew after beginning the 2nd data collection point, stating that some of the questions were upsetting to her[3] (while taking the Maternal Postnatal Attachment Scale, described below), and one more did not respond to the email for the final data collection, resulting in a 30% attrition rate over the full study. The seven participants described in this chapter are the women who completed all three data collection points[4].

[3] This mother was offered sources of support when she notified the researcher. She told the researcher that she was not overly distressed and gave permission for the data collected during the antenatal period. As she did not report a desire to harm herself or her child, the researcher did not report her distress to her GP.
[4] The data from these participants was also included in the antenatal (Chapter 4) and 1-year studies (Chapters 5 and 6).

Additionally, one mother began breastfeeding during the Strange Situation, so it was not possible to code her child's video, therefore, only her questionnaire and AAP data will be presented.

The women in this study ranged in age from 27 to 36 years of age. They were between 29 and 38 weeks pregnant at the time of participation. They all identified as White. Four of the women were cohabitating with their partner and the other three were married. They all reported having at least at Bachelor's level education. Most of the women (5) reported an annual income of >£52,000. The children's ages when they came to the UEA to participate in the Strange Situation ranged from 11 to 15 months, four of the children were boys and three were girls.

7.2.2 Measures

7.2.2.1 Maternal relationship to the child. The way the mother described her relationship to her foetus, and later to her child was measured by questionnaires which measure the mother's 'attachment' to her foetus and to her infant.

7.2.2.1.1 Antenatal attachment. The mother's antenatal attachment was measured using the Maternal Antenatal Attachment Scale (MAAS; Condon, 1993). The MAAS is a 19-item, multiple choice questionnaire which yields two scales of attachment: 'Quality' of attachment and 'Intensity of Preoccupation' with the foetus. These two scales can also be combined to derive a global attachment score. Further description of this measure can be found in the antenatal chapter (Study 1: Chapter 4, Section 4.2.2)

7.2.2.1.2 Postnatal bonding. Postnatal bonding was measured with The Maternal Postnatal Attachment Scale (MPAS; Condon & Corkindale, 1998) (Appendix J). The MPAS is a 19 item self-report questionnaire which assesses mothers' subjective experiences towards her infant under one year of age. The scale yields three subscales; 'Quality' of attachment, 'Absence of Hostility', and 'Pleasure in Interaction'. Questions

are asked in a multiple choice format for frequency and intensity within the past two weeks. 'Quality' of attachment refers to the intensity of emotions and the competence that a mother feels when she is with her baby, an example is 'When I interact with my baby, I feel:' with 1 = *Very incompetent and lacking confidence* and 4 = *Very competent and confident*. 'Absence of Hostility' refers to the mother's ability to control feelings of anger or resentment when caring for her baby, an example is 'Regarding the things that we had to give up because of the baby:' with 1 = *I find that I resent it quite a lot* and 4 = *I do not resent it at all*. 'Pleasure in Interaction' is reflective of the enjoyment mothers experience while being with their baby, an example is 'When I am with my baby:' with 1 = *I usually try to prolong the time I spend with him* or her and 2 = *I usually try to shorten the time I spend with him or her*. Questions are reverse coded where necessary and weighted so that they are scored 1-5 and scores of each of the subscales are summed and combined to obtain a global score, with higher global scores indicating higher maternal bonding to infant.

7.2.2.2 Caregiving. This study measured both antenatal parental caregiving and couple caregiving. Antenatal parental caregiving focused on the mother's predictions of herself as a caregiver to her future child. Couple caregiving focused on the mother's appraisal of herself as a caregiver to her partner.

7.2.2.2.1 Parental caregiving. Parental caregiving was measured with an antenatal adaptation of the Caregiving Experiences Questionnaire (CEQ; J. Brennan & George, in prep). The measure assesses mothers' caregiving representational regulation which is believed to be related to caregiving defensive processes. The original version of this measure is described in further detail in Chapter 3, Section 3.2.3.1 and the antenatal adaptation is described in further detail in Chapter 4, Section 4.2.2.1.1. The subscales

which had been found reliable for use in pregnancy in Study 3 were utilised in analyses for this study ('Enjoyment', 'Heightened', 'Helplessness', and 'Role Reversal').

7.2.2.2.2 Couple caregiving. Couple caregiving was measured with The Caregiving Questionnaire (CQ; Kunce & Shaver, 1994). The CQ is a 32-item self-report questionnaire which assess caregiving in romantic relationships. The questionnaire yields four dimensions, 3 positive and 1 negative: 'Proximity', 'Sensitivity', 'cooperation', and 'Compulsion'. Each item is scored on a 6-point Likert-type scale from 1 (*strongly disagree*) to 6 (*strongly agree*). Scores are averaged for each dimension. A 'Responsive' caregiving index can be computed by combining the three positive scales (J.A. Feeney, 1996) which can then be compared against 'Compulsive' caregiving. Further description of this measure can be found in Chapter 4., Section 4.2.2.1.2

7.2.2.3 Adult attachment. Adult attachment was assessed through two different methods which measured both attachment state of mind regarding attachment and romantic attachment.

7.2.2.3.1 Adult state of mind regarding attachment. Adult attachment representations were assessed using the Adult Attachment Projective (AAP; George et al. 1997). The AAP is a method to assess state of mind regarding attachment in adults. Adults are assigned to an attachment classification group based on their narrative responses to eight pictures. The AAP assesses the same four attachment classifications that the AAI (George et al., 1984, 1985, 1996) yields; secure, dismissing, preoccupied, and unresolved. Further detail about the AAP can be found in Chapter 4, Section 4.2.2.3.1.

7.2.2.3.2 Adult romantic attachment. Romantic attachment was measured with the Experiences of Close Relationships – Revised questionnaire (ECR-R; Fraley et al., 2000). The ECR-R is a 36-item questionnaire designed to measure adult romantic attachment. The questionnaire yields two scales: 'Anxiety' and 'Avoidance'. Items are rated on a 7-

point Likert –type scale (1 = *Strongly Disagree* to 7 = *Strongly Agree*). Scores are then summed for each scale. A further description of this measure can be found in Chapter 4, Section 4.2.2.3.2.

7.2.2.4 Relationship satisfaction. Relationship satisfaction was measured with the Relationship Assessment Scale (RAS; Hendrick, 1988). The RAS is a 7-item self-report measure of relationship satisfaction. Items are reverse coded where necessary and a total continuous scale is derived where higher scores equal higher levels of satisfaction. Further description of this measure can be found in Chapter 4, Section 4.2.2.4.

7.2.2.5 Maternal mental health. The pregnancy specific mental health of participants was assessed for antenatal depression and pregnancy specific anxiety. Mothers postnatal depression symptoms were measured at 6 months and maternal parenting stress was measured when the child was 1 year old.

7.2.2.5.1 Antenatal depression. Antenatal depression was measured with the Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987). The EPDS is a 10-item standardized, self-report, multiple choice questionnaire used in the screening of postnatal depression which has also been validated for use during pregnancy (Murray & Cox, 1990). Items on the questionnaire correspond to clinical depressive symptoms. Items are reversed coded where necessary and the score is then summed to determine a total depression score. Further description of this measure can be found in Chapter 4, Section 4.2.2.5.1.

7.2.2.5.2 Antenatal anxiety. Pregnancy specific anxiety was measured with the Pregnancy Anxiety Questionnaire (PAQ; Rini, Dunkel-Schetter, Wadhwa, & Sandman, 1999). The PAQ is a 10-item self-report questionnaire designed to measure pregnancy specific worries and concerns. Items are rated on a 4-point Likert-type scale ranging from 1 (*not at all*) to 4 (*very much*). Items are reversed coded where necessary and the score is

then summed to determine a total anxiety score. Further description of this measure can be found in Chapter 4, Section 4.2.2.5.2.

7.2.2.5.3 Maternal parenting stress. Mother's parental stress was measured with the Parenting Stress Index – Short Form (Abidin, 1995). This is a standardized measure used in both clinical work and research which measures three scales: 'Parental Distress', 'Parent-Child Dysfunctional Interaction', and 'Difficult Child'. These scales can be added together to derive a total stress score. Mothers rated each statement on a 5-point rating scale (1 = *strongly disagree* to 5 = *strongly agree*). Further description of the PSI-SF can be found in Chapter 3, Section 3.2.3.3.

7.2.2.7 Child attachment. The child's attachment to his or her mother was assessed using the Strange Situation Paradigm (SSP; Ainsworth et al. 1978). The SSP is considered the 'gold standard' of child attachment measures. It involves an observation of mother and child in the laboratory where the child is introduced to mild stressors (e.g. meeting a new person, being left with a new person, being left alone). The entire procedure takes up to 24 minutes and is video-recorded and coded later. There are two reunions, in which the mother returns to the room after being away which are of most importance to the coding. Children are assigned to 1 of 4 categories of attachment; secure, avoidant, resistant, or disorganised. Further description of the SSP can be found in Chapter 5, Section 5.2.2.5.

7.2.3 Procedure

Ethical approval for this study was first obtained through National Health Service Cambridge South NRES committee. The study was also registered with the University of East Anglia School of Psychology Ethics Committee.

7.2.3.1 Time one: 3rd trimester of pregnancy. Participants were offered the option of meeting the researcher at their home or at the university. The researcher first

described the purpose of the research and then provided the participant with an information sheet which contained frequently asked questions about the study, information on how their data would be kept confidential, information about how to withdraw from the study after participation, along with a reminder that they could withdraw from participation at any time during the study as well, and contact information for the researcher, researcher's supervisor, and Head of School and the Ethics Committee at UEA School of Psychology. The participant was asked to provide informed consent to participate. In keeping with a request from the NHS ethics board, participants were asked to provide the contact information of their midwife so that if they disclosed the desire to harm themselves, the researcher would be able to contact their GP via telephone within 36 hours or less to ensure proper follow-up care would be received. Participants were provided with a letter explaining their involvement in the ongoing study to add to their handwritten notes packet that they brought to their midwifery appointments, so that their midwife would be alerted to their participation and could contact the researcher if they felt that the participant should be removed from the study following any traumatic outcomes (i.e. loss of pregnancy, serious birth complications, etc.). Additionally, they were given a withdrawal form and a self-addressed, stamped envelope that they could return to the researcher if they chose to withdraw between data collection points. Participants were also provided with a list of local mental health and parenting resources and told that if they should find that participation brought up any concerns for them, they should contact their midwife or GP in the first instance, but that they could also contact the listed resources. The adult attachment assessment task was audio recorded. Administration of the attachment assessment and questionnaires was counterbalanced to ensure that there was no order effect.

