Reflective Functioning and Differentiation-Relatedness During Pregnancy and Infant Attachment Outcomes at One Year

by

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Abstract

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This study compared maternal reflective functioning (RF) and differentiation-relatedness (DR) during pregnancy and examined how these processes relate to the quality of mother-infant attachment at one year. The subjects were 35 mother-infant pairs drawn from the control group of a longitudinal treatment study, "Minding the Baby (MTB)," a federally and privately funded home intervention program developed jointly by the Yale School of Nursing and Yale Child Study Center, led by Drs. Lois Sadler and Arietta Slade, and targeting a low socio-economic status area of New Haven, CT. The Pregnancy Interview (Slade, 2003) was administered to the women (ages 14-25 years) during the third trimester of pregnancy, and quality of attachment was assessed when infants were 14 months using the Strange Situation (Ainsworth, Blehar, Waters, & Wall, 1978; Main & Solomon, 1990).

The DR scoring system, the Differentiation-Relatedness Scale of Self and Object Representations (Diamond, Blatt, Stayner, & Kaslow, 2011), was adapted for use with the Pregnancy Interview to provide a manual for this study (Daley, 2012). Lowest, highest, and most typical DR ratings were captured for self, the woman's mother, the father of the baby, and the baby. The mean for the baby, at 3.03, was one DR point lower

than other relationship means. Three composite scores were created, averaging across relationships: Low DR, High DR, and Overall DR.

Results indicated that maternal RF was correlated with Overall DR and High DR; however, none of these variables distinguished between attachment outcomes. In contrast, Low DR distinguished, with a large effect size (d = .92), between disorganized and secure attachment outcomes (p = .026), and, in post-hoc analyses, between disorganized and all organized outcomes. For the disorganized group, Low DR often dropped to self-other boundary confusion (level 2) across relationships. This suggests that, for a population of women on the lower end of the RF Scale, transient regression to non-differentiated states during pregnancy is a risk factor for disorganized infant attachment outcomes at one year. Results have implications for early identification of high-risk dyads and refinement of intervention models.

Keywords: attachment, differentiation-relatedness (DR), reflective functioning (RF), mentalization, pregnancy, trauma, high-risk dyads, intervention

Acknowledgments

The idea for this project had its roots in a formative experience as a psychology extern at Columbia Presbyterian hospital. Under the guidance of Zina Steinberg and Susan Kraemer, I worked with pregnant women on hospitalized bed rest and continued to work with the women whose infants needed to stay at the neonatal intensive care unit. Some families displayed remarkable resilience, while others appeared more vulnerable to what was undeniably a heartbreaking experience. I had been interested in pregnancy as a developmental phase for some time, influenced by my own pregnancies and by Arietta Slade's wonderful class in infant psychopathology. The externship experience added a layer of complexity: I began to wonder about the intersection of trauma and pregnancy, and about how to identify which individuals are most vulnerable to trauma and how to intervene effectively. This turned out to be the genesis of this project. I am so very grateful to Zina and Susan for the support they provided that set me on this journey and to the mothers who allowed me into their lives during a period of upheaval.

Turning the idea into a workable dissertation was a process in itself. Arietta, my chair, went beyond the call of duty as we created and discarded countless versions of exploration. A key turning point was when Arietta so generously offered the Minding the Baby data for a secondary analysis project. It meant shifting the study from a population exposed to medical trauma to a population exposed to chronic trauma, but then the pieces began to fall in place. Many thanks are due to the entire staff at Minding the Baby, a collaborative home intervention project through the Yale Child Study Center, the Yale School of Nursing and the Fair Haven Community Health Center; but, in particular, I would like to thank Lois Sadler and Linda Mayes, who along with Arietta are the

principal investigators of the project; and Crista Marchesseault, Patricia Miller, Andrea Miller, and Tony Ma for getting me set up and providing me the data.

While struggling with my dissertation topic, I was also participating in a training group in differentiation-relatedness organized by Diana Diamond. She generously set aside time to work with our group on a regular basis so we could become reliable in her coding system. At this training group, I was able to find a willing volunteer to co-rate the data, Sarah Constantine. I am so very grateful to Diana for her enthusiasm in applying her scale to pregnancy and to Sarah for her patience and good cheer as we met on a weekly basis over two months to score the data.

There are many other people to thank, and some are inspirations from afar. The dissertations of former City graduates Jillian Miller, Maia Miller, and Jasmine Ueng-McHale provided invaluable guidance. Also from afar (literally), and quite early in my dissertation exploration, Anna Brandon, a graduate of University of Texas Southwest Medical School at Dallas, amazingly offered me the use of her dissertation data without even meeting me in person. Closer to home, I give thanks to my cohort at City, in particular to Amber Kraft Nemeth and Tanja Auf der Heyde, for their ongoing support as, at times, I despaired of ever finishing. Thanks also go to my committee members, especially the core group of Arietta, Diana and Steve Tuber. Their patience and support were needed and very much appreciated. There may have been times when they, too, wondered if I would ever finish, but they graciously did not let me know it.

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Chapter 1: Introduction

Over the course of the last 35 years, researchers have consistently documented that security of attachment serves as a protective factor for a range of cognitive, academic and socio-emotional outcomes from childhood into adulthood (Sroufe, 2005) while insecurity of infant attachment has been linked to problematic outcomes (see Fearon, Bakermans-Kranenburg, van IJzendoorn, Lapsley, & Roisman, 2010, for a recent meta-analytic study and Carlson & Sroufe, 1995, for a review). Since Main first introduced her work on the Adult Attachment Interview (Main, Kaplan, & Cassidy, 1985), researchers have attempted to describe the maternal factors that promote secure attachments. A particularly productive area of research has been the work on the import of parental mentalization in establishing the context for secure attachment. Recent research has suggested that maternal capacities to mentalize are highly correlated with infant attachment security (Fonagy, 1997; Slade, 2005; Slade, Cohen, Sadler & Miller, 2009; Ueng-McHale, 2009). That is, a mother's capacity to imagine her own mind as well as that of her child makes it more likely that her child will be secure.

There are many ways to examine the question of what makes maternal mentalization possible. One hypothesis, derived from object relations theory, is that a mother's capacity to see herself as both differentiated from but related to her child is what makes high level mentalization possible. In this formulation, mothers who are able to see their babies as separate from but connected to themselves would be more capable of imagining their babies as having states of mind. Are higher levels of mentalization linked to higher levels of differentiation and relatedness? From a conceptual perspective,

this question focuses on the degree to which mentalization and object relations perspectives are linked.

Despite an implicit assumption that mentalization theory and object relations theory are interrelated, there remains much exploration regarding how or to what extent the key constructs of these theories compare. For example, patients with borderline personality disorder often have a history of significant early childhood trauma. These patients have particular difficulty mentalizing in attachment situations (Bateman & Fonagy, 2004). In concurrent work, object relations clinicians note that patients with borderline personality disorder tend to display splitting and projective identification when describing attachment figures, suggesting an internal world of "malevolent persecutors and idealized nurturers" (Gabbard, Miller, & Martinez, 2006). Overall, a good deal of the recent work on borderline phenomena suggests that these two approaches are highly interrelated.

This study will attempt to examine these processes and their interrelationship during pregnancy, a particularly rich time to explore the links between reflective functioning and differentiation-relatedness. Pregnancy is a time when an expectant mother is actively grappling with issues of differentiation and relatedness and also beginning to mentalize about her unborn child. Ideally, she moves during the course of the pregnancy towards representing her unborn child as an individual, part of herself and yet unique and separate (Bibring, Dwyer, Huntington, & Valenstein, 1961; Benedek, 1959; Slade et al., 2009). This time of expectation is seen as a unique space, a transitional space, where the pregnant woman can fantasize about her child while, it is hoped, remaining anchored to reality: a place of grounded imagination (Allen, 2006).

This transitional space (Winnicott, 1953) is crucial as the expectant mother begins to try to imagine the mind of her unborn child. Pregnancy represents an unusual opportunity to examine the expectant mother's ability to mentalize, to differentiate, and to imagine a relationship *in advance* of the arrival of the child. The absence of the other (or, in this case, the expectation of an un-met child) can be a powerful catalyst for changes in representation (Bion, 1962/1967; Main et al., 1985).

This study will also attempt to examine whether these processes independently contribute to infant attachment outcomes, or whether they operate in a cumulative or interactive way to predict infant attachment. The sample to be studied will be drawn from a large longitudinal treatment study, "Minding the Baby: A Home Intervention Study," a project developed by a collaborative group of nurses and mental health professionals at the Yale Child Study Center and Yale School of Nursing, led by Drs. Lois Sadler and Arietta Slade. Minding the Baby (MTB) follows women from pregnancy through their children's second birthday. The women have been randomly assigned to treatment or control conditions, with the treatment mothers receiving the Minding the Baby intervention, and control mothers receiving "treatment as usual." This study will examine 35 mother-infant pairs from the control group. These mothers range in age from 14-25 years and are drawn from a low socio-economic status area of New Haven, CT. These women completed interviews during the third trimester of pregnancy as well as an assessment of infant attachment when their infants reached 1 year of age. In this study, I will examine, first, the degree of correlation between maternal mentalization and differentiation-relatedness during pregnancy; and second, to what extent these two capacities work in complementary ways to predict infant attachment security.

Chapter 2: Literature Review

How is a pregnant woman's capacity to mentalize related to her capacity to differentiate from and relate to her unborn child? Does a model incorporating both of these capacities prove more predictive of infant attachment security than either variable on its own? To explore these questions, this literature review will examine two related but independent theories, mentalization theory and object relations theory. A primary scoring system for each theory will be compared and contrasted: maternal reflective functioning (RF) for mentalization theory, and differentiation-relatedness of self and object representations (DR) for object relations theory. The processes of pregnancy will then be discussed. Finally, I will explore how maternal reflective functioning and differentiation-relatedness during pregnancy may affect the development of the infant's attachment security.

Mentalization Theory and the Reflective Functioning Scale

Definition of mentalization. Fonagy defines mentalization as "perceiving and interpreting human behaviour in terms of intentional mental states (e.g. needs, desires, feelings, beliefs, goals, purposes, and reasons)" (Fonagy, 2006, p. 54). That is, mentalization is the ability to make plausible guesses about the mental states that are motivating one's own behavior or someone else's behavior. Mentalization theory is inclusive of a similar construct, theory of mind (Allen, 2006). Theory of mind assesses a person's ability to understand that someone else may have a different point of view than one's own. Theory of mind, however, examines an important question purely from a cognitive perspective, that is, what is the other person *thinking*. Mentalization theory also asks how well an individual can assess what the other person is *feeling* based on

behavior; in addition, mentalization theory proposes that the ability to mentalize is one way an individual can regulate his or her affect (Allen, 2006).

Auerbach and Blatt (2002) view mentalization as an extension of self-reflexivity. They describe self-reflexivity as the "ability to make smooth transitions between subjective and objective perspectives on the self" (p. 75). Self-reflexivity is seen as central to an individual's ability to develop his or her self-representation. The concept of self-reflexivity evolved from William James' distinction between two representations of the self: "I," or self as subject, and "me," or self as object (1890). Auerbach and Blatt (2002) argue that mentalization expands the concept of self-reflexivity by incorporating a relational process into how an individual develops self-reflexivity. The Reflective Functioning Scale used to evaluate expressed mentalization is implicitly relational in that the scale evaluates the individual's ability to read others' states of mind, not just his or her own (Auerbach & Blatt, 2002). Fonagy, Gergely, and Target (2008) propose that reflective functioning is comprised of self-reflective and interpersonal components. The combination "ideally provides the individual with a well-developed capacity to distinguish inner from outer reality, pretend from 'real' modes of functioning, intrapersonal mental and emotional processes from interpersonal communications" (Grienenberger, Kelly, & Slade, 2005). The interactions between a supportive mother and her infant are fundamental both to the development of mentalization and to a secure attachment in the child (Fonagy, 2006; Slade, 2005; Slade, Grienenberger, Bernbach, Levy, & Locker, 2005).

Attachment theory. Mentalization theory emerged against the backdrop of attachment theory. In 1969, John Bowlby published the first of three volumes

articulating a theory about attachment that integrated contemporary psychoanalytic views with psychological theories from ethological, biological and cognitive points of view (1969; 1973; 1980). The main tenet of attachment theory is that infants are motivated to form close bonds to their caregivers. Evolutionary theory proposes that the protection afforded by this attachment bond improves the chances of survival of the child, and therefore the chances of passing on genes to future generations (Simpson & Belsky, 2008; Slade, 2000; Slade & Holmes, in press).