7.2.3.2 Time two: 6 months after birth. The child's date of birth was estimated from the mother's reports of her due date. Approximately one week before the child's estimated 6-month birthday, the researcher sent an email to the mother reminding her of her participation and telling her that an email with a link to questionnaires would be arriving in one week. The email stated that if she would like to withdraw from the study at that point, she was welcome to do so by responding to that email, otherwise the link would be sent the following week. No mothers withdrew at that point and the emails were all sent. All mothers began the study, however as mentioned above, one did withdraw after beginning the survey – she agreed to the researcher using her previously collected data for the antenatal study. The survey began with a copy of the information page that the women had received at their first meeting with the researcher. The next page was a consent page that indicated that moving forward with the study provided informed consent.

7.2.3.3 Time three: 11-15 months after birth. Two weeks before the child was due to turn 1-year old (as determined by reported date of birth at time point two) mothers were sent an email asking them to schedule an appointment to come to the UEA to complete the final data collection. At this time the Strange Situation Procedure was briefly described to mothers in the email to prepare them for their visit. All but one mother responded and scheduled appointments. When participants arrived at the university, they were met and directed to the warm up/play room in the Developmental Dynamic Laboratory in the School of Psychology. There, the research was then described to the parent again, the parent was provided with another copy of the information sheet and were reminded that they could withdraw from participation at any time during the study. The participant was asked to provide informed consent again, this time for both themselves and their child to participate.

Once participation began, mothers started by filling in questionnaires. They remained in the warm up room with their child and the researcher tried to engage their child with toys and minimise distractions for their mothers. While this meant that mothers were not able to complete the forms in a distraction free setting, this method was chosen so as not to put any further separation distress on the child, as they would shortly be taking part in the Strange Situation Paradigm (SSP; Ainsworth et al., 1978). Following completion of the questionnaires, the SSP procedure was explained in detail to the mother, along with a reminder that she would not need to memorise this because the stranger would give her cues. She and her child were then escorted into the observation room where the SSP was run. Following the SSP, the mother and child were thanked by offering the child a small toy (bath toy or board book) to thank them for their participation and they were escorted back to their car. A reference to which measures were collected at which time point can be found in Table 26.

Table 26. *Measures at each time point.*

	Time One 3rd Trimester	Time Two 6 months	Time 3 1 year
Maternal Relationship with child	MAAS	MPAS	
Parental Caregiving	CEQ		CEQ
Adult Attachment	ECR-R	ECR-R	ECR-R
	AAP		
Couple Caregiving	CQ	CQ	CQ
Couple Relationship Satisfaction	RAS	RAS	RAS
Mental Health and Stress	EPDS	EPDS	PSI-SF
	PAQ		
Child Attachment			SSP

N.B. MAAS – Maternal Antenatal Attachment Scale; MPAS; Maternal Postnatal Attachment Scale; CEQ – Caregiving Experiences Questionnaire; ECR-R – Experiences of Close Relationships Scale-Revised; AAP - Adult Attachment Projective; CQ – Caregiving Questionnaire; RAS – Relationship Assessment Scale; EPDS – Edinburgh Postnatal Depression Scale; PAQ – Pregnancy Anxiety Questionnaire; SSP – Strange Situation Paradigm.

7.3 Findings

7.3.1 Mother's Dependent Measure Scores Over Time

Tables 27 thru 34 present each of the mothers' scores on the dependent variables over time and her child's attachment classification. All scores are presented in means or totals, depending on the measure and possible ranges can be seen in the construct column.

Table 27. *Mother 1's dependent measure scores over time.*

Construct/Subscale	Time One 3rd Trimester	Time Two 6 Months	Time Three 11-15 Months
Maternal Relationship with Child			
Total Score (19- 95)	84.5	74.4	--
Parental Caregiving			
Enjoyment (1-5)	4.75	--	5.00
Heightened Caregiving (1-5)	2.20	--	2.60
Helplessness (1-5)	1.29	--	1.21
Role Reversal (1-5)	4.25	--	3.63
Adult Attachment			
Anxiety (1- 7)	1.00	3.39	1.83
Avoidance (1-7)	3.00	3.67	1.00
State of Mind (Classification)	Secure	--	--
Couple Caregiving			
Responsiveness (1-6)	4.79	4.79	5.92
Compulsiveness (1-6)	2.63	3.88	2.88
Relationship Satisfaction (7-35)	27	35	35
Mental Health and Stress			
Depressive Symptoms (0-30)	4	6	--
Pregnancy Anxiety (10-40)	14	--	--
Overall Parenting Stress (%)	--	--	1st
Child Attachment (Classification)	--	--	Secure

Mother 1 was judged to have a secure state of mind regarding attachment and at 1 year old, her child also showed a secure attachment to her. Her reports of her relationship with her foetus and infant at 6 months decreased slightly after giving birth. Her parental caregiving scores remained relatively stable, though her endorsement of 'Role Reversal'

items did drop a bit. Her reports of both attachment related 'Anxiety' and 'Avoidance' rose 6 months after giving birth, but her reports were lower by the time her child was 1 year old. Her caregiving 'Responsiveness' to her partner rose over time, as did her reported relationship satisfaction. She reported low symptoms of ante- and postnatal depressive symptoms, pregnancy related anxiety, and parenting stress.

Table 28. *Mother 2's dependent measure scores over time.*

Construct/Subscale	Time One 3rd Trimester	Time Two 6 Months	Time Three 11-15 Months
Maternal Relationship with Child			
Total Score (19- 95)	81	74.20	--
Parental Caregiving			
Enjoyment (1-5)	4.63	--	4.88
Heightened Caregiving (1-5)	2.00	---	3.40
Helplessness (1-5)	2.29	--	1.57
Role Reversal (1-5)	3.88	--	4.38
Adult Attachment			
Anxiety (1- 7)	2.22	2.89	2.17
Avoidance (1-7)	1.33	1.89	1.11
State of Mind (Classification)	Dismissing		
Couple Caregiving			
Responsiveness (1-6)	5.29	4.75	4.75
Compulsiveness (1-6)	2.50	3.75	3.88
Relationship Satisfaction (7-35)	24	21	24
Mental Health and Stress			
Depressive Symptoms (0-30)	7	13	--
Pregnancy Anxiety (10-40)	26	--	--
Overall Parenting Stress (%)	--	--	90th
Child Attachment (Classification)	--	--	Secure

Mother 2 was judged to have a dismissing state of mind regarding attachment and her child had a secure attachment to her. Her reports of her relationship to her foetus and infant at 6 months decreased slightly after giving birth. At 1 year, she reported higher levels of 'Heightened' and 'Role Reversal' caregiving, but lower levels of caregiving

'Helplessness.' Her caregiving to her partner showed minor changes, with her 'Responsiveness' decreasing and her 'Compulsiveness' increasing after giving birth. Her relationship satisfaction was lowest 6 months after giving birth. She reported low depressive symptoms during pregnancy, but possible postnatal depression at 6 months. She also reported sub-clinical levels of parenting stress when her child was 1-year old.

Table 29. *Mother 3's dependent measure scores over time.*

Construct/Subscale	Time One 3rd Trimester	Time Two 6 Months	Time Three 11-15 Months
Maternal Relationship with Child			
Total Score (19- 95)	84	78.10	--
Parental Caregiving			
Enjoyment (1-5)	4.63	--	4.88
Heightened Caregiving (1-5)	3.40	--	1.60
Helplessness (1-5)	1.64	--	1.07
Role Reversal (1-5)	3.88	--	3.75
Adult Attachment			
Anxiety (1- 7)	1.50	1.11	1.00
Avoidance (1-7)	1.72	2.17	2.11
State of Mind (Classification)	Preoccupied		
Couple Caregiving			
Responsiveness (1-6)	4.63	4.42	4.54
Compulsiveness (1-6)	2.50	3.38	2.63
Relationship Satisfaction (7-35)	26	34	33
Mental Health and Stress			
Depressive Symptoms (0-30)	8	2	--
Pregnancy Anxiety (10-40)	15	--	--
Overall Parenting Stress (%)	--	--	5th
Child Attachment (Classification)	--	--	Secure

Mother 3 was judged to have a preoccupied state of mind regarding attachment and her child had a secure attachment to her. Her reports of her relationship with her foetus and infant at 6 months decreased very slightly. She reported lower levels of 'Heightened' caregiving when her child was 1 year old than she had during pregnancy. She reported a

slight increase in caregiving 'Compulsiveness' to her partner after giving birth. Her relationship satisfaction increased after pregnancy. She reported low levels of ante- and postnatal depressive symptomology, pregnancy related anxiety, and overall parenting stress.

Table 30. *Mother 4's dependent measure scores over time.*

Construct/Subscale	Time One 3rd Trimester	Time Two 6 Months	Time Three 11-15 Months
Maternal Relationship with Child			
Total Score (19- 95)	82	79.10	--
Parental Caregiving			
Enjoyment (1-5)	5.00	--	5.00
Heightened Caregiving (1-5)	3.60	--	3.80
Helplessness (1-5)	2.79	--	1.79
Role Reversal (1-5)	3.88	--	4.38
Adult Attachment			
Anxiety (1- 7)	1.94	2.06	1.78
Avoidance (1-7)	1.22	1.39	1.06
State of Mind (Classification)	Dismissing		
Couple Caregiving			
Responsiveness (1-6)	5.25	4.71	4.67
Compulsiveness (1-6)	5.00	4.00	4.13
Relationship Satisfaction (7-35)	26	34	30
Mental Health and Stress			
Depressive Symptoms (0-30)	4	4	--
Pregnancy Anxiety (10-40)	16	--	--
Overall Parenting Stress (%)	--	--	60th
Child Attachment (Classification)	--	--	Secure

Mother 4 was judged to have a dismissing state of mind regarding attachment. Her child was securely attached to her. Her caregiving 'Helplessness' was slightly lower when her child was 1 year old. Her romantic attachment and caregiving 'Responsiveness' to her partner also remained stable, but after giving birth, her reports of caregiving 'Compulsiveness' to her partner decreased. Her relationship satisfaction increased from

pregnancy to 6 months and decreased a bit by 12 months, still remaining higher than it had been during pregnancy. She reported lower ante- and postnatal depressive symptomology and pregnancy anxiety, and moderate parenting stress when her child was 1 year old.

Table 31. *Mother 5's dependent measure scores over time.*

Construct/Subscale	Time One 3rd Trimester	Time Two 6 Months	Time Three 11-15 Months
Maternal Relationship with Child			
Total Score (19- 95)	73	73.10	--
Parental Caregiving			
Enjoyment (1-5)	4.63	--	5.00
Heightened Caregiving (1-5)	2.50	--	2.60
Helplessness (1-5)	1.57	--	1.07
Role Reversal (1-5)	3.30	--	3.30
Adult Attachment			
Anxiety (1- 7)	1.61	1.50	2.56
Avoidance (1-7)	2.28	2.50	2.61
State of Mind (Classification)	Dismissing	--	--
Couple Caregiving			
Responsiveness (1-6)	4.75	4.71	4.57
Compulsiveness (1-6)	2.88	2.75	2.63
Relationship Satisfaction (7-35)	26	33	33
Mental Health and Stress			
Depressive Symptoms (0-30)	10	9	--
Pregnancy Anxiety (10-40)	17	--	--
Overall Parenting Stress (%)	--	--	15th
Child Attachment (Classification)	--	--	Disorganised

Mother 5 showed was judged to have a dismissing state of mind regarding attachment and her child showed patterns of a disorganised attachment towards her with an underlying pattern of security. Her reports of her relationship with her child, parental caregiving representations, adult attachment related avoidance, couple caregiving, and ante- and postnatal symptomology remained relatively stable over her first year of motherhood. There was a slight rise in her attachment related anxiety when her child was

1-year old. Her relationship satisfaction increased after giving birth and remained stable. She reported low parenting stress.

Table 32. *Mother 6's dependent measure scores over time.*

Construct/Subscale	Time One 3rd Trimester	Time Two 6 Months	Time Three 11-15 Months
Maternal Relationship with Child			
Total Score (19- 95)	77	71.80	--
Parental Caregiving			
Enjoyment (1-5)	4.88	--	5.00
Heightened Caregiving (1-5)	4.00	--	2.20
Helplessness (1-5)	2.14	--	1.29
Role Reversal (1-5)	3.88	--	4.38
Adult Attachment			
Anxiety (1- 7)	3.61	1.78	1.83
Avoidance (1-7)	1.39	1.00	1.11
State of Mind (Classification)	Secure	--	--
Couple Caregiving			
Responsiveness (1-6)	4.83	5.08	5.08
Compulsiveness (1-6)	4.13	2.63	3.50
Relationship Satisfaction (7-35)	25	33	33
Mental Health and Stress			
Depressive Symptoms (0-30)	9	5	--
Pregnancy Anxiety (10-40)	19	--	--
Overall Parenting Stress (%)	--	--	1st
Child Attachment (Classification)	--	--	Avoidant

Mother 6 was judged to have a secure state of mind regarding attachment and her child had an avoidant attachment to her. Her reports of 'Heightened' and 'Helplessness' caregiving both decreased after giving birth. Her attachment related 'Anxiety' also went down after giving birth and remained low for her first year of motherhood. While her caregiving 'Responsiveness' to her partner remained stable, her caregiving 'Compulsiveness' decreased after giving birth. Her relationship satisfaction was higher after giving birth and through the first year. She reported just under the clinical cut-off for

antenatal depression, but by 6 months, this score decreased. Her reports of pregnancy related anxiety and parenting stress at 1 year were both low.

Table 33. *Mother 7's dependent measure scores over time.*

Construct/Subscale	Time One 3rd Trimester	Time Two 6 Months	Time Three 11-15 Months
Maternal Relationship with Child			
Total Score (19- 95)	81	80.70	--
Parental Caregiving			
Enjoyment (1-5)	4.75	--	4.75
Discourages Closeness (1-5)	1.40	--	1.40
Heightened Caregiving (1-5)	3.00	--	3.40
Helplessness (1-5)	1.93	--	1.57
Role Reversal (1-5)	3.88	--	4.38
Adult Attachment			
Anxiety (1- 7)	2.11	2.72	3.56
Avoidance (1-7)	2.33	1.83	2.89
State of Mind (Classification)	Dismissing	--	--
Couple Caregiving			
Responsiveness (1-6)	4.92	5.13	4.83
Compulsiveness (1-6)	2.75	4.38	2.75
Relationship Satisfaction (7-35)	24	34	33
Mental Health and Stress			
Depressive Symptoms (0-30)	8	5	--
Pregnancy Anxiety (10-40)	15	--	--
Overall Parenting Stress (%)	--	--	55th
Child Attachment (Classification)	--	--	Not obtained

Mother 7 was judged as having a dismissing state of mind regarding attachment, unfortunately, her child's attachment classification was not available. Her reported relationship between her and her foetus and infant at 6 months remained stable, as did her parental caregiving representations. Her attachment related anxiety went up steadily from pregnancy to 1-year, while her attachment related avoidance decreased slightly at 6 months and then went up again at 1-year. Her caregiving 'Responsiveness' to her partner remained high and stable, but her caregiving 'Compulsiveness' went up quite a bit when

her child was 6 months, decreasing again by the time he was 1-year. Like most other women in the sample, Mother 7's relationship satisfaction went up after giving birth.

7.4 Discussion

Although this chapter presents only a small sample of women followed from pregnancy through their children's first year of life, it provides a picture into patterns that occur during the transition to motherhood for these women. As most of these constructs have not been studied together, this small study does help to understand if there are patterns that should be further researched.

The increase in relationship satisfaction over the transition to motherhood for each of these mothers is a unique finding. Where other studies often find a decrease in reported relationship satisfaction, the current study found an increase between pregnancy and 6 months. While there were slight decreases for some mothers from 6 months to 1 year, all but one mother reported higher relationship satisfaction at 1 year than she had during pregnancy. Along with a much larger sample size to allow for statistical analyses, future research should examine other factors of in the couple relationship, such as co-parenting.

Finally, there were noticeable difference of scores on overall antenatal attachment between mothers of secure children versus insecure children suggesting that there may likely be a relationship between these two constructs. Unfortunately, this small sample did not have enough power or diversity in infant attachment to detect what might be leading to these differences. Further longitudinal research is needed to understand the ways in which antenatal attachment may relate to children's attachment security to their parents.

7.4.1 Strengths of the Current Study

This study allowed for a very in-depth examination into the changes in various relationships that women experience during their transition to motherhood. By assessing women's relationships with their own parents, partners, and children-to-be during

pregnancy and following those women over their first year of motherhood, it is possible to view how the appraisal of their relationships during pregnancy related to their relationships after giving birth.

7.4.2 Limitations of the Current Study

Clearly the sample size is the most obvious limitation of the study. The explanation of recruitment issues has been discussed in previous chapters (see Chapter 4, 5, & 6), however this was even more limiting in this study as it meant that statistical analyses of the data were not possible. The cases presented here do suggest that further research following a larger group of women through this transition is warranted.

7.4.3 Conclusion

There is still so much to learn about the transition to motherhood. It is a time of upheaval and change for women, a time where they must focus on becoming a *caregiver* instead of a *care-seeker*, a time which may change their relationship to their partner, and a time that will be different from anything else they have ever done. While this small sample was not able to completely clarify this process, having the opportunity to examine this transition for a small group of women does help to understand what systems still require further exploration and understanding. This small, longitudinal study can serve well as a pilot study to future research examining these constructs in the hopes of better understanding the mechanisms that underlie the experience of becoming a mother.

Chapter 8: General Discussion

For over 60 years, both psychological and nursing researchers have had a keen interest in the processes occurring for women during pregnancy and in their transition to parenthood. Previous research investigating the transition to motherhood has examined the process through multiple, often separate lenses. The goal of this thesis was to blend together multiple attachment viewpoints in an attempt integrate the findings of each of these streams of research. This goal was achieved through four studies throughout the first year of motherhood and an integrative review of the literature, which described together, for the first time, traditional 'Bowlbian' longitudinal attachment research with longitudinal antenatal research and identified the gaps that remain in the literature, despite the multiple perspectives. Additionally, this thesis presented a study which measured the reliability and validity of a new measure of parental caregiving in a British population.

8.1 Summary of Findings for Each Study

A diagram of significant associations from the map of studies provided in the literature review (Section 1.7) is provided at the end of this chapter (Figure 15).

8.1.1 Study 1: Antenatal representations and their concordance with postnatal relationships: An integrative review. This review addressed the question: What can the antenatal maternal-foetal relationship tell us about the postnatal mother-child relationship? Adding to the existing body of knowledge by helping to understand how parental-foetal representations impact parent-child relationships during the postnatal period. Computerized databases were searched for relevant key phrases including the words: prenatal attachment, antenatal attachment, maternal-fetal attachment, postnatal, attachment, caregiving, and bonding. The search revealed 22 studies covering two distinct categories—studies which utilize traditional Bowlbian measures of attachment during pregnancy and those which are more commonly explained as parental-foetal attachment.

One study utilised measures from both categories. This study found that there was not a relationship between maternal-foetal attachment and a traditional measure of caregiving postnatally. The differing theoretical orientations and methods of study meant that this review could not provide any statistical comparisons of the studies included. This meant that conclusions as to which orientations are most important in this area of study were not able to be drawn. However, the main goal of this review was to provide a cohesive picture of the literature on how antenatal representations of relationships can influence the child-parent relationship quality after birth and also identify continuing gaps in the literature which helps in highlighting areas necessary for future research. This goal was achieved and the review provided a starting point for the rest of the studies included in this thesis.

8.1.2 Study 2: The Caregiving Experiences Questionnaire: A cross-cultural validation. This study investigated the cross-cultural validity and reliability of the Caregiving Experiences Questionnaire (CEQ; J. Brennan & George, in prep) for use in the United Kingdom. The wording of two items was changed to better reflect British English vernacular. A total of 150 mothers of children aged 1.5-5 years old who spoke British English as their first language and were living in the UK at the time were recruited online and completed the CEQ and measures of maternal reported parenting stress and child behavioural problems. CEQ scales of 'Enjoyment', 'Discouraging Closeness', 'Heightened' Caregiving, 'Helplessness', and 'Role Reversal' were examined in relation to predictive validity measures. The study found that only three of the original scales ('Heightened' 'Helplessness' and 'Role Reversal') were internally consistent in a UK sample. The 'Helplessness' scale showed the strongest internal consistency and was the only scale which was significantly associated with both child behaviour problems and parenting stress. The other scales ('Enjoyment' and 'Discourages Closeness') did not show the same predictive validity. Finally, the factor structure of the CEQ in a UK study

differed from that which was found in an American study, suggesting a 3-factor measure, rather than a 5-factor measure (J. Brennan & George, in prep).