Slade (2000; 2004; 2005) breaks down attachment theory into four basic assumptions. First, infants are motivated to form attachment relationships in order to survive. Second, children will preserve these relationships even at a psychological cost, such as a failure to develop a full sense of self and others or impairments in the child's affect regulation system. Third, maladaptive early attachment relationships may lead to negative outcomes in adults such as rigid or maladaptive interactions, difficulties with affect regulation, and changes in brain function (Slade, 2000). Finally, the fourth basic assumption of attachment is that the mother's attachment system will influence the child's emerging representations of attachment (Slade, 2004). Bowlby theorized that this transmission of attachment would be gradual, through many interactions between the mother and child. Eventually, the child's "patterned responses slowly become internal representations that determine access to thoughts, feelings and memories relevant to attachment" (Slade, 2004, p. 183). Bowlby used the phrase internal working model to describe these cognitive-affective representations of attachment relationships. He believed internal working models are templates that inform how an individual approaches relationships throughout his or her life.

Infant attachment classifications. One of Bowlby's colleagues, Mary Ainsworth, used attachment theory as the basis for classifying infant attachment behavior. She developed a laboratory observation procedure, called the Strange Situation Paradigm, in which one-year-old infants are separated from their mothers. Based on her observations, she described 3 patterns of infant attachment: secure, insecure-avoidant, and insecure-resistant (Ainsworth, Blehar, Waters, & Wall, 1978). A fourth pattern, disorganized, has since been added based on further study by Main and Solomon (1990). The securely attached child uses her mother as a secure base for exploration and becomes distressed when her mother leaves the room; however, upon reunion, the child is able to be soothed by her mother. The child with an insecure-avoidant classification appears unaffected by his mother's departure; moreover, when his mother returns, the child does not seek comfort from her. In contrast, the child with an insecure-resistant classification becomes extremely upset at the departure of her mother, but is unable to be comforted by her return; this child may rush to her mother but may hit her mother or arch away when picked up; overall, she finds little comfort in her mother's return. Finally, the disorganized child appears to have no clear strategy for finding a feeling of security. He may run to reunite with his mother but then freeze, run away or behave in other atypical ways (Main & Solomon, 1990).

Adult attachment classifications and metacognitive monitoring. Shortly following Ainsworth's discovery of infant attachment classifications, Mary Main began to explore the maternal correlates of infant attachment organization. Rather than focusing on adult behavior, however, she chose to examine adult representations of attachment (Main, Kaplan, & Cassidy, 1985).

Main and her colleagues developed the Adult Attachment Interview (George, Kaplan, & Main, 1984), a series of questions exploring an adult's view of his or her relationships to his or her parents. Main emphasized that the structure of the interviews (as distinct from the content) provided valuable information, and focused on:

> the extent to which the mother's internal working model of attachment was coherent – that is, the extent to which it integrated positive and negative qualities (as opposed to being polarized between idealization and denigration), and the extent to which generalized evaluations of attachment relationships coincided with specific attachment memories (Diamond & Blatt, 1994, pp. 80-81).

Coherence of narrative is thought to be an explicit expression of an implicit, internal process, a lexical re-representation of a system of internal working models. Main paid specific attention to "moment-to-moment changes in linguistic fluency, shifts in voice, lapses in meaning and coherence, and fragmentation of descriptions of early experiences of care, separation and loss" (Slade, 2004, p. 184). Main believed that changes in the ability of the adult to speak coherently about attachment relationships reflected the adult's capacity for metacognitive monitoring. Metacognitive monitoring is "the individual's capacity to 'step back and consider his or her own cognitive processes as objects of thought or reflection'" (Main, 1991, p. 35). Main proposed that a secure individual has an inclusive metacognitive monitoring system involving a singular model of attachment. The secure individual benefits from this singular model because he or she has access to a full range of representations of attachment when interacting with others and when monitoring their thinking. An insecure individual, on the other hand, isolates painful or disorganizing experiences into multiple models of attachment, keeping some models out of consciousness while monitoring one model at a time. Bowlby (1988)

further proposed that childhood trauma would lead to multiple metacognitive models of attachment. Fonagy and his colleagues incorporated and extended metacognitive modeling to develop mentalization theory (Slade, 2004).

Main and colleagues ultimately identified five adult patterns or states of mind in relation to attachment based on the Adult Attachment Interview representations: secure/autonomous, insecure/preoccupied, insecure/dismissing, unresolved, and cannot classify. The first three of these patterns are analogous, respectively, to the child attachment classifications of secure, insecure-resistant and insecure-avoidant (Main, Kaplan, & Cassidy, 1985). Main assessed how well the adult managed to maintain a coherent representation even when relating affect-laden material which – it was believed – activated the attachment system. Thus, the assessment of adult attachment includes an implicit assessment of arousal regulation, considered one of the key interpretive functions of mentalization (Fonagy, 2006).

Affect regulation varies markedly in relation to adult attachment organization. A secure/autonomous adult shows an appropriate range of affect when discussing parents; he or she is able to value attachment relationships and relate stories about difficult material without becoming disorganized in the narrative. In contrast, the preoccupied adult continues to be upset by past events and display negative emotions such as confusion, anger or fear around early relationships. "Preoccupied mothers seem to acknowledge and symbolize their own negative affects in the extreme, although such acknowledgment is highly enactive" (Slade, 1999, p. 804). For these women, representations of early attachment relationships do not appear to assist in emotional regulation, in other words, they are not successful at containing their affective

experiences through the use of symbolization. At the other extreme, the dismissing adult portrays early relationships one-sidedly, either idealistically or overly negatively, and in general seems to deny the impact of relationships. Dismissing parents are "unable to symbolize or acknowledge their children's dependency needs, desire for comfort, or anger; these feelings are thus not represented or known to the self and therefore cannot be represented in the relationship with the child" (Slade, 1999, p. 804).

The unresolved pattern in relation to attachment can be applied to the secure/autonomous, insecure/preoccupied or insecure/dismissing attachment patterns; it is assigned when the adult becomes disorganized in their narrative while speaking about loss and trauma (Main & Hesse, 1990). The disorganized/unresolved pattern is associated with adults who have a history of early childhood loss or trauma (Main & Hesse, 1990). A mother with the unresolved pattern often displays "dramatic lapses in mentalization and reflective functioning" (Slade, 2007, p. 227). The cannot classify pattern in relations to attachment refers to "a more global breakdown in the discourse or an inconsistent use of attachment strategies so that the AAI shows characteristics of several different categories" (Diamond & Kotov, 2003, p. 123).

The affect associated with a mother's internal working model of attachment plays an important role in the ability to mentalize. Soothing or dysregulating, these internal representations may therefore have both a direct and an indirect impact on the mother's ability to mentalize with her child and thereby to encourage her child to develop mentalization. Thus, a mother's lapse in mentalization such as seen with the unresolved pattern or a more global breakdown as seen in the cannot classify pattern may have a

profound impact on her child's internal working model and subsequent infant attachment status.

When a mother describes her attachment relationships in an interview, such as the Adult Attachment Interview, she needs to speak explicitly about relationship representations that may be more implicitly understood. Karmiloff-Smith (1992) models representation as a continuum with two poles: implicit and explicit. Allen believes that people move from implicit to explicit in a "gradual process of representational redescription" (Allen, 2006. p. 10). This process appears to happen for some individuals during typical development and for others through psychotherapy. In this sense, an interview represents an opportunity to assess the developmental progress an individual has made in what Main termed metacognitive modeling.

The transmission gap: The route to infant attachment. Bowlby's theory that the mother's attachment representations would influence the child's attachment organization has been borne out in several studies. In 1985, Mary Main published results indicating that 68% of the time, a mother's attachment organization predicted the quality of infant attachment (Main et al., 1985). Both retrospective studies (Ainsworth & Eichberg, 1991; Main & Goldwyn, 1985-1998; Pederson, Gleason, Moran, & Bento, 1998) and prospective studies (Benoit, Vidovic, & Roman, 1991; Fonagy, Steele, & Steele, 1991; Aber, Belsky, Slade, & Crnic, 1999) support a link between parental representations and child attachment outcome. Additional research has confirmed a strong relationship between parent attachment organization and infant attachment organization (Benoit & Parker, 1994; Fonagy et al., 1991; Ward & Carlson, 1995; Zeanah et al., 1993). Links have also been demonstrated between adult attachment organization

and subsequent parental representations of the child (George & Solomon, 1996; Zeanah, Benoit, Hirschberg, Banon, & Regan, 1995). Mothers with insecure attachment organization tend to give limited or distorted representations of their children, and additionally tend to represent themselves either as "detached from their children or as helpless to engage with and contain them" (Slade, 1999, p. 801).

While Main and her colleagues (Main et al., 1985) found links between the three major infant and adult classifications, two important studies (Fonagy et al., 1991; Zeanah et al., 1993) failed to link preoccupation in mothers to insecure-resistant attachment in infants. The method of transmitting attachment organization from mother to child, thought to be maternal sensitivity or perhaps maternal behavior, remained an open question (van IJzendoorn, 1995). This was termed the transmission gap.

Maternal reflective functioning and the child's attachment security. Mentalization has been proposed as one mechanism through which a parent's state of mind in relation to attachment may be transmitted to the child (Fonagy et al., 1995). That is, a parent's ability to mentalize, assessed through the construct of reflective functioning, is now believed to play an important role in the development of an infant's attachment organization. An expectant parent's ability to mentalize about his or her own parents, measured during pregnancy, has been shown to predict the subsequent attachment organization of the infant one year after birth (Fonagy, Steele, & Steele, 1991). In addition, high reflective functioning may be particularly protective for mothers exposed to trauma (Fonagy et al., 1995).

Mentalization may not be the only route to attachment security. The representational system may influence the transmission of attachment security in other

ways. Fonagy, for example, asserts that both mentalization and the representational system may influence attachment security. While mentalization draws heavily on the internal representational system, it is also a mechanism that involves other neural systems, including affect regulation, cognitive regulation and social detection (Fonagy, 2006). Fonagy views the mother's mentalizing process and her representational system as two different, but often inter-related, routes to secure child attachment. That is, "[t]he child is likely to be securely attached if either the parent's internal model of relationships is benign, dominated by favorable experiences, *or* if the parental reflective function is of sufficient quality to forestall the activation of working models based on adverse experiences inappropriate to the current state of the relationship of child and caregiver" (Fonagy et al., 1995).

Slade advanced the research into the transmission gap by developing tools for assessing a parental representational system of the child. She proposed that the Adult Attachment Interview was not the ideal interview to investigate mother-child interactions and maternal reflective functioning, since the AAI was designed to examine an adult's relationship to her parents rather than her children. With colleagues, she developed interviews for pregnancy (Pregnancy Interview; Slade, Huganir, Grunebaum, & Reeves, 1987; revised, Slade, 2003) and parenthood (Parent Development Interview; Aber, Slade, Berger, Bresgi & Kaplan, 1985) to explore this second emergent representational system. The Pregnancy Interview asks questions about the pregnant woman's representations of her unborn child as well as about her representations of how she imagines her future relationship with her child. Similarly, the Parent Development Interview asks questions about the parent's representations of the child and his or her representations of the parent-

child relationship. Slade and colleagues modified Fonagy and colleagues' Reflective Functioning scoring manual (Fonagy, Target, Steele, & Steele , 1998) to assess level of maternal reflective functioning during pregnancy (Slade & Patterson, 2005) and during parenthood (Slade, Bernbach, Grienenberger, Levy & Locker, 2004).

Hoping to clarify the role maternal RF plays in explaining the transmission gap between parent attachment patterns and infant attachment outcomes, Slade and colleagues (Slade et al., 2005) carried out a prospective study of 40 first-time mothers from a highly educated, stable middle-class population. By measuring adult attachment during pregnancy (with the Adult Attachment Interview), RF at 10 months (with the Parent Development Interview) and infant attachment outcome at one year (with the Strange Situation), they were able to demonstrate a strong link between adult attachment patterns and RF (with a large effect size of 1.01 distinguishing secure from insecure groups) as well as a strong link between RF and infant attachment outcome (with again a large effect size of .81 distinguishing secure from insecure groups). The RF mean (M_A = 5.74, SD = 1.51) for the autonomous group of parents was higher than all three other groups, and in fact more than 3 points higher than that of the unresolved group of parents (M_U = 2.67, SD = .58). When considering infant attachment outcomes, the RF mean for the secure children was again higher than RF means of each of the three other groups (M_S = 5.64, SD = 1.14). Interestingly, the group with lowest RF was the insecure-resistant group (M_R = 3.0, SD = .00) rather than the disorganized group (M_D = 4.3, SD = 1.57). There was a weak correlation between adult attachment patterns assessed during pregnancy and infant attachment outcome that did not meet levels of significance ($r = .24$, one-tailed $p < .065$); however, this link disappeared when they controlled for RF. They

were then able to demonstrate using LISREL, a software package for structural equation modeling, that RF was a possible mediating variable between adult attachment patterns and infant attachment outcome, with an indirect effect of .22 ($p < .05$). They also held out the possibility that RF was playing a more direct role in influencing both adult attachment patterns and infant attachment outcomes.