8.1.3 Study 3: Becoming a mother: The beginning. To extend previous work which examined romantic attachment and couple caregiving during pregnancy, this study measured state of mind regarding attachment, romantic attachment, parental caregiving, partner caregiving, relationship satisfaction, and maternal antenatal mental health. A total of 41 women, expecting their first child took part in the study: 26 in-person and 15 online. The main hypothesis was that antenatal parental caregiving representations would be related to antenatal attachment representations. There were associations between some scales of parental caregiving and antenatal attachment ('Enjoyment' and 'Role Reversal'), but not all. Additionally, the relationships between each of the maternal variables were investigated to understand how different attachment and caregiving relationships are related to a woman's developing relationship with her foetus. Antenatal attachment was related to 'Responsive' caregiving to partner and romantic attachment 'Avoidance', but not related to the women's state of mind regarding attachment. Parental caregiving 'Enjoyment' was the best predictor of antenatal attachment, over and above both couple caregiving 'Responsiveness' and romantic attachment related 'Avoidance' which had both been identified as significant predictors of antenatal attachment in previous research. Overall, the findings support previous research which has found associations between romantic attachment, couple caregiving, and antenatal attachment and added to the current knowledge by extending the work to measure parental caregiving as well. These findings support the notion that researchers who study the maternal-foetal relationship as an attachment relationship may actually be measuring women's caregiving behavioural system as it develops during pregnancy. Future research should continue to examine the underlying structures of both antenatal attachment and parental caregiving to better

understand if the two constructs are unique with some convergence or the same construct being measured in different ways.

8.1.4 Study 4: Becoming a mother: The child's first year. While child attachment previously been associated with the mother's state of mind regarding attachment and her parental caregiving representations, there existed no published research which had examined the contribution of the mother's romantic attachment and couple caregiving representations to her child's attachment security. Therefore, the main aim of this study was to measure individual differences in maternal romantic attachment and couple caregiving representations of mothers of children with differing attachment classifications to understand their contribution to children's attachment security. Additionally, the study also measured the differences in first-time mothers reported parenting stress, parental caregiving, and relationship satisfaction. A total of 19 mother-child dyads met with the researcher. The mothers completed a battery of questionnaires and the dyads took part in the Strange Situation Paradigm (Ainsworth et al., 1978). The results found that there were no significant differences in romantic attachment or couple caregiving representations between the attachment groups. Parenting stress and relationship satisfaction also did not discriminate between attachment groups. In fact, the only significant difference between the groups was for one of the parental caregiving scales, 'Role Reversal'. As it is well known that maternal variables are related to children's attachment, future research must continue to examine the ways in which maternal experiences impact their children's attachment security.

8.1.5 Study 5: Becoming a mother: The mother's first year. The aim of this study was to attempt to understand how women's representations of their relationships were related to one another during their first year of motherhood. The study measured romantic attachment, couple caregiving, relationship satisfaction, parental caregiving and

parenting stress in 48 first-time mothers with children ages 11-15 months. The results indicated that there were significant associations among adult romantic attachment, couple caregiving, and parenting stress. Again, parental caregiving 'Helplessness' was correlated with parenting stress, as it had been in the UK study. Relationship satisfaction was associated with the parental stress scale of 'Parental Distress' which is a scale that represents a mother's representation of herself in a relationship with her child. The results help to better understand how these processes impact one another, particularly around parenting stress, with a goal of improving our understanding of how to support new mothers. Future research should also examine other relationship specific parenting constructs such as the co-parenting alliance.

8.1.6 Study 6: Becoming a mother: The transition to motherhood. This small, longitudinal study followed seven women from their 3rd trimester of pregnancy until their child was approximately 1 year old (11.5-15 months) with a goal of identifying patterns of change in their relationship representations over time and attempting to understand what antenatal representations might be related to the child's attachment at 1 year of age. As this was such a small sample, the results provided were descriptive in nature. The study provides an understanding of important processes during the transition to motherhood and provides a good base for future research to examine these relationships in a larger sample.

8.2 Synthesis of the Findings

8.2.1 What is antenatal attachment actually measuring? The antenatal study in this thesis (Study 3: Chapter 4) provides some support to Walsh et al.'s (2014) proposal that the construct of antenatal attachment seems to be more closely linked to caregiving than it does to attachment. Walsh et al. found that 'Responsive' caregiving to partner was directly associated with antenatal attachment and fully mediated the association between romantic attachment 'Avoidance' and antenatal attachment. The study presented in this

thesis also found direct associations between 'Responsive' couple caregiving and antenatal attachment, as well as associations between parental caregiving 'Enjoyment' and 'Role Reversal'. As 'Avoidance,' 'Responsiveness,' 'Enjoyment,' and 'Role Reversal' were all significantly correlated with antenatal attachment, a regression model was built to determine how each of these factors contributed to antenatal attachment. Parental caregiving 'Enjoyment' was the best predictor of overall antenatal attachment, above and beyond the previously identified contributing factors. Caregiving 'Enjoyment' is meant to be reflective of a parent who is flexibly integrated and can see their child as their own person, understands that their vital role as a caregiver is to provide a haven of safety to their child (J. Brennan, 2012). If parental caregiving 'Enjoyment' is the best predictor of antenatal 'attachment,' then, there is a good chance that antenatal 'attachment' is in fact more likely related to the caregiving behavioural system than it is to the attachment behavioural system, the parent is *providing* care to their foetus, rather than *seeking* care from their foetus.

As one of the more established researchers in antenatal attachment, Condon (2012) has written about the debate of referring to the antenatal relationship that a mother develops with her foetus as an 'attachment' relationship (J. Condon, 2012). Traditional Bowlbian attachment researchers, of both the developmental and social psychology traditions suggest that the word 'attachment' be reserved to describe a relationship where one person seeks care and protection from another person with the ultimate goal of survival, following Bowlby's (1969/1982) proposition of the relationship serving an adaptive function. Condon (2012) however, asserts that the term 'attachment' can also be used to describe the love that a parent feels for the child, both before and after birth. Condon (2012) describes these feelings as 'parents' subjective cognitive and emotional experiences in relation to their offspring' (p. 1). He wrote that attachment researchers who

suggest that the relationship between a parent-to-be and their unborn child is not an attachment relationship (i.e. Walsh, 2010; Van den Berg & Simons, 2009; Redshaw & Martin, 2013) who instead refer to it as a bonding relationship, are not giving credence to the subjective feelings that the parent experiences.

Condon's (2012) editorial suggests that attachment researchers reserve the term attachment only for the child's side of the relationship. However, as has been explained in previous chapters, Bowlby (1975) himself proposed that attachment is a process that humans experience throughout their lifetime and indeed, attachment research therefore extends beyond childhood. What remains constant with traditional, Bowlbian attachment researchers is the concept that the attachment behavioural system serves the function of protection and the ultimate goal of survival and that caregiving serves the function of providing protection and care to another person. Some of these researchers follow Bowlby and suggest that the subjective feelings that parents feel toward their child are driven by their caregiving behavioural system (George & Solomon, 1989a, 1996, 2008a; Solomon & George, 1996), while others have studied the transmission of parental attachment representations to the quality of the child's attachment (e.g. Fonagy et al., 1991; Jacobvitz, Leon, & Hazen, 2006; Slade et al., 2005; Steele et al., 1996). Traditional Bowlbian researchers do not devalue the importance of subjective feelings that a parent has for their child both before and after birth, but they do assert that attachment is related to seeking care and protection, whereas caregiving is related to providing care and protection.

Sandbrook and Adamson-Macedo (2004) found further support for this in qualitative interviews with both primiparous and multiparous women, where 'protection' was the most overwhelming theme in women's when asked how they felt about the foetus. 'The woman must protect her progeny from environmental damage, accidental harm, and perceived danger' (Sandbrook & Adamson-Macedo, 2004 p. 176). The researchers

suggested that the theme of protection seemed instinctual to the women and that it developed very quickly after learning of the pregnancy, getting stronger over time. These findings led the researchers to question if love, as described by Condon (1993) in his definition of antenatal attachment, was actually a core tenet of the relationship between a woman and her foetus. They asked the participants if their relationship with their foetus was love and the participants said that it was not, that love was something that would happen once they had their baby and could interact with them. Agreeing with the findings of Walsh et al. (2014) and the current thesis, Sandbrook and Adamson-Macedo (2004) concluded that antenatal relationship is not based love at all, but instead the instinctive need to protect the foetus.

It may seem that insisting the relationship is a caregiving relationship rather than an attachment relationship is splitting hairs. Yet, the point of entry for early intervention is dependent upon the underlying mechanisms. As this debate continues in the literature, this study has provided further evidence that the relationship a woman develops with her foetus is not an attachment relationship.

8.2.2 How do maternal relationships and contextual factors relate to one another during the transition to parenthood in first time mothers? While the associations between maternal romantic attachment, couple caregiving, parental caregiving, antenatal bonding, parenting stress, and relationship satisfaction had each been examined before in differing configurations, very few studies investigated these associations specifically for first-time mothers and no studies investigated the associations between all of them at the same time. The antenatal study (Study 3: Chapter 4) provided support for the inverse relationship between romantic attachment and 'Responsive' couple caregiving in first-time mother's to be. This association was replicated in the first year study (Study 5: Chapter 6) with first time mothers of infants, supporting the results of

Millings et al.'s (2013) study with parents of older children. Both studies also found inverse relationships for relationship satisfaction and romantic attachment, further supporting the findings of Möller et al. (2006) who found a significant assoication between the two constructs. Further, relationship satisfaction was also correlated with 'Responsive' caregiving to partner in the antenatal and one-year study, which does not seem to have been studied during the transition to parenthood for first-time mothers before, making this finding unique.

The relationships between the parenting stress scale 'Parental Distress' and romantic attachment, as well as the stress scale's association with both 'Responsive' caregiving to partner, and relationship satisfaction highlight the importance of the partner relationship on helping to regulate maternal parenting stress. 'Helplessness' continued to show strong associations with parenting stress in the one year study (Study 5: Chapter 6) with similar effect sizes as those which were seen in both the initial validity study of the CEQ (J. Brennan & George, in prep) and the UK validity chapter in this thesis (Study 2: Chapter 3) reinforcing the predictive validity of that particular scale. Caregiving 'Helplessness' is meant to reflect a caregiver who is so overwhelmed by her responsibilities as a caregiver or by her own attachment needs that she feels out of control. If caregivers are feeling highly stressed by their roles as parents, it is not unexpected that this stress may lead to overwhelm. Or, this direction could also go the other way, a caregiver who is overwhelmed by her responsibilities as a caregiver or by her own attachment needs may also feel that parenting is more stressful as a result of being unable to cope with her caregiving responsibilities.

The lack of differences in maternal relationship and contextual variables between mothers of children with differing attachment classifications in the one year study (Study 4: Chapter 5) was surprising, yet still possibly insightful. Most of the variables studied

(romantic attachment, couple caregiving, and relationship satisfaction) had not been studied, or at least not reported, in previous research regarding infant attachment. Therefore, the lack of significant differences for those variables brings to question the strength of effect of these associations these variables might have with the security of a child's attachment to his or her mother. The surprising finding was the lack of differences for parenting stress and parental caregiving between attachment groups, as these have been found in previous research (George & Solomon, 1989a, 1996; Jarvis and Creasey, 1991). However, as mentioned in the chapter, the power of the analyses for this study was low due to the small sample size.

One difference that was found among child attachment groups in the 1 year study (Study 4: Chapter 5) was mother's endorsements of items on 'Role Reversal' scale. This scale proved to be interesting throughout the studies. In the UK measurement study (Study 2: Chapter 3), this scale showed good internal reliability as measured by Chronbach's alpha and inter-item correlations, yet it was not significantly associated with either maternal reports of parenting stress or child behavioural problems, suggesting that it did not have the expected predictive validity. In the antenatal study (Study 3: Chapter 4), 'Role Reversal' was positively associated with antenatal attachment. This scale was designed to capture a form of dysregulated caregiving where the parent is so overwhelmed by caregiving that she excludes caregiving distress from her conscious thoughts and only sees her child as an ideal child, one who barely requires care. The items on the scale such as 'My child and I are really close. I can just sit there and tell him or her if I had a bad day and s/he understands' are worded in a positive manner, yet describe a role reversed relationship whereby the mother turns to the child to provide care for her. The items which describe the child as a particularly 'special' child, such as 'My baby goes out of his or her way to be sensitive to me and others.' are again, worded in a positive manner, but are not

age-appropriate for such young children and were drawn from interview examples where mothers described a perfect child who does not require care, instead that child provides care to those around them. However, based on the findings of the studies in this thesis, it appears that the positive tone of the items on the 'Role Reversal' scale are not capturing caregiving dysregulation as previously found (J. Brennan & George, in prep; J. Brennan 2012; Røhder et al., under review). The CEQ still requires further study to help to determine what each of the scales is capturing and particular attention must be paid to the 'Role Reversal' scale.

8.3 Limitations and Future Research Directions

As mentioned multiple times through this thesis, the largest limitation of the studies in this volume is the sample sizes. As mentioned in the longitudinal chapter (Study 6: Chapter 7), the initial goal of the thesis was to run one, large longitudinal research study which followed primiparous women through from their 3rd trimester of pregnancy and through their child's first year of life, culminating with the final data collection measuring their child's attachment security to them. An a priori power calculation in G*Power (Faul, Erdfelder, Buchner, & Lang, 2009; Faul, Erdfelder, Lang, & Buchner, 2007) determined that the study would require an initial recruitment of 104 women to account for a 25% attrition rate over three data collection periods for a final minimum sample of 78. This was a lofty goal to begin with and one that became even more challenging once the study received ethical approval and launched.

The initial recruitment plan for the study involved a collaboration with the local midwives' clinics, whereby midwives would distribute an information sheet about the study to first-time mothers-to-be at their clinic appointments. Unfortunately, at the same time that the study received ethical approval and was due to launch, the midwifery team was currently assisting with recruitment for two other studies and it was determined that

adding another study to their load would be too burdensome with all of the other demands on midwives' time. This was a disappointing, but very understandable setback. Permission was then granted by the NHS ethics committee to ask doctors' surgeries where midwifery clinics were held to post flyers recruiting for the study in their waiting rooms. However, after distributing the flyers to local clinics, not a single potential participant initiated contact from having seen a flyer in the surgeries.

Therefore, recruitment for this study was done online through paid Facebook advertisements, messages to parenting groups on Facebook, posts on Netmums, Mumsnet, the University of East Anglia staff and student news bulletins, and Twitter. Flyers were also placed in the community at cafes, libraries, a private ultrasound clinic, and the University of East Anglia. Additionally by contacting local antenatal instructors and explaining the study to them, the researcher was invited to attend classes and describe the study to the mothers present. The most fruitful methods of recruitment came from these local classes, suggesting that making initial face-to-face contact with potential participants is an important part of the recruitment process. This was further enforced while recruiting for the antenatal and first year cross-sectional studies, where again, most in person participants were recruited through antenatal classes and participation in a local bump and baby fair.

Further, the restrictions for participation in the research also seemed to impact the number of participants. Many women who were having the second (or in one case fourth!) child showed interest in the study after seeing the flyer or hearing about the research, as this study was looking specifically at the transition for first time mothers, these mothers were thanked for the interest, but told they did not qualify for the study. The situation was similar for lone mothers, as this study was interested in the associations between mothers'

relationships with their partners, women who did not currently have a partner were excluded from participation.

Researchers interested in conducting longitudinal research on the transition to motherhood must consider the barriers to recruitment for this population. Many women work until the end of their pregnancies and towards the end of their pregnancy in the 3rd trimester, they have many obligations in preparing for the baby that compete for their free time, likely reducing the amount of time they may be willing to donate for the purposes of research. Additionally, single women had to be turned away from this research because of the variables of interest. Future research should consider if it would be possible to broaden their population and still manage to study the variables of interest in a larger population.

The statistical analyses in this thesis relied on primarily correlation data to draw its conclusion. These conclusions cannot explain causality or in most cases, directionality of the associations it found. Further, the analyses were limited not only by sample size, but also by attempting to control for possible errors generated by the number of tests conducted. This lowered the critical significance level to very low values and rendered some significant associations non-significant after corrections. Pallant (2016) cautions that these post hoc corrections do increase the chance of not detecting an effect that is present. This can be further complicated in smaller studies. Therefore, the results in each chapter present associations which were initially found to be significant, yet highlights the findings that became non-significant after the adjustment was applied to the critical significance value.

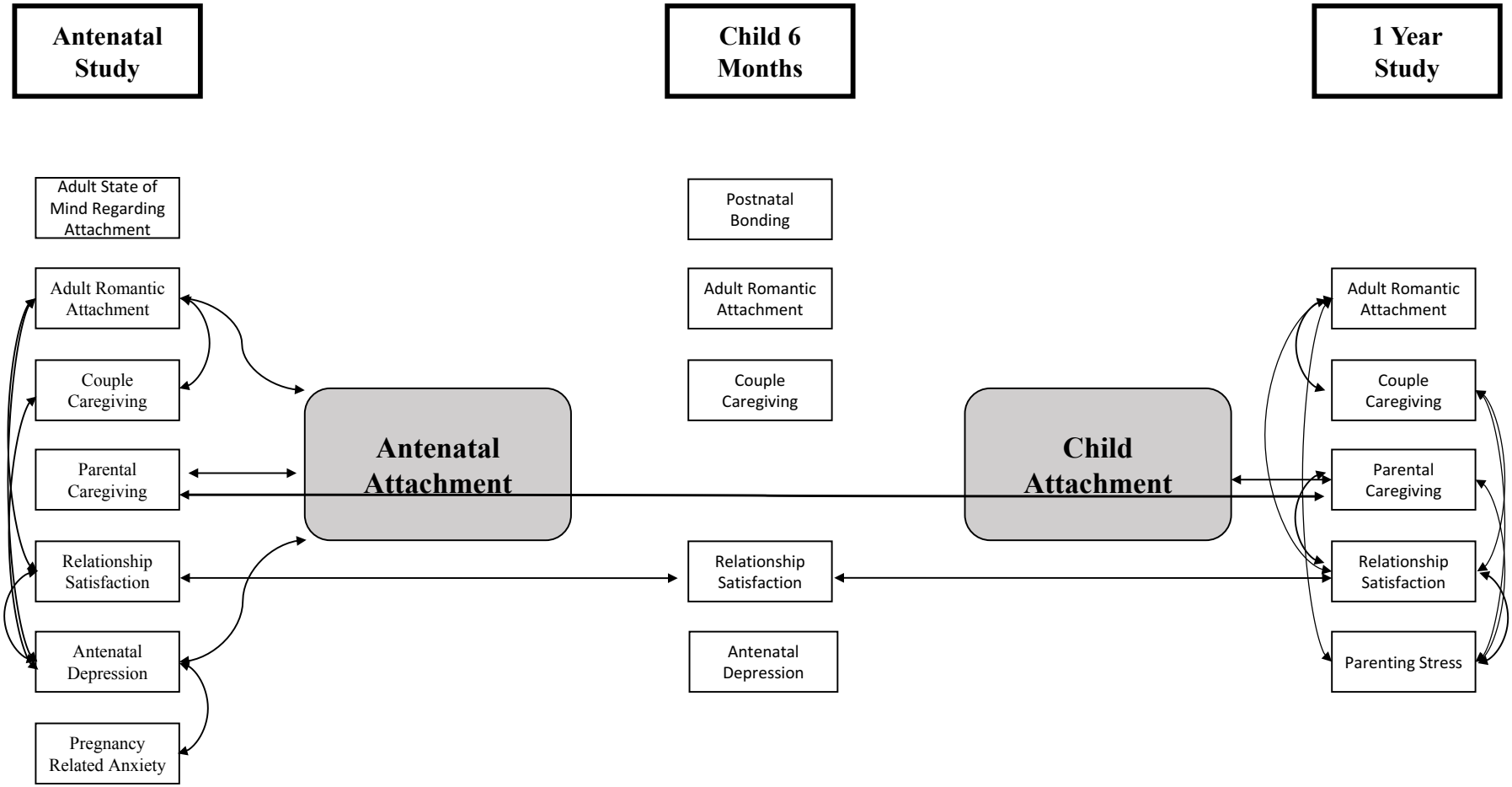
8.4 Conclusions

The goal of investigating the transition to motherhood from a variety of attachment theoretical viewpoints was achieved through multiple studies at different time points between the 3rd trimester of pregnancy and the first year after the child was born. While

the studies in this thesis have mostly provided further support of previously recognised associations, the studies also provided unique results. The associations between parental caregiving representations and antenatal attachment had not yet been studied, the antenatal study found that not only were they associated, but that parental caregiving representations were predictive of overall antenatal attachment. This finding is incredibly important to our thinking about antenatal representations: What are these relationships? Are they reflective of an attachment relationship from the mother to her foetus? This research would suggest that they are not. Differences in romantic attachment dimensions and couple caregiving representations were examined for mothers of children with differing attachment patterns for the first time, and while the differences were not found to be significant, this too is a new and unique finding; we did not know if romantic attachment and caregiving related directly to infant attachment security and these results suggest that they do not. Finally, the observed increase of mother's relationship satisfaction across the transition to parenthood was a unique finding, as previous research has always reported a decrease over the transition.