In light of these findings, parental RF was proposed as a construct (Slade, 2005). Building on the original concept of RF (Fonagy, Steele, Steele, Moran, & Higgitt, 1991), which was developed on the AAI and assessed the adult's ability to understand and link mental states pertaining to his or her parents, parental RF is more specifically defined as the parent's ability to understand the links between mental states and behavior in his or her child, to "hold the child's mental states in mind" (Slade, 2005).

Maternal RF, assessed during pregnancy, has been shown to predict quality of affective communication for dyads of at-risk mothers and their four-month-old infants (Ueng-McHale, 2009). Grienenberger, Kelly, and Slade (2005) also examined the link between maternal reflective functioning, mother-infant disruptive affective communication and infant attachment outcome. They found an inverse correlation ($r = -.48$, $p < .001$) between RF (measured when the infant was 10 months) and disrupted affective communication (at 14 months), with a very large effect size ($d = 1.1$). Based on a regression analysis, the results indicate that the mother's behavior, specifically how the mother regulated her child's negative affect (such as fear or distress), plays a mediating role between maternal reflective functioning and attachment outcome. Another way to view this is that maternal reflective functioning appears to make a contribution, independent of maternal behavior, to attachment outcome (Grienenberger et al., 2005).

The Reflective Functioning Scale. The Reflective Functioning Scale (RF; Fonagy et al., 1998) was developed to assess mentalization in the context of the Adult Attachment Interview. The RF scoring scale includes 11 levels, marking a developmental progression from Negative (-1) or Absent (0) Reflective Function through Questionable (3), Ordinary (5), Marked (7) and Exceptional (9) Reflective Functioning. Responses scored with Negative Reflective Function are anti-reflective, hostile, bizarre or inappropriate, while Absent Reflective Function responses show little to no evidence that the individual thinks about mental states. At the other end of the scale, responses scored at Marked Reflective Functioning suggest the individual has a stable model of the mind with an interactional perspective, while responses scored at Exceptional Reflective Functioning imply the individual is applying a complex and consistent causal reasoning to the understanding of mental states (Fonagy et al., 1998).

Object Relations Theory and the Differentiation-Relatedness Scale

The literature of object relations theory brings a different perspective to the question of determining what maternal qualities might bring about a secure infant attachment outcome: that is, what are the expectations regarding the good-enough mother's attainment of self-other differentiation and relatedness, of evocative object constancy? To explore this question requires a review of the principles of object relations theory, particularly the contributions of Klein, Fairbairn, Winnicott, and Mahler, as well as an exploration of the Differentiation-Relatedness Scale of Self and Object Representations (Diamond, Blatt, Stayner, & Kaslow, 2011).

Object-Seeking as the primary purpose. Object relations theory models the individual's intrapsychic world as comprised of representations of self and others, bound

together with affect (Pine, 1985). The principles of object relations theory and its focus on relationships represent a major shift from Freud's drive theory and its focus on the pursuit of pleasure. Freud proposed that an individual was driven to find avenues for the "discharge of psychic energy" that had built up from frustrated libidinal and aggressive drives (Greenberg & Mitchell, 1983, p. 379). Fundamental to drive theory was the concept (arising from the principles of hedonism) that that one of the primary purposes of the libidinal drive was the pursuit of pleasure. Thus, when he developed a structure to describe personality with three components (id, ego and superego), he designated the id's primary purpose as seeking pleasure. Freud further proposed that derivatives of unacceptable sexual and aggressive impulses were the foundation of the repressed unconscious.

Object relations theory has expanded some ideas from drive theory and rejected others (Fairbairn, 1952). The id, ego and superego structure was re-imagined in object relations theory. As an internalized representation of the parent, the superego can be viewed as an internalized object. Moreover, the ego is presented as attempting to find a balance between the id and the superego, and this can be seen as the evoking the idea that intrapsychic objects have relationships (Fairbairn, 1952). In addition, object relations theorists expanded the idea of the repressed unconscious to include the unacceptable representations of the self and others (Greenberg & Mitchell, 1983).

In summarizing the development of object relations theory, Pine (1985) credits Melanie Klein and Ronald Fairbairn as moving the field toward object relations. Greenberg and Mitchell (1983) assert that Klein "focused" Freud, while Fairbairn "refuted" him (p. 188). Melanie Klein was one of the first psychoanalysts to work

primarily with children, and her focus on the relationship between the mother and the child led her to place much greater emphasis on the internalization of part objects of the mother (such as a good breast and bad breast) in the mind of the child. She reframed the discussion of "*drive* processes (libidinal and destructive) in terms of incorporation and expulsion of good and bad *objects*, thus cementing the tie (or actually creating a certain equivalence) of drive and object" (Pine, 1985, p. 59). Her writings included the idea that the infant "attempts to ward off the dangers of bad objects, both internal and external, largely by keeping images of them separate and isolated from the self and the good objects" (Greenberg & Mitchell, 1983). This led Klein to develop the paranoid position, later called the paranoid-schizoid position, as the first state that the infant experienced. A progression from this position to the depressive position occurred when the individual was capable of internalizing a whole object, both good and bad qualities. Klein asserted that movement to the depressive position began by the second quarter of the first year but could continue throughout an individual's life and could generate depressive anxiety (Greenberg & Mitchell, 1983).

Drawing heavily on Klein's ideas, Fairbairn disputed the pleasure-seeking principle developed by Freud and argued instead for an object-seeking principle. That is, he believed that rather than being driven primarily to seek pleasure, human beings are driven primarily to seek and internalize relationships with others. This became a cornerstone of object relations theory, a phrase he coined (Pine, 1985).

Pine views Winnicott (1958, 1965) as an important bridge between Klein and Fairbairn's initial efforts and later object relations theorists such as Mahler. He suggests

the Winnicott's writings, drawing from direct observation of infants and children, were essential for "anchoring" Klein's theories in reality (Pine, 1985, p. 59).

Winnicott proposed a developmental process by which the child becomes aware of himself as separate through interactions with the mother. Winnicott felt there was no baby, only a mother-infant unit. The infant begins life in a state of unintegration; if the mother is able to provide a "holding environment," it is possible for the infant to feel contained and to experience himself in interaction with the mother (Winnicott, 1955).

Winnicott (1954) elaborated the conditions that comprised what he called good-enough mothering, conditions that facilitated the child's development. Initially, a perfect responsiveness of the mother to the infant's needs would allow the infant to experience the sensation of omnipotence. As the child develops, the mother responds by providing several essential functions: a "non-intrusive 'holding' and mirroring environment throughout quiescent states; the collusive agreement to respond to transitional objects; survival, despite the intensity of the infant's needs, and the failure to retaliate against the destructive features of object-usage" (Greenberg & Mitchell, 1983, p. 198). Ultimately, Winnicott believed it was essential that the mother *gradually fails* at adapting to the child's world. Through surviving these failures, the infant succeeds in developing a self that is both separate and differentiated (Winnicott, 1954).

Evocative object constancy. Inspired in part by the concept of object permanence (Piaget, 1937), object relations theorists proposed that evocative object constancy is "the ability to evoke a positive image of a significant other, or to maintain an integrated representation of that other, when the person in question is absent, unavailable, or frustrating" (Auerbach & Blatt, 2002, p. 87). The concept of object constancy was

first proposed by Hartmann in 1952. While object *permanence*, the ability to evoke the image of an absent physical object, is attained at approximately 18 months, the attainment of evocative object *constancy* is thought to be much more complex, with aspects achieved both earlier and later:

> Thus we cannot even assume that once permanence of the physical object has been attained, constancy of the libidinal object has also been attained. We can say only that the cognitive potential is there. The presence of intense libidinal and aggressive ties to the object may thus make for *more rapid* but *less fixed* attainment of a permanent cognitive/affective representation of it in all its aspects (Pine, 1985, p. 104).

Pine (1985) notes that the relief of distress that the mother provides may heighten some elements of object constancy early in infancy; however, the ability to evoke object constancy consistently, particularly when experiencing intense emotions, may remain a struggle far past the 18 month milestone.

Pine interprets Winnicott's definition of the child's capacity to be alone (Winnicott, 1958) as the essence of evocative object constancy "by being alone in the presence of the mother and subsequently internalizing the sense of her presence" (Pine, 1985, p. 239). In addition, Winnicott's emphasis on the mother's role in creating an environment that facilitated the developmental maturation of the child (1965) proved to be a foundation for many later theorists.

Margaret Mahler was influential in creating a developmental model for the attainment of evocative object constancy by young children (Mahler et al., 1975). Her observations of infants and toddlers led her to propose that children progressed over the first two years of life from an undifferentiated state towards separation and individuation. Separation refers to an end to the symbiotic state between mother and infant; individuation on the other hand refers to the process by the child where he takes on

characteristics that identify him as a unique person. With the completion of the separation-individuation process came the achievement of a differentiated self as well as the achievement of evocative object constancy.

Mahler's model (Mahler, Pine, & Bergman, 1975), with some clarifications by her colleague Pine (1985), denotes the undifferentiated, or objectless, state as the first few weeks after birth. Following this, from a few weeks to approximately four or five months old, infants are in the normal symbiotic phase, where they lack consistent differentiation between self and other, instead experiencing *moments* of symbiosis or merger with the caregiver (Pine, 1985). These moments are tied to prior states of distress or need, and the affect is therefore heightened. Next, the infant enters into the separation-individuation phase, divided into subphases. From four or five months until 10 months, the infant is considered to have reached the early differentiation subphase. Here they appear alert when awake and were conceived by Mahler as having "hatched." From 10 months to 15 -18 months, the infant is in the practicing subphase. Although he experiences rapid development in being physically separate from his mother, the infant does not appear to treat the mother as if he "appreciates her as a separate person" (Greenberg & Mitchell, 1983, p. 277). The rapprochement phase, which begins at 15-18 months and develops into the rapprochement crisis from 18 to 24 months, is seen as a key developmental step towards the achievement of object constancy (Mahler et al., 1975). Mahler suggested that the goal was not just evoking and using the internalized image of the mother for support "but to unite all aspects of the mother, the good and the bad, in one concept" (Pine, p. 106). This unification "serves to temper rage and disappointment" (Pine, p. 106).

Pine notes that the infant's early attachment is developing in the presence of moments of merger and in the absence of fully developed differentiation:

> The absence of clear cognitive concepts of mother and self provides the setting in which the moments of merger can more readily become the basis for the organization of experience. Or, at the other pole, the later development of reliability and differentiated concepts of mother and self, a development that is anchored in perceptual reality, counterbalances fleeting merger experiences and provides the setting in which the illusion of oneness is gradually given up, as external perception and higher level cognitive organization supply a powerful counterweight to affective experience and wish (Pine, 1985, p. 52).

Despite the early attachment pattern that is developing, Pine notes that the infant needs to be able to construct an object before there can be a relation to it:

> The assumption of nonawareness of differentiation (in the first half year) rests on one prior assumption, one readily observable phenomenon, and one set of observations from our research. The prior assumption has already been stated: that the infant is not born with differentiated concepts of self and other. The readily observable phenomenon is equally clear: later on, children have such differentiated concepts. Hence, they must have developed sometime in between. Why do we assume they have not developed in the first half year? Because (and these are the observations from our research) we see behavioral phenomena in the five-to-ten-month period which suggest that the awareness of differentiation is growing then" (Pine, 1985, p. 228).

The behavioral phenomena referenced by Pine include peek-a-boo games, stranger anxiety, and the child's inspection of the mother's face (Pine, 1985).

Measuring evocative object constancy: Representations and relationships. Researchers began to apply the theory of object relations in order to assess the presence of evocative object constancy in adults. The first step in this process was identifying a cognitive model of self and other. The importance of affect in object constancy is seen in how representations of self and other are modeled with an affective component. Kernberg, for example, proposed units of self-object-affect (1976), while Blatt proposed

cognitive-affective schema (1974). The positive or negative valence of this affect might promote or interfere with evocative object constancy.

The search for a way to evaluate representations for progress towards achieving evocative object constancy led to the development of the Conceptual Level Scale by Blatt and his colleagues (Blatt, 1974; Blatt, Wein, Chevron, & Quinlan, 1979; Blatt, Chevron, Quinlan, Schaffer, & Wein, 1988). The Conceptual Level Scale delineates a developmental progression of object representations. At the lowest level, the sensorimotor-preoperational level, significant others are only described in terms of ways they are gratifying or frustrating. The next level, concrete-perceptual, applies to representations that merely describe physical appearance. The third level, external-iconic, applies when the individual describes significant others with outwardly observable activities. The fourth level, internal-iconic, shows a recognition that the other has thoughts and feelings. Finally, the fifth level, the conceptual level, is scored when the individual describes significant others who are psychologically complex and differentiated from the self. The Conceptual Level Scale captured the essence of differentiation of self from other, but ultimately Blatt felt it to be too "static, insofar as it related descriptions of persons but not of relationships, and also insofar as it failed to capture certain intersubjective dimensions of object representation" (Auerbach & Blatt, 2002, p. 87).

Intersubjectivity theory focuses on how knowledge of the self, or self-representation, develops through interactions with others (Auerbach & Blatt, 2001). Auerbach and Blatt propose that self-reflexivity, a key component of mentalization wherein the individual begins to understand himself or herself as having both a subjective

and objective self-representation, develops through a dyadic relationship - such as that of the mother and infant, or the therapist and client. In this conceptualization, they have been heavily influenced by Daniel Stern's work elaborating the importance of mother-child interactions in the development of the child's self (Stern, 1985).

Diamond and colleagues (Diamond, Kaslow, Coonerty, & Blatt, 1990) note that "whereas Mahler emphasizes the development of intrapsychic autonomy during the separation-individuation process, Stern makes the achievement of interaffective sharing and intersubjective relatedness the end point" (p. 365). They propose the expansion of separation-individuation "beyond object constancy by including the development of more advanced stages of empathy and intersubjectivity, in which a differentiated identity and an empathic sharing of the other's experience can be simultaneously achieved" (p. 365).

The Differentiation-Relatedness Scale. The model of differentiation-relatedness is an effort to incorporate intersubjectivity into the Conceptual Level Scale (Auerbach & Blatt, 2002). The Differentiation-Relatedness Scale of Self and Object Representations is a scoring system developed by Diamond, Blatt, Stayner, and Kaslow (1993, revised 2011). The scoring system is designed to quantify an individual's ability to articulate a self that is differentiated from others while at the same time evaluating the individual's ability to represent complex and nuanced relationships with others (Diamond et al., 2011).

Differentiation-Relatedness Scale levels. The scoring system for the Differentiation-Relatedness Scale of Self and Object Representations (Diamond et al., 2011) evaluates both differentiation and relatedness, seen as evolving on two independent, yet interrelated, lines of psychological development, resulting in a global score ranging from 1 to 10. A score of 1 or 2 indicates a lack of differentiation, or boundary confusion,

between self and other. Increasing scale points acknowledge the use of mirroring (3), self-other idealization or denigration (4), and oscillation between idealization and denigration poles (5). A more differentiated and related sense of self and other is then observed in 6 and 7. Scores of 8 and 9 indicate a sense of self and other as empathically related with increasing acknowledgment of mutually reinforcing relationships. Finally, a score of 10 indicates an integrated construction of self and other in relationships that are empathic and reciprocal; moreover, these representations display a conscious acknowledgment that the relationship between self and other is evolving through an intersubjective process (Diamond et al., 2011).

Differentiation-Relatedness as a sign of clinical mental health. A number of research studies have documented a correlation between differentiation-relatedness and mental health as measured through global assessment of functioning (Auerbach & Blatt, 2002). Harpaz-Rotem and Blatt (2009) published results showing that more mature representations of a therapist, measured with the DR scoring system, were associated with changes in a patient's overall level of clinical functioning. Lindgren and colleagues (2010) reported on a longitudinal study examining 134 young adults aged 18-25 who engaged in psychoanalytic treatment and were followed 1.5 year post-treatment. Global assessment of functioning improvement significantly during treatment, and gains were maintained 1.5 years post-treatment. They found representations of self, mother, and father, as rated by the DR scoring system, improved during treatment, and continued to improve 1.5 years post-treatment.

Vinocur (2006) used the DR scoring system to explore the relationship of trauma history to adult severe psychopathology. She found differentiation-relatedness

functioned as a mediator between physical abuse by the father during latency and both overall adjustment and quality of friendships. For patients with borderline personality disorder, she found a significant correlation between differentiation-relatedness and overall adjustment, and between differentiation-relatedness and quality of relationships with both friends and parents. Regardless of the severity of trauma reported from the childhood of borderline patients, Vinocur found that differentiation-relatedness scores were significantly higher for those patients who reported a positive relationship during childhood with a key figure such as a relative, grandmother or teacher. This last finding supports the theory of the importance of early childhood caregiving in the development of differentiation-relatedness.

Pregnancy: An Opportunity to Explore RF and DR

Pregnancy is a rich and compelling time to explore reflective functioning, differentiation-relatedness, and the inter-relationship between these two processes. The adult's capacity for mentalization clearly develops before pregnancy; however, the expectant mother's ability to mentalize *about her child and herself as a mother* emerges during pregnancy; motherhood involves changes to the self-representation, and becoming a mother involves developing a new attachment relationship that may tap different internal working models of attachment. Studies of reflective functioning during pregnancy and early parenthood indicate a strong relationship between reflective functioning of the parent and the attachment organization of the child (Fonagy, 1997; Fonagy et al., 1995; Miller, 2008; Slade, 2005; Slade et al., 2009; Steele & Steele, 2008; Ueng-McHale, 2009).

Object relations theorists likewise consider the processes of differentiating and relating as crucial developmental components of a successful pregnancy. Several theorists (Bibring et al., 1961; Benedek, 1959; Notman & Lester, 1988; Pine, 1994; Slade et al., 2005; Slade et al., 2009) have advanced the idea that the expectant woman's ability to differentiate from her fetus, while still retaining the ability to imagine both her future child and her future relationship with the child, may be an important predictor of the relative success of the mother-infant relationship.

In 1945, Helene Deutsch proposed the idea that the relationship between mother and child begins in pregnancy. Diamond and Kotov (2003) additionally credit Simone de Beauvoir (1949) with highlighting the expectant mother's experience during pregnancy. De Beauvoir proposed that in pregnancy the relationship between self and other changes, that subject and object are no longer in direct opposition. Significant research followed to support the idea that pregnancy represents an opportunity for developmental maturation of the expectant mother. Grete Bibring was one of the first researchers to document, in a longitudinal study of 15 pregnant women, that women typically underwent a psychological reorganization during pregnancy (Bibring et al., 1961).

Therese Benedek (1959), a contemporary of Bibring, contributed the idea that pregnancy was a developmental phase critical to the ongoing development of a woman's personality. She emphasized the impact the hormonal changes of pregnancy could have on regression and on maternal introjects. She asserted that, during pregnancy and lactation, the new mother experiences reactivations of object representation that were formed during the oral phase of development, and she viewed the disruption caused by the hormonal imbalance as similar to the onset of adolescence (Benedek, 1959).

The phases of pregnancy. "In pregnancy, a woman is born again as a mother" (Tracy, 2000, p. 35). This statement reflects the powerful re-organization of self-representation that many women undergo with their first pregnancy. Most women have 38 to 40 weeks of pregnancy to become accustomed to the idea of becoming a mother and to begin to imagine their future child. There are important physical changes in the body during pregnancy that act as catalysts for psychological change. Thus, the expectant mother's psychological development can be viewed by important physical changes during three phases of the pregnancy.

The first phase of psychological development occurs during the first half of the pregnancy, up to around 18-20 weeks (Bergner, Monk, & Werner, 2008; Notman & Lester, 1988). Pregnant women often initially experience intense reactions to discovering they are pregnant, such as joy, anxiety or amazement (Cohen, 1988). Following this reaction, there may be a struggle to develop and incorporate an understanding of what the fetus represents to the woman. The developmental task during this phase is for the woman to "accept the foreign object that represents both the fetus and the sexual partner, as part of the self" (Cohen, 1988, p. 111). In effect, the primary changes to the representational system during the first phase are changes to the self-representation.

The second phase is marked early in the second trimester, at approximately 18 to 20 weeks, when *quickening* is reached, that is, the moment when the woman feels the baby move within her (Bergner et al., 2008). The range of prenatal representations from quickening onwards reflects many anxieties about separating and individuating:

> Mothers describe the fetus as "busy," "demanding," "willful," "won't stop bothering me," "makes me sick all the time," and "making me feel good about life." A woman's representations of herself as a mother are likewise developing: "I'll be a good mother," … "a controlling mother," … "I'm

> not going to be a pull-out-all-the-stops mother because I love my work" (Slade et al., 2009, p 26).

In these excerpts, we see the beginnings of representations about the fetus as well as changes to the representation of the self. We also see concerns about relatedness to the child begin to emerge. Bibring felt quickening marks a critical point in the mother's development, where the mother shifts from self-differentiation to object-relatedness, from viewing the pregnancy as a process within the self to representing the fetus as an object able to be loved (Bibring et al., 1961). A key developmental task of this second phase is for the pregnant woman to begin "the process of acknowledging the fetus as a separate being" (Carr, 1993, p. 19). Issues around relatedness that arise for pregnant women include ambivalence around relinquishing the role of being nurtured by others and taking on the active role of nurturing the fetus. Winnicott believed that, from the last trimester of the pregnancy into the first few months of motherhood, it is adaptive for the mother to be absorbed "in fantasies of and experiences of her baby" (Greenberg & Mitchell, 1983, p. 191).

The final phase of the pregnancy is considered to be the final 4-6 weeks of the pregnancy (Bergner et al., 2008), although much of the psychological work has been in progress throughout the third trimester. The woman's primary tasks at this stage are preparing to give birth and separating from the baby (Cohen, 1988). Conflicts may revolve around issues with separation-individuation and abandonment. The physical discomfort of these final weeks can provide motivation for the woman to look forward to delivery, but the discomfort can also disturb a sense of merger the expectant mother may be enjoying with her fetus. It is normative for the near-term woman to have become identified with the fetus and to be fearful of the fetus leaving the safety of her body. The

approach of labor and delivery brings increased anxiety. Expectable fears include possible infant defects, physical tearing from the birth, and death. Anxiety over parenting begins to rise. The discomfort of these final weeks contributes to the woman's desire for the pregnancy to end and assists the woman in beginning to see the fetus as a separate individual. Uncertainty and mourning may be experienced in relation to changes in her relationship with her spouse, losing the state of being pregnant, and worries over parenting (Carr, 1993).

Indications of successful psychological development during pregnancy.

Bibring viewed a successful psychological development to be evident in the mother's subsequent relationship to her child, which she felt should show "characteristics of a freely changeable fusion – varying in degree and intensity – of narcissistic and object-libidinal strivings, so that the child will always remain part of herself, and at the same time will always have to remain an object that is part of the outside world and part of her sexual mate" (Bibring et al., 1961, p. 22). Throughout the pregnancy, by focusing first on integrating the fetus into the self, and then relating to the fetus as a separate individual, the woman is practicing a valuable skill: the ability to move flexibly between merger and separation. In order to be a "good-enough mother" after the baby is born, the expectant mother ideally recognizes that the infant is a separate person while retaining the ability to maintain a psychological symbiosis (Domash, 1988). Slade and colleagues concur:

> [T]he woman must, in a some very real sense, abandon herself to her child…becoming utterly preoccupied and identified with her baby, with his or her needs, rhythms, and very being. In this state, she and the baby are – profoundly – together as one….At the same time, the baby's separateness, separate within her own body, must remain real to her. She must imagine and hold in mind his or her autonomy, distinct from her fantasies, her desires, her projections, and her attributions. She must also

> feel secure in her own ability to retain an autonomous identity, even while surrendering her sense of self to her baby" (Slade et al., 2009, p. 26).

A separate but equally important outcome of pregnancy is the resolution of ongoing identification issues with the expectant woman's mother. Bibring observed in her longitudinal study that pregnancy activated thoughts and feelings about the expectant mother's relationship to her own mother (Bibring et al., 1961). For "the healthy expectant woman, pregnancy fulfills her wish to have a child and mother it as she herself was mothered. It provides an opportunity to become a mother like her mother and to share in her experience of creating life" (Silver & Campbell, 1988, p. 224). The expectant mother "comes to *feel* like a mother" by this identification with her own mother (Slade et al., 2009).

Bibring noted that first-time mothers who did not sufficiently resolve these reactivated issues during pregnancy displayed disturbances in the early mother-child relationship (Bibring et al., 1961). Likewise, Deutsch (1945) felt that a pregnant woman needed to find a balance between two identifications, one with her child and one with her own mother. If the woman could not embrace identification with the fetus, she might view the fetus as hostile and greedy, while if she could not embrace identification with her own mother, this would affect her own ability to mother effectively (Silver & Campbell, 1988).