Becoming a mother is an experience that is unlike anything else a woman has ever done. It is a process that will vary for each person based on their past and present experiences. As researchers, learning how this experience differs for women can help to inform interventions to help women struggling with the transition with a goal of improving not just the lives of mothers, but also of their children.

Figure 15. *Map of Becoming a Mother studies with significant associations highlighted.*



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Appendix A

Caregiving Experiences Questionnaire
(J. Brennan & George, in prep)

We would like to get a much better understanding of what it is like to be a parent and your relationship with your child. Please try to think only about being his or her parent as you complete this questionnaire.

The following statements are things parents say about being with their child. Read this list and think about how well these statements match your feelings about being your child's parent or about your child. Do the best you can and trust your judgment.

It is important that you answer all of the questions. This is not a test. There are no right or wrong answers. The statements simply describe different ways that parents think about their experiences.

For each statement please choose a number 1-5 that most closely represents how characteristic you find this statement to be of you, your child and your relationship with your child.

1 = Not very characteristic at all
2 = Usually not characteristic
3 = Somewhat characteristic
4 = Usually, but not always, characteristic
5 = Very characteristic

1.	My child is so happy when s/he can do something on his own. S/he has a huge smile on his or her face like "I'm so proud, mom, I'm so proud of myself."	1	2	3	4	5
2.	My child deserves my love and attention, especially when he or she is not feeling well.	1	2	3	4	5
3.	When I'm away from my child, I've got to do something else so s/he isn't on my mind.	1	2	3	4	5
4.	S/he can mess things up just to be demanding and get attention. Children know what is going on and will purposely act up to test you.	1	2	3	4	5
5.	When s/he gets up in the morning, just to see the smile on his or her face – I know that s/he loves me, s/he trusts me.	1	2	3	4	5
6.	My child is my top priority.	1	2	3	4	5
7.	My child can get so demanding. It's particularly annoying when s/he makes demands after I've just done something special for him or her.	1	2	3	4	5
8.	I'm not inclined to give my child many hugs and kisses when s/he gets hurt. S/he's going to get hurt the rest of his or her life, so s/he might as well get used to it.	1	2	3	4	5
9.	Sometimes being a parent seems like a battle and if my child won't cooperate, one of us must give in.	1	2	3	4	5
10.	Sometimes I just lose it and scream at him or her or punish too harshly.	1	2	3	4	5
11.	I get overwhelmed because my child always needs my help and cannot handle problems on his or her own.	1	2	3	4	5

12.	Sometimes I say, “I can’t do this right now.” I need time to relax.	1	2	3	4	5
13.	My child is amazing. I am in awe of him or her.	1	2	3	4	5
14.	I feel that my child is worth all the love and attention I give him or her.	1	2	3	4	5
15.	I get out of control and there’s nothing I can do about it.	1	2	3	4	5
16.	My child pushes me away or ignores me a lot.	1	2	3	4	5
17.	When I’m angry at my child, I have to leave the room so I don’t explode.	1	2	3	4	5
18.	My child is really gifted.	1	2	3	4	5
19.	I feel like I’m walking on eggshells when I am with my child.	1	2	3	4	5
20.	It frightens me when my child is angry and I plead with him or her to stop.	1	2	3	4	5
21.	Life is chaotic and my child makes me feel out of control.	1	2	3	4	5
22.	Being away from my child makes me feel guilty.	1	2	3	4	5
23.	I enjoy being with my child when s/he is learning.	1	2	3	4	5
24.	My child can get wild and out of control.	1	2	3	4	5
25.	My child is a real part of me. I can’t imagine what it would be like to live without him or her.	1	2	3	4	5
26.	I am lonely when my child and I are separated.	1	2	3	4	5
27.	I think about my child constantly when we’ve been separated for a while. I really don’t know what to do without him or her for very long.	1	2	3	4	5
28.	My child is just as happy and excited to see me as I am to see him or her after we have been away from each other for a while.	1	2	3	4	5
29.	I get sad when I realize that my child won’t stay a baby forever.	1	2	3	4	5
30.	My child cheers me up if I am sad or angry. S/he makes me smile and feel better.	1	2	3	4	5
31.	There are a lot of times when I cannot control or restrain my child.	1	2	3	4	5
32.	I’m so lucky to have my child. S/he is a miracle – the best gift I ever had. Being a mother is wondrous.	1	2	3	4	5
33.	My child goes out of his way to be sensitive and tuned in to me and others.	1	2	3	4	5
34.	I am delighted when I see my child’s face.	1	2	3	4	5
35.	Sometimes I think my child would be better off if I weren’t there and somebody else could do better.	1	2	3	4	5
36.	My child can get so wound up and out of control and I don’t want to take him or her anywhere.	1	2	3	4	5
37.	My child and I are really close. I can just sit there and tell him or her if I had a bad day and s/he understands.	1	2	3	4	5
38.	I feel helpless as a mother.	1	2	3	4	5
39.	I am scared of my child. (My child scares me.)	1	2	3	4	5
40.	My child and I are so close we can almost tell each other’s feelings. We’re really tuned into each other.	1	2	3	4	5

Appendix B

Child Behavior Checklist 1.5-5 years
(Achenbach & Edelbrock, 1990)

Below is a list of items that describe children. For each item that describes your child now or within the past 2 months, please choose 2 if the item is very true or often true, 1 if the item is sometimes true or somewhat true. If the item is not true of your child, please choose 0. Please answer all items as well as you can, even if some do not seem to apply to the child.

Statement	Not True	Sometimes or Somewhat True	Very True or Often True
1. Aches or pains (without medical cause; do not include stomach or headaches)	0	1	2
2. Acts too young for age	0	1	2
3. Afraid to try new things	0	1	2
4. Avoids looking others in the eye	0	1	2
5. Can't concentrate, can't pay attention for long	0	1	2
6. Can't sit still, restless, or hyperactive	0	1	2
7. Can't stand having things out of place	0	1	2
8. Can't stand waiting; wants everything now	0	1	2
9. Chews on things that aren't edible	0	1	2
10. Clings to adults or too dependent	0	1	2
11. Constantly seeks help	0	1	2
12. Constipated, doesn't move bowels (when not sick)	0	1	2
13. Cries a lot	0	1	2
14. Cruel to animals	0	1	2
15. Defiant	0	1	2
16. Demands must be met immediately	0	1	2
17. Destroys his/her own things	0	1	2
18. Destroys things belonging to his/her family or other children.	0	1	2
19. Diarrhoea or loose bowels (when not sick)	0	1	2
20. Disobedient	0	1	2
21. Disturbed by any change in routine	0	1	2
22. Doesn't want to sleep alone	0	1	2
23. Doesn't answer when people talk to him/her	0	1	2
24. Doesn't eat well	0	1	2
25. Doesn't get along with other children	0	1	2
26. Doesn't know how to have fun; acts like a little adult	0	1	2
27. Doesn't seem to feel guilty after misbehaving	0	1	2
28. Doesn't want to go out of home	0	1	2
29. Easily frustrated	0	1	2
30. Easily jealous	0	1	2

31. Eats drink things that are not food – don't include sweets	0	1	2
32. Fears certain animals, situations, or places	0	1	2
33. Feelings are easily hurt	0	1	2
34. Gets hurt a lot, accident-prone	0	1	2
35. Gets in many fights	0	1	2
36. Gets into everything	0	1	2
37. Gets too upset when separated from parents	0	1	2
38. Has trouble getting to sleep	0	1	2
39. Headaches (without medical cause)	0	1	2
40. Hits others	0	1	2
41. Holds his/her breath	0	1	2
42. Hurts animals or people without meaning to	0	1	2
43. Looks unhappy without good reason	0	1	2
44. Angry moods	0	1	2
45. Nausea, feels sick (without medical cause)	0	1	2
46. Nervous movements or twitching	0	1	2
47. Nervous, high-strung, or tense	0	1	2
48. Nightmares	0	1	2
49. Overeating	0	1	2
50. Overtired	0	1	2
51. Shows panic for no good reason	0	1	2
52. Painful bowel movements (without medical cause)	0	1	2
53. Physically attacks people	0	1	2
54. Picks nose, skin, or other parts of body	0	1	2
55. Plays with own sex parts too much	0	1	2
56. Poorly coordinated or clumsy	0	1	2
57. Problems with eyes (without medical cause)	0	1	2
58. Punishment doesn't change his/her behaviour	0	1	2
59. Quickly shifts from one activity to another	0	1	2
60. Rashes or other skin problems (without medical cause)	0	1	2
61. Refuses to eat	0	1	2
62. Refuses to play active games	0	1	2
63. Repeatedly rocks head or body	0	1	2
64. Resists going to bed at night	0	1	2
65. Resists toilet training	0	1	2
66. Screams a lot	0	1	2
67. Seems unresponsive to affection	0	1	2
68. Self-conscious or easily embarrassed	0	1	2
69. Selfish or won't share	0	1	2
70. Shows little affection toward people	0	1	2
71. Shows little interest in things around him/her	0	1	2
72. Shows too little fear of getting hurt	0	1	2
73. Too shy or timid	0	1	2
74. Sleeps less than most kids during day and/or night	0	1	2

75. Smears or plays with bowel movements	0	1	2
76. Speech problem	0	1	2
77. Stares into space or seems preoccupied	0	1	2
78. Stomach aches or cramps (without medical cause)	0	1	2
79. Rapid shifts between sadness and excitement	0	1	2
80. Strange behaviour	0	1	2
81. Stubborn, sullen, or irritable	0	1	2
82. Sudden changes in mood or feelings	0	1	2
83. Sulks a lot	0	1	2
84. Talks or cries out in sleep	0	1	2
85. Temper tantrums or hot temper	0	1	2
86. Too concerned with neatness or cleanliness	0	1	2
87. Too fearful or anxious	0	1	2
88. Uncooperative	0	1	2
89. Underactive, slow moving, or lacks energy	0	1	2
90. Unhappy, sad, or depressed	0	1	2
91. Unusually loud	0	1	2
92. Upset by new people or situations	0	1	2
93. Vomiting, throwing up (without medical cause)	0	1	2
94. Wakes up often at night	0	1	2
95. Wanders away	0	1	2
96. Wants a lot of attention	0	1	2
97. Whining	0	1	2
98. Withdrawn, doesn't get involved with others	0	1	2
99. Worries	0	1	2
Please write in any problems the child has that were not listed.			