Thus, the pregnancy can become a developmental crisis which reactivates representations of self and other, particularly around the relationship between the expectant woman and her mother (Slade et al., 2009). Ideally, the woman will have enough time and psychological resources to "rework" her representations. This process of internal reorganization ideally results in re-representations of self and other, showing

an accommodation to the new reality. Viewing this process through the lens of attachment theory, we might say that the expectant mother's internal working models of attachment are revived during the pregnancy. A psychologically healthy woman has the resources to adapt and assimilate these revived working models into her current model of relating to others. Without sufficient resources, however, a pregnant woman might have a pathological reaction to these reactivated representations. The resolution of questions around this earliest dyadic relationship of the expectant mother is one of the developmental challenges of pregnancy for many women.

The representations of the fetus that women develop during their pregnancies are shaped by both conscious and unconscious processes. Slade and her colleagues note that these representations of the baby are formed "even before a woman becomes pregnant, for it is likely that she has at some if not many points in her life, fantasized about having children and about being a mother" (Slade et al., 2009, p. 26). Likewise, the actual interactions between an expectant mother and her fetus reinforce the reality of the child. For example, the fetus may respond with a kick when the woman presses her belly, or the fetus may become active after the woman drinks some orange juice. Overall, however, the expectant mother's representations of her relationship with the fetus will be more reflective of the woman's inner life rather than a representation of an active relationship with another person.

Ammaniti and colleagues (Ammaniti, 1991; Ammaniti et al., 1992) investigated the developmental trajectory of maternal representations from pregnancy through the early postpartum period. They collected representations from the expectant woman for several key figures: self, fetus, the woman's partner, and the woman's mother. They

noted changes during the pregnancy in maternal representations of the self and the child, both at the conscious and unconscious levels. They also documented a developmental progression of representations of the fetus. First, in early pregnancy, the mother forms a representation of a "fantasmatic baby" (Lebovici, 1983, 1988) that is closely linked to unconscious processes and reflects "conflicts around the mother's own early attachment relationships (Diamond & Kotov, 2003, p. 131). Second, also in early pregnancy, is a representation of an "imaginary baby" that is more available to consciousness "and based on the mothers' present relational situation" (p. 131). Later in pregnancy, after quickening, a representation of "the child of reality" begins to come to the forefront (p. 131). Intriguingly, Ammaniti and colleagues (1992) also found that later in the pregnancy it was normative for the expectant mother when representing her fetus to draw more on her representation of the partner than on that of herself. They hypothesized that by using the partner's known qualities of other-ness, the expectant woman was better able to navigate the process of differentiating from the fetus prior to the birth.

The expectant mother's ability to engage in flexible fantasy about her unborn child may allow her to practice skills needed in order to engage in intersubjectivity with her infant. This suggests that intersubjectivity begins *before* the mother and child meet and interact. Even once the infant arrives, Auerbach and Blatt (2001) note that a mother's ability to engage in intersubjectivity with her infant is a "paradoxical notion" because the infant cannot return the process of intersubjectivity, as he or she has not yet developed many of the capacities necessary for human subjectivity, such as intentionality, self-reflexivity, or language. "[C]hildren become independent subjects only if they are recognized as such – that is, as beings with minds, wills, and feelings of their own – by

their caregivers" (Auerbach & Blatt, p. 429). Engaging in intersubjectivity with someone who lacks intersubjectivity may stir up feelings of inadequacy and frustration. How much more of a paradoxical notion is the idea that intersubjectivity could develop between a mother and her unborn child?

Atypical maternal representations and associated child outcome. Just as there are indications for the benefits of successfully navigating the psychological demands of pregnancy, there is research that a troubled (or absent) navigation of the developmental demands of pregnancy has an impact on both the child's attachment organization and the child's affect regulation system. A great deal of the work examining the relationship between the mother and child has been focused on how to identify atypical maternal representations, both during pregnancy and in the first year of the child's life.

Prenatal maternal representations tend to endure into the first year of the child's life: for example, Benoit and colleagues (Benoit, Parker, & Zeanah, 1997) found that parents' prenatal representation of their infants (assessed with the Working Model of the Child Interview, WMCI) remained stable through the first year of their baby's life. They measured aspects of the representations along dimensions of balance, affect valence and coherence. Prenatal representations that were unbalanced, negative and incoherent predicted an insecure attachment classification one year after birth.

Aylor (1995) examined the postnatal object representations of 87 mothers and the attachment security of one-year-old infants using two object representations measures, the Structural Representation of the Object from Blatt's Parental Descriptions Test and the Bell Object Relations Inventory. By combining scores on both measures, Aylor divided her group of mothers into categories, where mothers with low scores on both

measures were designated as having less mature representational ability and mothers with higher scores on both measures were designated as having more mature representational ability. Mothers with less mature representational ability had more than twice the incidence level of anxious attachment in their children than mothers with more mature representational ability. Mothers with less mature representational abilities also rated their children as more difficult in terms of their behavior.

Gerber (2000) compared the developmental level of a mother's object relations to the quality of her prenatal and postnatal representations of her child. Thirty-four women were given the Rorschach Inkblot Test and the Pregnancy Interview (Slade et al., 1987), and 24 of these women also participated in the Parent Development Interview (Aber et al., 1985) at 10 months postpartum. The Rorschach was scored with The Mutuality of Autonomy Scale (Urist, 1977) and the Developmental Analysis of the Concept of the Object Scale (Blatt, Brenneis, Schimek, & Glick, 1976). The Pregnancy Interview and Parent Development Interview were both scored with alternate scoring systems (this was prior to the development of the parental RF coding manual). Gerber found that prenatally, a woman with access to "a range of object relational experiences of self and other, from empathetic and mutual to aggressive and malevolent, may represent her child more coherently" (p. viii). Postnatally, mothers with a higher developmental level of object relations "including a more differentiated and less symbiotic world, appear to experience more joy and less anger in their relationships with their children" (p. viii). She also found a difference in type of representations by gender of the child, raising the possibility that the mother's process of representing her fetus varies along gender lines. This build on the afore-mentioned research by Ammaniti and colleagues (1992) considering how the

expectant woman begins to differentiate from her child using the father of the baby's as a template.

There is now significant research indicating that a pregnant woman's mental health has enduring consequences for the child. The pregnant woman's mental health, particularly depressive and anxious states, has now been associated with changes to the fetal neurobiological substrate of the emerging affective regulation system and has been associated with long-term outcomes in infancy, childhood and adolescence (Gutteling et al., 2005; Lundy et al., 1999; Mohler, Parzer, Brunner, Wiebel, & Resch, 2006; Monk et al., 2004; Van den Bergh & Marcoen, 2004; Van den Bergh, Van Calster, Smits, Van Huffel, & Lagae, 2008; see Bergner, Monk, & Werner, 2008, for a review). Ruth Feldman's research also supports a link between a pregnant woman's physiology and her attachment behavior before and after birth. For example, oxytocin levels in a pregnant woman are linked to maternal attachment behavior, both throughout the pregnancy and most importantly directly preceding and after the birth. Feldman has associated higher plasma oxytocin levels in the first trimester with more indices of positive attachment when assessing the mother-child interaction at 4 months (Feldman, 2007).

The use of prenatal representation as a predictor for the mother's affect regulation with her child is also documented. Thun-Hohenstein and colleagues found that prenatal representations of the child predicted maternal regulatory ability, but not maternal interactive behavior, in a study of 73 mother-infant dyads. Prenatal representations about the child also predicted infant overall eye contact and infant interactive behavior (Thun-Hohenstein, Wienerroither, Schreuer, Seim, & Wienerroither, 2008).

Brandon (2006) examined maternal depressive symptoms, prenatal representations, and prenatal attachment for high-risk hospitalized pregnant women. Prenatal attachment was assessed with a 19-item self-report questionnaire (Condon, 1993) that asked the mother how strongly attached she feels to her fetus and how much time she spends in an attachment state. Brandon found a significant inverse correlation between depressive symptoms and reported prenatal attachment. She also found a link between mental health and prenatal attachment: mothers who were rated high in self-criticism scored significantly lower in a measure of prenatal attachment quality and endorsed a higher number of depressive symptoms.

Together, these findings provide compelling support for the need to develop screening tools that can be used to identify pregnant women at risk for adverse child attachment outcomes. Examining whether and how reflective functioning and differentiation-relatedness capacities during pregnancy interact to predict infant attachment outcome may provide important guidance for such intervention projects.

Maternal Reflective Functioning, Differentiation-Relatedness & Infant Attachment

Measuring a pregnant woman's mentalizing capacities *and* her level of differentiation-relatedness may provide complementary information about infant attachment outcome. There are significant differences between reflective functioning and differentiation-relatedness, both in theory and in the construction of the scales. Blatt and Blass (1990) note that much of the research investigating attachment theory (which heavily informs mentalization theory) has been done with typically developing infants and mothers, while much of the research investigating differentiation-relatedness has been on a clinically pathological population. Perhaps as a result, the levels of the RF

Scale emphasize a different range of functioning than do the levels of the DR Scale. Reflective functioning focuses on the sophistication of an individual's ability to identify mental states of self and other accurately, particularly in moments of intense affect. Auerbach and Blatt note that the RF scale appears to implicitly assess the degree of attainment of evocative object constancy, particularly in moments of intense affect (Auerbach & Blatt, 2002). Nevertheless, there are important differences, particularly at the lower end of each scale. The RF Scale does not directly assess relatedness or intersubjectivity at lower levels. While the lower levels of reflective functioning designate negative or absent reflective functioning, the lower levels of differentiation-relatedness attempt to clarify self and other boundaries. The lower and middle levels of differentiation-relatedness are particularly useful for individuals with a psychotic or borderline level of functioning (Auerbach & Blatt, 2002).

RF: Self and Other variability. There is now evidence to suggest that reflective functioning can be different for the self than for the other. This is in line with Fonagy, Gergely, Jurist & Target's (2002/2004) stance that there are both self-reflective and interpersonal components to RF. In a recent study of women in a substance abuse treatment program, Suchman and colleagues performed a factor analysis of the RF scale. She found there were two distinct factors to the scale, one for self and one for other. In the process of treatment, women who scored high in self RF often experienced a high degree of depression (Suchman, DeCoste, Leigh, & Borelli, 2010).

While the previous study appears to indicate a common self-other emphasis in both RF and DR, there is also evidence that RF and DR measure different capacities with different characteristics. Auerbach and Blatt (2002) present case studies indicating that

reflective functioning can diminish during moments when attachment security is threatened (for example as termination of treatment approaches), even while differentiation-relatedness continues to improve.

What is the link between the mother's differentiation-relatedness and the child's developmental progress and attachment security? Pine (1985) discusses pathology in the separation-individuation process, and describes two child cases. He makes a distinction between an individual who has achieved differentiation but may struggle with feelings of alienation and a second individual who has limited sense of self without the presence of the other, where the minds appear to be still merged. Levine, Tuber, Slade and Ward (1991) studied the relationship between adolescent mothers' representations of themselves and their parents and then measured their infants' attachment status. Adult attachment interviews were given to 42 adolescent mothers; the representations in the narratives were then scored both for adult attachment organization and for interpersonal relatedness using the Krohn Object Representation Scale for Dreams (Krohn & Mayman, 1974). Levine and colleagues noted that maturity of object relations, as scored on the Krohn scale, was more likely to be associated with a secure/autonomous style of adult attachment. The secure/autonomous young women were more able to express coherent representations than adolescents with insecure classifications; the secure autonomous women also tended to describe their relationships with their parents as loving and not rejecting; and they did not overly idealize these relationships. These qualities would contribute to higher scores on the DR Scale. Finally, the attachment organization and maturity of object relations were both found to have a significant relationship to infant attachment (Levine et al., 1991).

How do RF and DR scores relate over time in individuals? Diamond and colleagues (1999) presented two cases with borderline personality disorder who participated in a year of transference-focused psychotherapy. They found that measures of attachment, reflective function and differentiation-relatedness over the course of the year did not necessarily correspond: for one patient, improvements in attachment mirrored improvements in differentiation-relatedness; for another patient they did not. This led them to conclude that "measures of attachment, reflective function, and object representation assess distinct dimensions of intrapsychic change with borderline patients" (p. 864).

The differences between RF and DR are further noted by a recent study by Vermote and colleagues (2010). They studied process and outcome for 44 hospitalized adult patients with a personality disorder. At intake, and every three months during treatment, and 3 and 12 months following completion of treatment, patients were assessed for RF, DR, and felt security, all scored on the Object Relations Inventory (Blatt, 1998; Harpaz-Rotem & Blatt, 2005). Piecewise linear growth curve analysis showed improvement in symptoms, personality functioning, self and object relations and felt safety, but not in reflective functioning. Linear changes in self and object representation and felt safety, but not in reflective functioning, predicted improvement in outcome. Additionally, no association between the three scales of RF, DR and felt safety was found, except for a small correlation between the felt safety and RF ($r = .3$, $p < .01$).