Appendix C

Parenting Stress Index – Short Form
(Abidin, 1995)

The following statements describe feelings and perceptions about the experience of being a parent. Think of each of the items in terms of how your relationship with your child or children typically is. Please indicate the degree to which you agree or disagree with the following items by placing the appropriate number in the space provided.

Statement	Strongly Disagree				Strongly Agree
1. I often have the feeling that I cannot handle things very well.	1	2	3	4	5
2. I find myself giving up more of my life to meet my children's needs than I ever expected.	1	2	3	4	5
3. I feel trapped by my responsibilities as a parent.	1	2	3	4	5
4. Since having this child, I have been unable to do new and different things.	1	2	3	4	5
5. Since having a child, I feel that I am almost never able to do things that I like to do.	1	2	3	4	5
6. I am unhappy with the last purchase of clothing I made for myself.	1	2	3	4	5
7. There are quite a few things that bother me about my life.	1	2	3	4	5
8. Having a child has caused more problems than I expected in my relationship with my spouse (or male/female friend).	1	2	3	4	5
9. I feel alone and without friends.	1	2	3	4	5
10. When I go to a party, I usually expect not to enjoy myself.	1	2	3	4	5
11. I am not as interested in people as I used to be.	1	2	3	4	5
12. I don't enjoy things as I used to.	1	2	3	4	5
13. My child rarely does things for me that make me feel good.	1	2	3	4	5
14. Sometimes I feel my child doesn't like me and doesn't want to be close to me.	1	2	3	4	5
15. My child smiles at me much less than I expected.	1	2	3	4	5
16. When I do things for my child, I get the feeling that my efforts are not appreciated very much.	1	2	3	4	5
17. When playing, my child doesn't often giggle or laugh.	1	2	3	4	5
18. My child doesn't seem to learn as quickly as most children.	1	2	3	4	5
19. My child doesn't seem to smile as much as most children.	1	2	3	4	5
20. My child is not able to do as much as I expected.	1	2	3	4	5
21. It takes a long time and it is very hard for my child to get used to new things.	1	2	3	4	5
For the next statement, choose your response from the choices "1" to "5" below.					

22. I feel that I am:
    1. Not very good at being a parent
    2. A person who has some trouble being a parent
    3. An average parent
    4. A better than average parent
    5. A very good parent

Statement	Strongly Disagree				Strongly Agree
23. I expected to have closer and warmer feeling for my child than I do and this bothers me.	1	2	3	4	5
24. Sometimes my child does things that bother me just to be mean.	1	2	3	4	5
25. My child seems to cry or fuss more often than most children.	1	2	3	4	5
26. My child generally wakes up in a bad mood.	1	2	3	4	5
27. I feel that my child is very moody and easily upset.	1	2	3	4	5
28. My child does a few things which bother me a great deal.	1	2	3	4	5
29. My child reacts very strongly when something happens that my child doesn't like.	1	2	3	4	5
30. My child gets upset easily over the smallest thing.	1	2	3	4	5
31. My child's sleeping or eating schedule was much harder to establish than I expected.	1	2	3	4	5

For the next statement, choose your response from the choices "1" to "5" below.

32. I have found that getting my child to do something or stop doing something is
    1. Much harder than I expected
    2. Somewhat harder than I expected
    3. About as hard as I expected
    4. Somewhat easier than I expected
    5. Much easier than I expected

For the next statement, choose your response from the choices "10+" to "1-3"

33. Think carefully and count the number of things which your child does that bother you.
    10+ 8-9 6-7 4-5 1-3

Statement	Strongly Disagree				Strongly Agree
34. There are some things my child does that really bother me a lot.	1	2	3	4	5
35. My child turned out to be more of a problem than I had expected.	1	2	3	4	5
36. My child makes more demands on me than most children.	1	2	3	4	5

Appendix D

The Caregiving Questionnaire
(Kunce & Shaver, 1994)

For each statement, write the number that indicates how descriptive the statement is of you. Write the number in the space provided, using the following rating scale:

1	2	3	4	5	6
Not at all descriptive of me					Very descriptive of me

1.	I sometimes push my partner away when s/he reaches out for a needed hug or kiss.	1	2	3	4	5	6
2.	I can always tell when my partner needs comforting, even when s/he doesn't ask for it.						
3.	I always respect my partner's ability to make his/her decisions and solve his/her own problems.						
4.	When my partner cries or is distressed, my first impulse is to hold or touch him/her.						
5.	I help my partner without becoming overinvolved in his/her problems.						
6.	Too often, I don't realise when my partner is upset or worried about something.						
7.	When my partner is troubled or upset, I move closer to provide support and comfort.						
8.	I'm good at knowing when my partner needs my help or support and when s/he would rather handle things alone.						
9.	I feel comfortable holding my partner when s/he needs physical signs of support and reassurance.						
10.	I'm not very good at "tuning in" to my partner's needs and feelings.						
11.	I tend to get overinvolved in my partner's problems and difficulties.						
12.	I don't like it when my partner is needy and clings to me.						
13.	I often end up telling my partner what to do when s/he is trying to make a decision.						
14.	I sometimes miss the subtle signs that show how my partner is feeling.						
15.	When necessary I can say "no" to my partner's requests for help without feeling guilty.						
16.	I tend to be too domineering when trying to help my partner.						
17.	When it's important, I take care of my own needs before I try to take care of my partner's.						
18.	I am very attentive to my partner's nonverbal signs for help and support.						

19.	I can easily keep myself from becoming overly concerned about or overly protective of my partner.						
20.	I'm very good about recognising my partner's needs and feelings, even when they're different from my own.						
21.	I can help my partner work out his/her problems without "taking control".						
22.	I sometimes draw away from my partner's attempts to get a reassuring hug from me.						
23.	I am always supportive of my partner's own efforts to solve his/her problems.						
24.	I tend to take on my partner's problems – and then feel burdened by them.						
25.	When my partner seems to want or need a hug, I'm glad to provide it.						
26.	When I help my partner with something, I tend to want to do things "my way".						
27.	I frequently get too "wrapped up" in my partner's problems and needs.						
28.	I sometimes "miss" or "misread" my partner's signals for help and understanding.						
29.	When my partner is crying or emotionally upset, I sometimes feel like withdrawing.						
30.	When my partner tells me about a problem, I sometimes go too far in criticising his/her own attempts to deal with it.						
31.	I create problems by taking on my partner's troubles as if they were my own.						
32.	When helping my partner solve a problem, I am much more "cooperative" than "controlling".						

Appendix E

Maternal Antenatal Attachment Scale
(Condon, 1993)

These questions are about your thoughts and feelings about the developing baby. Please choose only one answer for each question.

1. Over the past two weeks I have thought about, or been preoccupied with the baby inside me:
    a. Almost all the time
    b. Very frequently
    c. Frequently
    d. Occasionally
    e. Not at all

2. Over the past two weeks when I have spoken about, or thought about the baby inside me I got emotional feelings which were:
    a. Very weak or non-existent
    b. Fairly weak
    c. In between strong and weak
    d. Fairly strong
    e. Very strong
3. Over the past two weeks my feelings about the baby inside me have been:
    a. Very positive
    b. Mainly positive
    c. Mixed positive and negative
    d. Mainly negative
    e. Very negative
4. Over the past two weeks I have had the desire to read about or get information about the developing baby. This desire is:
    a. Very weak or non-existent
    b. Fairly weak
    c. Neither strong nor weak
    d. Moderately strong
    e. Very strong
5. Over the past two weeks I have been trying to picture in my mind what the developing baby actually looks like in my womb:
    a. Almost all the time
    b. Very frequently
    c. Frequently
    d. Occasionally
    e. Not at all
6. Over the past two weeks I think of the developing baby mostly as:
    a. A real little person with special characteristics
    b. A baby like any other baby
    c. A human being

    d. A living thing
    e. A thing not yet really alive
7. Over the past two weeks I have felt that the baby inside me is dependent on me for its well-being:
    a. Totally
    b. A great deal
    c. Moderately
    d. Slightly
    e. Not at all
8. Over the past two weeks I have found myself talking to my baby when I am alone:
    a. Not at all
    b. Occasionally
    c. Frequently
    d. Very frequently
    e. Almost all the time I am alone
9. Over the past two weeks when I think about (or talk to) my baby inside me, my thoughts:
    a. Are always tender and loving
    b. Are mostly tender and loving
    c. Are a mixture of both tenderness and irritation
    d. Contain a fair bit of irritation
    e. Contain a lot of irritation
10. The picture in my mind of what the baby at this stage actually looks like inside the womb is:
    a. Very clear
    b. Fairly clear
    c. Fairly vague
    d. Very vague
    e. I have no idea at all
11. Over the past two weeks when I think about the baby inside me I get feelings which are:
    a. Very sad
    b. Moderately sad
    c. A mixture of happiness and sadness
    d. Moderately happy
    e. Very happy
12. Some pregnant women sometimes get so irritated by the baby inside them that they feel like they want to hurt it or punish it:
    a. I couldn't imagine I would ever feel like this
    b. I could imagine I might sometimes feel like this, but I never actually have
    c. I have felt like this once or twice myself
    d. I have occasionally felt like this myself
    e. I have often felt like this myself
13. Over the past two weeks I have felt:

a. Very emotionally distant from my baby
b. Moderately emotionally distant from my baby
c. Not particularly emotionally close to my baby
d. Moderately close emotionally to my baby
e. Very close emotionally to my baby.

14. Over the past two weeks I have taken care with what I eat to make sure the baby gets a good diet:
    a. Not at all
    b. Once or twice when I ate
    c. Occasionally when I ate
    d. Quite often when I ate
    e. Every time I ate
15. When I first see my baby after the birth I expect I will feel:
    a. Intense affection
    b. Mostly affection
    c. Dislike about one or two aspects of the baby
    d. Dislike about quite a few aspects of the baby
    e. Mostly dislike
16. When my baby is born I would like to hold the baby:
    a. Immediately
    b. After it has been wrapped in a blanket
    c. After it has been washed
    d. After a few hours for things to settle down
    e. The next day
17. Over the past two weeks I have had dreams about the pregnancy or the baby:
    a. Not at all
    b. Occasionally
    c. Frequently
    d. Very frequently
    e. Almost every night
18. Over the past two weeks I have found myself feeling, or rubbing with my hand, the outside of my stomach where the baby is:
    a. A lot of times each day
    b. At least once per day
    c. Occasionally
    d. Once only
    e. Not at all
19. If the pregnancy was lost at this time (due to miscarriage or other accidental event) without any pain or injury to myself, I expect I would feel:
    a. Very pleased
    b. Moderately please
    c. Neutral (i.e. neither sad nor pleased, or mixed feelings)
    d. Moderately sad
    e. Very sad

Appendix F

The Experiences of Close Relationships Scale – Revised
(Fraley et al., 2000)

The statements below concern how you feel in emotionally intimate relationships.