The intersection of trauma, reflective functioning, and differentiation-relatedness. Exposure to trauma and inner-city violence, both frequently reported by women in the MTB study, may impact the ability of the expectant mother to represent her

fetus and future child. This may result in differences between the reflective functioning and the differentiation-relatedness scores, and these differences may provide clarity regarding infant attachment outcomes. Slade and her colleagues note that the pregnancy interviews for the Minding the Baby project show a range of limitations:

> Mothers in our study were extremely limited in their capacity to imagine the baby or themselves as mothers during pregnancy. Their representations were often stark in their blandness and superficiality; others were infused with conflict and unmetabolized anger and fear (Slade et al., 2009, p. 35).

Maternal reflective functioning scores from the Minding the Baby intervention group were in a very low range of the Reflective Functioning scale, with a mean RF of 3.23 and a mode RF of 3 (Ueng-McHale, 2009).

Fonagy proposes that trauma causes "the collapse of mentalization," and he links this collapse with an adult's increasing reliance on non-verbal modes of interacting with (and representing) the world (Fonagy, 2006). Related studies support the impact of trauma on limiting an individual's ability to mentalize. For example, children with a history of trauma have difficulty learning words for feelings (Beeghly & Cicchetti, 1994), and adults with a history of trauma have more difficulty than their non-traumatized counterparts in recognizing facial expressions (Fonagy, Stein, Allen & Fultz, 2003).

Schechter and colleagues (2005) interviewed women exposed to inner city violence and found that those with severe post-traumatic stress disorder (PTSD) were significantly more likely to give non-balanced postnatal representations, regardless of RF score. The maternal representations were collected via the Working Model of the Child Interview (WMCI). A balanced representation integrates both positive and negative aspects of the child and the parent's relationship with the child; it is also predominantly

positive in overall tone. Distorted representations may include aspects of idealization or denigration, seen in projection and unrealistic expectations of the child. Schechter views a balanced representation as analogous to a secure/autonomous attachment style; while a distorted representation includes elements of both preoccupied and disorganized/unresolved attachment styles. The disengaged representation is indicative of the dismissing attachment style.

Higher scores on PTSD symptoms were associated with distorted representations, while higher RF was associated with balanced representations. Overall, PTSD appears to interfere with balanced maternal representations while RF supports them (Schechter et al., 2005, p. 325). The mother's PTSD symptoms may increase the likelihood of affective dysregulation, leading to non-balanced representations when speaking of her child. They found that the mother may view the child as a source of stress or a threat. For example, they found that "as many as 59% of the mothers reported that their child was one of the three greatest stresses in their lives" (Schechter et al., p. 316), noting in particular how often these women cited temper tantrums by their child as extremely stressful.

While post-traumatic stress symptoms appear to impact the affect regulation system, these symptoms also appear to be mediated by reflective functioning. Schechter and colleagues (2008) examined 41 dyads of mothers and children. They found that maternal representations of children proved to be useful risk indicators of affect dysregulation; they also found that negative or distorted maternal representations predicted "atypical behavior (Cohen's $d > 1.0$)" (p. 124.) However, while they found that PTSD and RF both impacted representations, this happened in separate ways with little

overlap, and high RF appeared to provide a protective factor against PTSD-related dysregulation.

Thus, trauma history appears to have an impact on the maternal affect regulation system and the mother's representational ability, but a pregnant woman with a history of trauma may nevertheless be protected from affect dysregulation by high reflective functioning. Object relations theory suggests that trauma history would also impact the pregnant woman's ability to differentiate from her fetus as well as to develop the skills necessary to form a relationship with her soon-to-arrive child.

Purpose and Aims

The proposed study is a secondary analysis of the control group data gathered through Minding the Baby, an ongoing longitudinal intervention project for a sample of first-time mothers from New Haven, CT. This population of first-time mothers is at risk for experiencing parenting issues due to many factors such as socioeconomic status, insufficient support systems, and exposure to trauma. The purpose of this study is to examine the extent to which maternal reflective functioning and differentiation-relatedness capacities during pregnancy predict infant attachment at one year.

My study will have the following aims:

1. score the Pregnancy Interviews of the Minding the Baby control group using the Differentiation-Relatedness (DR) Scoring System;
2. test the hypothesis that DR scores are positively correlated with maternal reflective functioning (RF) scores for Pregnancy Interviews;
3. explore the ways that DR scores differ from RF score;

4. and, finally, test the hypothesis that a logistic regression model incorporating DR scores and RF scores is predictive of infant attachment.

Chapter 3: Methods

This study is a secondary analysis of data collected from the control group of an ongoing longitudinal intervention project. The ongoing research study is called "Minding the Baby: A Home Intervention Study." The study is a collaborative effort between the Yale Child Study Center, The Yale University School of Nursing, and the Fair Haven Community Health Center (FHCHC) in New Haven, CT, led by Lois S. Sadler, R.N., Ph.D. and Arietta Slade, Ph.D. Funding for MTB is provided NIH/NINR (P30NR0899), NIH/NICHD (R21HD048591), NIH/CTSA (UL1RR024139), NIH/NICHD (RO1HD057947), the Irving B. Harris Foundation, the FAR Fund, the Annie E. Casey Foundation, the Pritzker Early Childhood Foundation, the Seedlings Foundation, the Edlow Family, and the Schneider Family.

Subjects

Pregnant women in the present study were drawn randomly from the control group of the larger MTB study, having been recruited for the larger study at FHCHC. After recruitment, participating women signed a participation consent form and were randomly assigned either to the control group or to the intervention group. As of 2010, there was a control group of 36 women-infant pairs and 72 intervention pairs. All were English-speaking, between the ages of 14 and 25, and having their first child. Subjects were excluded if they were using heroin or cocaine, or if they had major acute or significant chronic medical illnesses (e.g. AIDS, etc.). Participants for the intervention group received weekly home visits until one year; they were then seen twice a month until graduation at two years (Sadler et al., 2013).

A demographic breakdown indicates that 62% of the women in the larger MTB sample were Latina, 28% were African American, and 10% were from diverse ethnic backgrounds. The mean age was 19.6 years (*SD* = 2.5). On entry into the study, most women were never married/single (83.8%), while 7.6% were married, 1.9% divorced and 6.7% of the women were engaged (Sadler et al., 2013).

The mothers in the MTB study were at risk for experiencing parenting issues due to many factors such as socioeconomic status, insufficient support systems, and exposure to trauma. In their preliminary findings (Slade & Grienenberger, 2006) the MTB project reported that 80% of the mothers in the study had experienced a previous history of abuse (sexual, physical, neglect/abandonment, domestic violence), 55% had a previous history of depression, 60% scored above the cut-off for depression at baseline on a depression scale (CES-D); 40% were in the clinically vulnerable range of the BSI at baseline; 27% scored in a range comparable with a psychiatric population on measures of PTSD, 3 mothers had psychotic episodes in the perinatal period, and 65% of the women had low mastery scores at baseline using the Pearlin & Schooler Sense of Mastery Scale.

Procedures

Women attending prenatal groups at FHCHC were approached by research assistants and offered the opportunity to join the MTB project. For both the control group and the intervention group, participants took the Pregnancy Interview (Slade, 2003). Pregnancy interviews and trauma history were collected during the third trimester, usually by the 28th week of the pregnancy. Two raters coded the Pregnancy Interviews for maternal reflective functioning. The intraclass correlation coefficient was .84, establishing good reliability.

After the pregnancy interview, both the control group and the intervention group received ongoing medical care at FHCHC. In addition, the intervention group (not the focus of this study) received visits from a nurse and a licensed clinical social worker on alternating, biweekly home visits. All mother-infant pairs participated in The Strange Situation Paradigm, a laboratory observation, 12 months post-partum. Women were paid $25 after the prenatal visit and after the 12-month visit. There were additional measures taken at other points during the project which are not part of this study.

Measures

The Pregnancy Interview (PI). The original version of the Pregnancy Interview was developed in 1987 (Slade, Grunebaum, Huganir, & Reeves, 1987). This has since been modified, and the modified version of the Pregnancy Interview was administered for the MTB participants during the third trimester (Slade, 2003). This is a semi-structured clinical interview with 22 main questions and additional probes. The interview takes approximately an hour and asks questions about the woman's emotional experience of her pregnancy, her representations of self, mother, and partner, and her representations of both the fetus and the future mother-infant relationship.

Maternal Reflective Functioning Scale. Slade and Patterson (2005) modified Fonagy and colleagues' Reflective Functioning scoring manual (1998) to assess level of maternal reflective functioning during pregnancy. The RF scores for maternal reflective functioning range from negative reflective capacity (-1) to high (9). A score of five is considered to be indicative of "average" reflective functioning. To score at five or above, the individual must show the ability to link mental states to behavior or link mental states to mental states. For the revised scoring system, Slade and Patterson focused on two

areas: assessing the pregnant woman's ability to acknowledge her and her partner's mental states regarding the transition to becoming parents; and, assessing the pregnant woman's recognition that her child will one day have his or her own mental states. Both a general RF score for the entire interview and individual RF scores for specific questions are generated. Emphasis is placed on the capacity to manage both complexity and uncertainty. Value is placed on the expectant mother's metacognitive modeling, "thinking about thinking," in regards to this fantasy depiction of her future life with her baby. The scale points for the overall RF scores for the PI are (-1) Negative RF; (1) Lacking in RF; (3) Questionable or Low RF; (5) Ordinary RF; (7) Marked RF; (9) Exceptional RF. Negative RF indicates either a rejection of RF or bizarre RF, while Lacking in RF is totally absent but not rejected out of hand. Questionable or Low RF is generally assigned when the expectant woman is able to identify basic mental states but not able to link them explicitly to behavior. Ordinary RF indicates a basic understanding of the relationship between mental states and behavior. Ordinary RF may also be scored when there is a range of Low RF to Marked RF, or when only one of several categories of RF is used. Marked RF scores are given when there are explicit attempts to "tease out the mental states underlying behavior" (Slade & Patterson, 2005, p. 30). Exceptional RF is assigned to interviews that show a complex and elaborate effort to understand underlying mental states, especially when the parent is discussion her relationship with her child over time.

The Strange Situation Paradigm. The Strange Situation Paradigm is a videotaped structured observation of eight separation/reunion encounters among various combinations of the infant, a primary caregiver, and a stranger. The videotapes are coded

and, based on these results, infants are then grouped into attachment classifications of secure (B), insecure-avoidant (A), and insecure-resistant (C) following procedures specified by Ainsworth and colleagues (1978). In addition, the infants receive a continuous score for level of disorganization as specified by Main and Solomon (1990) from 1 to 9. Scores of 5 to 9 prompt a reclassification to the Disorganized category (D).

The Differentiation-Relatedness Scale. The Differentiation-Relatedness Scale of Self and Object Representations was initially developed by Diamond, Blatt, Stayner, and Kaslow in 1993 and describes the level of self-differentiation and other-relatedness expressed by an individual when describing himself or significant others. The current study relied on the 2011 manual as the basis for scoring.

The scoring system condenses the representations of self and other, seen as evolving on two independent, yet interrelated, lines of psychological development, into a global score ranging from 1 to 10. A score of 1 or 2 indicates a lack of differentiation, or boundary confusion, between self and other. Increasing scale points acknowledge the use of mirroring (3), self-other idealization or denigration (4), and oscillation between idealization and denigration poles (5). A more differentiated and related sense of self and other is then observed in 6 and 7. Scores of 8 and 9 indicate a sense of self and other as empathically related with increasing acknowledgment of mutually reinforcing relationships. Finally, a score of 10 indicates an integrated construction of self and other in relationships that are empathic and reciprocal; moreover, these representations display a conscious acknowledgment that the relationship between self and other is evolving through an intersubjective process (Diamond et al., 2011). The narrative is typically a free-response item such as a five-minute speech sample or a five-minute written sample

from the Object Relations Inventory; this is the first time it will be applied to the Pregnancy Interview.

Object Relations Inventory. The DR scoring method has instructions for application to the Object Relations Inventory (ORI, Diamond et al., 2011; see Blatt et al., 1979 and Blatt et al., 1988). The ORI is a five-minute sample, either spoken or written, where the subject is asked to describe a significant figure (often the self, the mother, the father, or the therapist). No probes are given; rather, the subject is given the opportunity to associate freely. In a spoken sample, an inquiry follows the five-minute sample. Spoken or written, the ORI for a given relationship often gives a page or less of information that can be scored.

Reliability of Differentiation-Relatedness scoring method. The scoring method has an adjusted intraclass correlation coefficient of 0.83 (Stayner, 1994). Test-retest reliability of ratings was examined by comparing ratings of descriptions of mother and self provided by 10 adult day-hospital patients over a five day period. Ratings for differentiation-relatedness were within one point of each other for 18 of the 20 descriptions (Stayner, 1994). Furthermore, Levy, Blatt and Shaver (1998) used the DR Scale to explore the relationship between young adult attachment styles and the content and structure of their representations of their parents. Their interrater reliability was greater than .75 Pearson correlation coefficient, and they were able to use the scale to distinguish attachment styles in adults.

Application of DR scoring method to Pregnancy Interview. This was the first time the Differentiation-Relatedness Scale of Self and Object Representations (Diamond et al., 2011) was applied to the Pregnancy Interview (Slade, 2004). Drawing on a

separate set of Pregnancy Interviews from the MTB population's intervention group, the principal investigator first developed an adaptation creating guidelines for applying the DR scoring system to the Pregnancy Interview (Daley, 2012; see Appendix B). Using this separate sample, the principal investigator outlined several modifications to the DR scoring process to account for the length of the Pregnancy Interview, the number of relationships investigated, and the criteria to be used for scoring the responses about the unborn child.

Due to the length of the PI (generally from 30 to 60 minutes), particularly in comparison with the brief ORI (approximately 5 minutes), it was expected that there would be variability in the DR responses during the course of the PI. In fact, Pregnancy Interviews ranged from 6 to 20 or more pages in length. Moreover, four relationships were available for scoring: Self, Mother (Mom), Father of Baby (FOB), and Baby. The procedure for scoring therefore was expanded to include reading through the entire interview twice and, for each of the four relationships, capturing three aspects of DR: the lowest DR score in the interview, the highest DR score, and the DR score that appeared to be the most common or consistent strategy towards differentiation and relatedness for that relationship. Any response on the PI was considered a possible scoreable response if the woman's response pertained to one of these relationships. Thus, 12 variables were initially created: the most typical scores for the four main relationships (Self DR, Mom DR, FOB DR, and Baby DR); the corresponding lower-bound scores (Self Low DR, Mom Low DR, FOB Low DR, and Baby Low DR); and, the corresponding upper-bound scores (Self High DR, Mom High DR, FOB High DR, and Baby High DR). After a

factor analysis (see chapter 4: Results I), these variables were condensed into three composite scores spanning all four relationships: Overall DR, Low DR, and High DR.

Reliability within this study. There were several efforts to establish reliability for scoring DR on the Pregnancy Interviews. In addition to the creation of the adaptation manual in advance of the study, two raters (the primary investigator and a second doctoral student) were trained to reliability in the DR scoring method by Diana Diamond, Ph.D. They coded a reliability set of 35 ORIs, and each received a weighted kappa of .653. Following this, the primary investigator scored all 35 interviews and the second rater coded 20% of the interviews. The two coders met periodically throughout the scoring process and worked to come to agreement on the scoring for the second rater's interviews. Both individuals were blind to the RF and attachment scores associated with each pregnancy interview; the second doctoral student was also blind to the hypotheses of this study.

Baby DR scoring examples. While all relationships were scored, particular attention was paid to finding DR scoring examples for the baby to include in the adaptation. Scoring examples for DR levels 1 to 8 are documented here (see also Appendix B for more examples of Baby DR and other relationships). Note that no examples of DR levels 9 and 10 were found in the Pregnancy Interviews examined from this population.

Level 1: Self-Other boundary compromise (physical). This level is typically used when adults describe a sense of confusion between the physical boundary of the self and that of others. For the case of describing the unborn child, this scoring level may apply when the woman expresses confusion or denial about the existence of the fetus, or

experiences the pregnancy as a threat to her physical integrity. Since the Pregnancy Interviews were conducted after the women reached the stage of quickening, the expectation was that most women would have begun to differentiate from the fetus.

I: Can you remember the moment you found out that you were pregnant?

M: (Yes)

I: Um, can you tell me about it?

M: Um, yes. Yeah – when it was six months. I found out when — yeah — when it was six months. **(Okay)** Yeah, because I was losing a lot of weight and some bumps comin' out on my skin, and I'm not eating. So, you know, I tell my mom to bring me to the doctor and, you know, everything.

In this example, there is no sense of a differentiated baby, and the pregnant woman's experience is fragmented. She recounts not being aware of the pregnancy until six months into the pregnancy. There is a loss of coherence in the narrative, with repetition of phrases and pauses in her speech. More importantly, her narrative of being pregnant focuses on physical aberrations that appear to affect her sense of bodily integrity.

Level 2: Self-Other boundary confusion (intellectual, affective). Rather than a confusion with physical differentiation, this level identifies ways that the expectant mother may experience a sense of merger with the fetus, in that she may believe the baby can feel her feelings or know what she is thinking. There is evidence of a blurring of boundaries where she is not sure where her identity stops and the baby's begins. When asked to describe the baby, the woman may respond with vagueness or with a flood of confusing details. An "I don't know" may be scored at this level if there is a sense that the task has overwhelmed the individual. (In contrast, an "I don't know" that represents a refusal to answer and gives a sense of agency would be scored a 5.)

I: Okay alright. So you would you say that you have a relationship with the baby right now?

M: Yeah.

I: How would you describe that?

M: She knows her mummy's feelings. Like I can feel it. Like I know when she knows when I'm upset or when I'm in pain or something. I don't know it's weird.

I: What changes for you that makes you feel like she knows that, that that's going on?

M: Her changes her moods like one minute she will be moving all over the place, and it will start hurting me, I will go and lie down and I will be in pain and she will stop.

This response expresses a physical separation between the mother and baby, so it is not a level 1 response. Instead there is an emotional merger. It is important to remember that level 2 responses for describing the baby may occur despite higher scores for other relationships.

Level 3: Self-Other mirroring. For the description of the baby, scoring for this level focused on ways the expectant woman might be using physical or character traits of herself or the father of the baby to differentiate from the baby.

I: My next question was what sort of a person do you imagine your baby's going to be?

M: I think similar to me.

I: How so?

M: She will probably be very stubborn. (laughter) A dancer she loves music, she moves and I am hoping she's I don't know, it's probably the way I raise her. I am just hoping she's a loving person.

I: Okay. Can you pull up a picture in your mind about your baby? About what do you imagine when you pull that picture up?

M: A fair skinned baby that is long, I think that she is going to be tall.

I: Yes you have mentioned that before.

M: With curly dark hair. A lot a lot of hair. And probably with light eyes. If the genetics kick in.

I: The light eyes come from which side?

M: Both none of us were blessed with them so hopefully she will. Yeah

I: So when you imagine all of those, the way the baby looks do you how old is your daughter in that picture?

M: Newborn.

I: Just a first born.

M: Yeah.

I: Okay.

M: I don't have a picture from when she's older I don't want to yet. (laughter)

I: You know the sex of the baby?

M: Female.

I: Yes. How do you feel about having a girl?

M: Excited, we were hoping for a girl first.

I: So you had a preference?

M: Yes.

I: What about having a girl did you prefer?

M: (laughter) The pink the hair the dresses I don't know, having a miniature me running around.

In this example, there are some indications of qualifiers ("probably be very stubborn…hopefully she will") that could indicate a higher score, but overall, the differentiation during the pregnancy is at a place of mirroring, where the pregnant woman is using herself as a preliminary way of understanding who her baby might be. In addition, there is an unusual emphasis on physical characteristics.

Level 4: Self-Other idealization or denigration.

At this level, the adult will engage in unilateral characterizations of self or other that are all good (idealization) or all bad (denigration). It is possible that from passage to passage there will be flips from an idealized stance to one that denigrates; however, the individual makes little or no attempt to hold these in mind at the same time. Overall, the passage may feel static or cliché.

I: …and can you think of a specific time that you were feeling good about their reaction?

M: All the time.

I: All the time. Okay. Um, have you had any hard or difficult feelings while you've been pregnant?

M: (No)

I: Nothing? Um, have you had any worries about the baby or concerns while you've been pregnant that have been worrying you or bothering you?

M: For now, no.

I: No? Okay. And not so far in the pregnancy you haven't? Okay. So no difficult or hard or bad feelings at all?

M: (No)

Despite repeated queries, this woman is unable or unwilling to define any negative feelings about herself and the pregnancy, instead creating a unilaterally positive experience ("all the time") that appears flat and cliché.

Level 5: Semi-Differentiation

At this level, the expectant mother will often oscillate between idealized and denigrating passages within the same passage. She may also refuse to answer the questions of the interviewer in a way that indicates agency rather than that the questions have overwhelmed her (the latter is indicative of a level 2 response). A sense of struggle pervades the passage.

I: Do you have a sense that the baby needs you now?

M: Not really. I'm gonna be there anyways. They can't get rid of me now.

I: What do you think the baby will need once it's born? If you can imagine.

M: ****

I: Changing diapers, what else?

M: I don't know. Love is always gonna be there, care is always gonna be there, there's a lot of money that is gonna be wasted.

I: That's gonna be what?

M: Wasted on him.

In this example, the pregnant woman expresses anger and envy of the baby's needs being met. She expresses conflict indicating a fear of being rejected by the baby ("They can't get rid of me now.")

Level 6: Emergent, ambivalent constancy and cohesion, and an emergent sense of relatedness.

At this level, the individual is beginning to form a tentative consolidation of positive and negative aspects of the other. There is an emergent sense of relationship that tends to be in one direction rather than bi-directional ("she listens to me" rather than "we listen to each other"). The descriptions may be tentative and continue to indicate some ambivalence or some mild idealizing or denigrating qualities.

> **I: …if you had to think of five years from now and your little baby is five years old —**
>
> M: I can't wait. [Laughter]
>
> **I: — and you had three wishes for your child —** (Uh-huh) **— what would they be?**
>
> M: Um, five wishes — no, three wishes. [Laughter] Okay. Three wishes for five years. **(Right)** Okay. Well, I would hope that he learns something from me and is able, you know, to communicate well with others; you know; has friends. Um, I hope that he's smart. You know, obviously, I think he will be smart, 'cause I have a lot of ideas for that. Um, I — I just — I just hope he's, you know, happy, just happy, you know. I think bein' a parent is a hard job, you know; because you're always tryin' to keep your kid happy. But sometimes you just — you can't, you know. You have to try your best, and sometimes your best is not enough, you know. So I just — I just hope that I'm — I can do it, that's all, you know. I just want him to be happy. Well that hurt. [tearing up…laughter].

In this example, the pregnant woman is able to articulate her anxiety that she will not be a good enough mother. The qualities she hopes for in her child are placed in the context of the importance of relationships to the well-being of the child as well as the role the parent has in cultivating these qualities. She conveys a tentative consolidation of herself as an agent that affects the people around her.

Level 7: Consolidated, constant (stable) sense of self and other.

At this level, the individual has succeeded in integrating positive and negative representations of self and other. There is a sense of tolerance for difference in others. The relationships still tend to be unidirectional, but there is some indication that the individual is interested in and capable of "understanding of others' thoughts, feelings and motivations in depth" (Diamond et al., 2011, p. 55).

> M: Um, I would say another goal would be for her to be a free spirited person. Not to worry about what's mommy and daddy going through. Just to worry about her. (**M'hm**) Like not to take on the responsibility of her having to grow up too fast.

Here the pregnant woman is able to acknowledge that her child will be impacted by her parents' emotional states, but also express her hope that her child will still be able to develop in her own way. There is a clear sense that the mother is hoping the child will be differentiated. At the same time, the emphasis on differentiation at the expense of relatedness prevents this from being a higher score.

Level 8: Cohesive, individuated, empathically related self and others in reciprocal relationships.

An individual at this level expresses a more modulated and individuated sense of self and others and describes relationships as bidirectional, or reciprocal, rather than unidirectional.

> **I: And when you think about the first, um, six months of the baby's life, what, um — when do you imagine you'll be the happiest?**
>
> M: The first time he smiles at me.
>
> **I: Mmm. Why do you think it'll be then?**

M: I think it will be then because I think that's just the number one thing that you — that you wait for, that you want them to do; because it just — it intensifies the connection that you already had.

I: Mmm. Tell me more about that.

M: Um, I know it — it, um — it's kind of like — it clears up anything in your mind about any worry of having them as early as you did or any of the problems that you went through in the pregnancy, if you had any. And it establishes the fact that the baby actually knows who you are, and you had some kind of connection; and you did what you needed to do in order for them to recognize you. And it shows that they love you as much as you love them.

In this example, the pregnant woman articulates her desire for a moment of connection with her baby and places it in the context of an evolving relationship between the self and the other. The expression at the end – her wish that "they love you as much as you love them" indicates a wish or need for the relationship that in a less differentiated response might warrant a lower score.