We are interested in how you *generally* experience relationships, not just in what is happening in a current relationship.

Respond to each statement by placing an "X" in the relevant box to indicate how much you agree or disagree with the statement.

SD = Strongly Disagree/ SA = Strongly Agree

Statement	SD						SA
1. I'm afraid that I will lose my partner's love.							
2. I often worry that my partner will not want to stay with me.							
3. I often worry that my partner doesn't really love me.							
4. I worry that romantic partners won't care about me as much as I care about them.							
5. I often wish that my partner's feelings for me were as strong as my feelings for him or her.							
6. I worry a lot about my relationships.							
7. When my partner is out of sight, I worry that he or she might become interested in someone else.							
8. When I show my feelings for romantic partners, I'm afraid they will not feel the same about me.							
9. I rarely worry about my partner leaving me.							
10. My romantic partner makes me doubt myself.							
11. I do not often worry about being abandoned.							
12. I find that my partner(s) don't want to get as close as I would like.							
13. Sometimes romantic partners change their feelings about me for no apparent reason.							
14. My desire to be very close sometimes scares people away.							
15. I'm afraid that once a romantic partner gets to know me, he or she won't like who I really am.							
16. It makes me mad that I don't get the affection and support I need from my partner.							
17. I worry that I won't measure up to other people.							
18. My partner only seems to notice me when I'm angry.							
19. I prefer not to show a partner how I feel deep down.							
20. I feel comfortable sharing my private thoughts and feelings with my partner.							
21. I find it difficult to allow myself to depend on romantic partners.							
22. I am very comfortable being close to romantic partners.							
23. I don't feel comfortable opening up to romantic partners.							
24. I prefer not to be too close to romantic partners.							

25. I get uncomfortable when a romantic partner wants to be very close.							
26. I find it relatively easy to get close to my partner.							
27. It's not difficult for me to get close to my partner.							
28. I usually discuss my problems and concerns with my partner.							
29. It helps to turn to my romantic partner in times of need.							
30. I tell my partner just about everything.							
31. I talk things over with my partner.							
32. I am nervous when partners get too close to me.							
33. I feel comfortable depending on romantic partners.							
34. I find it easy to depend on romantic partners.							
35. It's easy for me to be affectionate with my partner.							
36. My partner really understands me and my needs							

Appendix G

The Relationship Assessment Scale
(Hendrick, 1988)

Please choose the letter which best answers the item for you

1. How well does your partner meet your needs?

A	B	C	D	E
Poorly		Average		Extremely well

2. In general, how satisfied are you with your relationship?

A	B	C	D	E
Unsatisfied		Average		Extremely satisfied

3. How good is your relationship compared to most?

A	B	C	D	E
Poor		Average		Excellent

4. How often do you wish you hadn't gotten in this relationship?

A	B	C	D	E
Never		Average		Very often

5. To what extent has your relationship met your original expectations:

A	B	C	D	E
Hardly at all		Average		Completely

6. How much do you love your partner?

A	B	C	D	E
Not much		Average		Very much

7. How many problems are there in your relationship?

A	B	C	D	E
Very few		Average		Very many

Appendix H

Edinburgh Postnatal Depression Scale
(Cox et al., 1987)

As you are pregnant, we would like to know how you are feeling. Please check the answer that comes closest to how you have felt IN THE PAST 7 DAYS, not just how you feel today.

In the past 7 days:

1. I have been able to laugh and see the funny side of things
    a. As much as I always could
    b. Not quite so much now
    c. Definitely not so much now
    d. Not at all
2. I have looked forward with enjoyment to things
    a. As much as I ever did
    b. Rather less than I used to
    c. Definitely less than I used to
    d. Hardly at all
3. I have blamed myself unnecessarily when things went wrong
    a. Yes, most of the time
    b. Yes, some of the time
    c. Not very often
    d. No, never
4. I have been anxious or worried for no good reason
    a. No, not at all
    b. Hardly ever
    c. Yes, sometimes
    d. Yes, very often
5. I have felt scared or panicky for no very good reason
    a. Yes, quite a lot
    b. Yes, sometimes
    c. No, not much
    d. No, not at all
6. Things have been getting on top of me
    a. Yes, most of the time I haven't' been able to cope at all
    b. Yes, sometimes I haven't been coping as well as usual
    c. No, most of the time I have coped quite well
    d. No, I have been coping as well as ever
7. I have been so unhappy that I have had difficulty sleeping
    a. Yes, most of the time
    b. Yes, sometimes
    c. Not very often
    d. No, not at all
8. I have felt sad or miserable
    a. Yes, most of the time
    b. Yes, quite often
    c. Not very often
    d. No, not at all
9. I have been so unhappy that I have been crying

a. Yes, most of the time
b. Yes, quite often
c. Only occasionally
d. No, never

10. The thought of harming myself has occurred to me
    a. Yes, quite often
    b. Sometimes
    c. Hardly ever
    d. Never

Appendix I

Pregnancy Anxiety Scale
(Rini et al., 1999)

The next set of questions is about your feelings and expectations about the birth and your baby.

Please indicate your own feelings about each statement below by choosing one of the following answers

1. I am confident of having a normal childbirth.
    a. not at all
    b. somewhat
    c. Moderately
    d. very much
2. I think my labor and delivery will go normally.
    a. not at all
    b. somewhat
    c. Moderately
    d. very much
3. I have a lot of fear regarding the health of my baby.
    a. not at all
    b. somewhat
    c. Moderately
    d. very much
4. I am worried that the baby could be abnormal.
    a. not at all
    b. somewhat
    c. Moderately
    d. very much

5. I am afraid that I will be harmed during delivery.
    a. not at all
    b. somewhat
    c. Moderately
    d. very much
6. I am concerned (worried) about how the baby is growing and developing inside me.
    a. Never
    b. Sometimes
    c. most of the time
    d. almost all of the time
7. I am concerned (worried) about losing the baby.
    a. Never
    b. Sometimes
    c. most of the time
    d. almost all of the time
8. I am concerned (worried) about having a hard/difficult labor and delivery.
    a. Never
    b. Sometimes

c. most of the time
d. almost all of the time

9. I am concerned (worried) about taking care of a new baby.
    a. Never
    b. Sometimes
    c. most of the time
    d. almost all of the time
10. I am concerned (worried) about developing medical problems during the pregnancy.
    a. Never
    b. Sometimes
    c. most of the time
    d. almost all of the time

Appendix J

Maternal Postnatal Attachment Scale
(Condon & Corkindale, 1998)

These statements concern the different sorts of emotional reactions parents have when caring for young babies. Please select the response which is closest to your own feelings.

1. When I am caring for the baby, I get the feeling of annoyance or irritation:
    a. very frequently
    b. frequently
    c. occasionally
    d. very rarely
    e. never
2. When I am caring for the baby I get the feeling that the child is deliberately being difficult or trying to upset me:
    a. very frequently
    b. frequently
    c. occasionally
    d. very rarely
    e. never
3. Over the last two weeks I would describe my feelings for the baby as:
    a. dislike
    b. no strong feelings towards the baby
    c. slight affection
    d. moderate affection
    e. intense affection
4. I can understand what my baby needs or wants:
    a. almost always
    b. usually
    c. sometimes
    d. rarely
    e. almost never
5. Regarding my overall level of interaction with the baby, I believe I am:
    a. much more involved than most parents in my position
    b. somewhat more involved than most parents in my position
    c. involved to the same extent as most parents in my position
    d. somewhat less involved than most parents in my position
    e. much less involved than most parents in my position
6. When I am with the baby I feel bored:
    a. very frequently
    b. frequently
    c. occasionally
    d. very rarely
    e. never
7. When I am with the baby and other people are present I feel proud of the baby:
    a. very frequently
    b. frequently
    c. occasionally

d. very rarely
e. never

8. I try to involve myself as much as possible in child care and looking after the baby:
   a. this is true
   b. this is untrue
9. I find myself talking to people (other than my partner) about the baby:
   a. many times each day
   b. a few times each day
   c. once or twice a day
   d. rarely on any one day
10. When I have to leave the baby:
   a. I usually feel rather sad (or it's difficult to leave)
   b. I often feel rather sad (or it's difficult to leave)
   c. I have mixed feelings of both sadness and relief
   d. I usually feel rather relieved
11. When I am with the baby:
   a. I always get a lot of enjoyment/satisfaction
   b. I frequently get a lot of enjoyment/satisfaction
   c. I occasionally get a lot of enjoyment/satisfaction
   d. I rarely get a lot of enjoyment/satisfaction
12. When I am not with the baby, I find myself thinking about the baby:
   a. almost all the time
   b. very frequently
   c. frequently
   d. occasionally
   e. not at all
13. When I am with the baby:
   a. I usually try to prolong the time I spend with him/her
   b. I usually try to shorten the time I spend with him/her
14. When I have been away from the baby for a while and I am about to be with him/her again, I usually feel:
   a. intense pleasure at the idea
   b. moderate pleasure at the idea
   c. mild pleasure at the idea
   d. no feelings at all about the idea
   e. negative feelings about the idea
15. Over the past two weeks I have found myself just sitting looking at the sleeping baby for periods of five minutes or more:
   a. very frequently
   b. frequently
   c. a few times
   d. not at all
16. I now think of the baby as:
   a. very much my own baby
   b. a bit like my own baby
   c. not yet really my own baby
17. Regarding the things that I/we have had to give up because of this baby:
   a. I find that I resent it quite a lot
   b. I find that I resent it a moderate amount
   c. I find that I resent it a bit

d. I don't resent it at all

18. Over the past two weeks, I have felt that I do not have enough time for myself to pursue my own interests:
    a. almost all the time
    b. frequently
    c. a few times
    d. not at all

19. Usually when I am with the baby:
    a. I am very impatient
    b. I am a bit impatient
    c. I am moderately patient
    d. I am extremely patient