Quantitative Analysis

This study used quantitative research methods to examine the trends and patterns in the group of women. Maternal reflective functioning (RF) had been previously scored for the Pregnancy Interview (in preliminary results, $M = 3.15$, $SD = .92$; in more current results, $M = 3.23$). The relationship between maternal reflective functioning and differentiation-relatedness was evaluated. Following this, maternal reflective functioning and differentiation-relatedness were evaluated as possible contributors to infant attachment outcome using independent t-tests and binary logistic regression. The mother's age, race and ethnicity and the child's gender were considered as possible demographic factors confounding the results.

Hypotheses

Hypothesis 1. DR scores will be positively correlated with RF scores and provide additional discriminating detail for mothers with low levels of reflective functioning.

Hypothesis 2. Mothers of disorganized infants will exhibit significantly lower levels of DR during pregnancy than will mothers of infants with secure patterns of attachment.

Chapter 4: Results I

Results are presented in two chapters. Because this is the first time the Differentiation-Relatedness Scale of Self and Object Representations (Diamond et al., 2011) has been applied to the Pregnancy Interview (Slade 2003), this chapter contains an analysis of the differentiation-relatedness variables. The nature of Baby DR is assessed in relation to the other relationships, and the differentiation-relatedness variables are reduced to three composite variables which are then compared.

As mentioned in the Methods chapter, four relationships were investigated: Self, Mother (Mom), Father of Baby (FOB), and Baby. For each of the four relationships, three scores were captured: the DR score that appeared to be the most common or consistent strategy towards differentiation and relatedness for that relationship; the lowest DR score in the interview; and, the highest DR score. Thus, 12 variables were initially created: the scores for the four main relationships (Self DR, Mom DR, FOB DR, and Baby DR); the corresponding lower-bound scores (Self Low DR, Mom Low DR, FOB Low DR, and Baby Low DR); and, the corresponding upper-bound scores (Self High DR, Mom High DR, FOB High DR, and Baby High DR).

Once the interviews were scored, the DR variables were then investigated in two respects: first, the nature of Baby DR was compared with the other DR relationships; then, the relationships were analyzed with dimension reduction to consider the merits of creating composite scores.

The Nature of Baby DR

The four main relationships were set as the exploratory variables. Paired t-tests were performed comparing Baby DR against each of the three other DR variables: Self

DR, Mom DR and FOB DR. Paired t-tests were deemed applicable because the variables have the same unit of measure (the DR Scale) and the purpose was to see if the subjects scored differently on the different measures.

Results indicated that the expectant woman's ability to differentiate and relate to her unborn child tended to be at a lower DR scale point than her DR ability in relation to herself, her mother or the father of the baby (Baby DR-Self DR paired $t(34) = 6.02$, $p < .001$; Baby DR-Mom DR paired $t(34) = 7.61$, $p < .001$; Baby DR-FOB DR paired $t(34) = 6.80$, $p < .001$). Baby DR scores were most strongly related in paired sample correlations to Self DR scores ($r = .63$, $p < .001$) but also correlated with Mom DR ($r = .48$, $p = .003$) and FOB DR ($r = .49$, $p = .003$). Paired differences in mean for Baby DR in comparison to the other three relationships was more than a point lower (Baby DR-Self DR paired difference $M = 1.10$, $SD = 1.10$; Baby DR-Mom DR paired difference $M = 1.20$, $SD = .93$; Baby DR-FOB DR paired difference $M = 1.26$, $SD = 1.10$). Means for each relationship indicate that Baby DR mean of 3.03 was more than one point lower on the DR Scale than the means for Self DR (4.11), Mom DR (4.23) or FOB DR (4.29).

Dimension Reduction, Factor Analysis and Internal Consistency of DR Scores

The second question about the DR scores was whether they could be reduced to composite variables. The exploratory variables included the four main relationships (Self DR, Mom DR, FOB DR, and Baby DR) as well as the lower-bound scores (Self Low DR, Mom Low DR, FOB Low DR and Baby Low DR) and the upper-bound scores (Self High DR, Mom High DR, FOB High DR, and Baby High DR).

A factor analysis of the four main relationships (Self DR, Mom DR, FOB DR and Baby DR) suggested that one factor was tying the variables together (i.e., only one factor

with an eigenvalue over 1 accounted for 71% of the variance). A reliability analysis was then conducted to consider deleting items from a combined scale. Cronbach's alpha for all four variables was .86, where a value over .7 is considered acceptable.

Continuing with factor analysis of lower-bound scores (Self Low DR, Mom Low DR, FOB Low DR and Baby Low DR), again it was determined that only one factor was tying the variables together (i.e., only one factor with an eigenvalue over 1 accounted for 60% of the variance). Cronbach's alpha for all four variables was .78, an acceptable level. Finally, factor analysis was performed on the upper-bound scores (Self High DR, Mom High DR, FOB High DR and Baby High DR). Again, it was determined that only one factor was tying the variables together (i.e., only one factor with an eigenvalue over 1 accounted for 62% of the variance). Cronbach's alpha for all four variables was .79, an acceptable level.

Table 1 lists correlations between the three composite variables Overall DR, Low DR and High DR. There was a strong correlation between Overall DR and Low DR as well as between Overall DR and High DR, but a medium-sized correlation between Low DR and High DR. It could be argued that either Overall DR or High DR could have been excluded from further analysis, as they have a great deal of overlap; however, as all three exploratory variables were of theoretical interest, they were retained for separate analyses in the next chapter.

Table 1.
Spearman Correlations between DR variables

Variables	r_s	p
Overall DR and Low DR	.73	.000***
Overall DR and High DR	.77	.000***
Low DR and High DR	.39	.021*

Note: *$p < .033$, ***$p < .001$

In summary, the factor analysis suggested that one unidimensional latent construct accounted for a great deal of the variance among the four DR relationships (Self DR, Mom DR, FOB DR and Baby DR), as well as for lower-bound and upper-bound scores. The DR variables were therefore combined to create three scores: Overall DR, Low DR, and High DR. That is, for each subject in the study, Overall DR represents the average of Self DR, Mom DR, FOB DR and Baby DR; Low DR represents the average of lower-bound scores (Self Low DR, Mom Low DR, FOB Low DR, and Baby Low DR); and High DR represents the average of upper-bound scores (Self High DR, Mom High DR, FOB High DR, and Baby High DR). While comparisons indicated that either Overall DR or High DR could be excluded, a decision was made to keep all three composite scores (Overall DR, Low DR & High DR) for the analysis of the a priori hypotheses in the following chapter.

Chapter 5: Results II

Results are presented in several sections in order to explore significant associations in depth. First, descriptive statistics were generated to document this sample's ratings for infant attachment classifications, maternal reflective functioning, differentiation-relatedness and demographic variables. After establishing modified significance levels, planned analyses based on a priori hypotheses were run in order to investigate to what extent differentiation-relatedness and maternal reflective functioning during pregnancy predicted the quality of infant attachment at one year. Then, for results that were found to be significant in the prior section, multivariate analyses assessed the role of potentially confounding demographic variables including infant gender and mother's age, race and ethnicity. Finally, a post hoc analysis explored these significant findings when analyzed with alternate attachment groupings.

Descriptive Statistics

In the present study, the Pregnancy Interviews (Slade et al., 1987; revised, Slade, 2007) of 35 expectant mothers were evaluated for differentiation-relatedness and maternal reflective functioning. At the time of recruitment, women ranged in age from 15 years to 25 years of age, with a mean of 19.1 years and standard deviation 2.5 years. Education levels were relatively low: 20 (57%) had completed high school; 11 (31%) were in middle or high school at the time; and 4 (11%) did not complete school. Women were from a low income demographic: 34 (97%) women were receiving at least one form of public assistance; 28 (80%) women were receiving two or more forms. This was a predominantly Latina sample: 21 (60.0%) women were Hispanic/Latina, non-Black, the majority of whom identified themselves as Puerto Rican. Eight (22.9%) women were

Black or African American, non-Hispanic. Two (5.7%) women identified as White, Non-Hispanic and four (11.4%) endorsed multiple races and/or ethnicities. Two women dropped out of the study before completing the attachment measure, one Hispanic/Latina and one Caucasian. Further breakdowns of race and ethnicity are available in Appendix A.

Of the 33 infants rated for attachment category at one year, 14 were judged secure (category B, 42%), 1 was judged insecure-avoidant (category A, 3%), 5 were judged insecure-resistant (category C, 15%) and 13 were judged disorganized (category D, 39%).

The majority of the 35 women were in their third trimester when the Pregnancy Interview was administered, with a range of 23 to 38 weeks (all post-quickening), a mean of 32.9 weeks, and a standard deviation of 3.65. Women had been informed of infant gender during pregnancy. One woman who reported she was having a female infant actually had a male infant; she was excluded from the analysis of infant gender. Thus, of the 34 remaining women whose DR scores were analyzed for infant gender, 16 (47%) had male infants and 18 (53%) had female infants. Of the 32 women who then completed the attachment assessment at one year, the numbers were similar: 15 (47%) had male infants and 17 (53%) had female infants.

Maternal reflective functioning (RF) levels had been previously scored for the entire sample by another researcher. The RF mean for the current sample was 3.10, with standard deviation of .74 and a range of 2 to 5.

DR levels were scored for the entire sample of 35 women. For the current study, the principal investigator scored all 35 cases, and the second coder coded 7 of the cases (20%). Due to the exploratory nature of the scoring, the principal investigator and the

second coder worked to come to agreement on coding, with the result that the single measure intraclass correlation coefficient (ICC) was high, ranging from .727 to 1.0 for the 12 exploratory DR variables. Variability in scores between raters was no more than 1 point for particular cases.

Differentiation-relatedness levels for all relationships are reported in Appendix A. The composite scores were used for the analysis here. Overall DR had a mean of 3.91 with a standard deviation of .93; High DR had a mean of 4.80 with a standard deviation of .86; and Low DR had a mean of 3.02 with a standard deviation of .71. Descriptive statistics when grouped by attachment outcome (disorganized vs. secure) are also included in Appendix A.

Outlier analysis. A casewise list outlier for attachment outcome was identified with studentized residual greater than 2 (in this case, ZResid = 2.25). Examining this case, it had the lowest of the Low DR scores across the sample, at 1.75 (an average of the four underlying relationships), yet at one year this dyad was rated as having a secure pattern of attachment. There may be measurement error for this case, either with Low DR or with attachment outcome. It is also possible the outlier may have special circumstances: for example, it appears from her interview that this woman had been receiving psychotherapy at school. It is also possible the model may be missing a factor that better accounts for cases at the extremely low end of the scale. Rather than eliminating this case, the Low DR score was winsorized to minimize any distortion due to error from this case. The next lowest Low DR score was 2.00; therefore, the outlier was modified to change the Low DR level from 1.75 to 1.99. In effect, this case was kept as the most atypical in the sample, but not so extreme that results were distorted. This

created a winsorized mean for Low DR of 3.03 with a standard deviation of .70. (Compare with the original mean for Low DR of 3.02 and standard deviation of .71). Both the mean and the winsorized mean for Low DR are reported in Appendix A for comparison.

Tests of normality for continuous variables. Normality tests were run for the continuous variables and results are listed with descriptive statistics in Appendix A. Of the key exploratory and outcome continuous variables, Overall DR, High DR and Age variables met criteria for normality, but Low DR, RF and D-ness variables did not. Exploratory variables were also tested for normality when broken down by attachment group B vs. D and results are shown in Appendix A.

Significance test levels. Since three variables were used and two major hypotheses were being tested, there was the danger of the possibility of Type I error under the conditions of multiplicity. By applying the Holm-Bonferroni method (Holm, 1979), the rejection criteria was modified in order to control the family-wise error rate (the overall possibility of witnessing one or more Type I errors). For both major hypotheses, which are exclusive of each other, the two-tailed alpha was set broadly to .10 to reflect the exploratory nature, but reduced by dividing by the three independent variables. Note that, although the two major hypotheses are unidirectional, the two-tailed approach was retained to allow for the possibility of findings in the opposite direction. Thus results needed to reach a two-tailed $p < .033$ for the purposes of reaching significance for this exploratory study.

Planned Analyses of A Priori Hypotheses

Hypothesis 1: The relationship between DR and RF. For the 35 mothers in our sample, RF had an overall mean of 3.10 and standard deviation of .74, where a 3 is considered a Questionable or Low level of Reflective Functioning. In fact, 22 out of the 35 cases received an RF score of 3, creating difficulty in differentiating attachment outcome for this highly stressed population. A graph shown in Figure 1 illustrates the challenge of incorporating the RF score into an analysis:

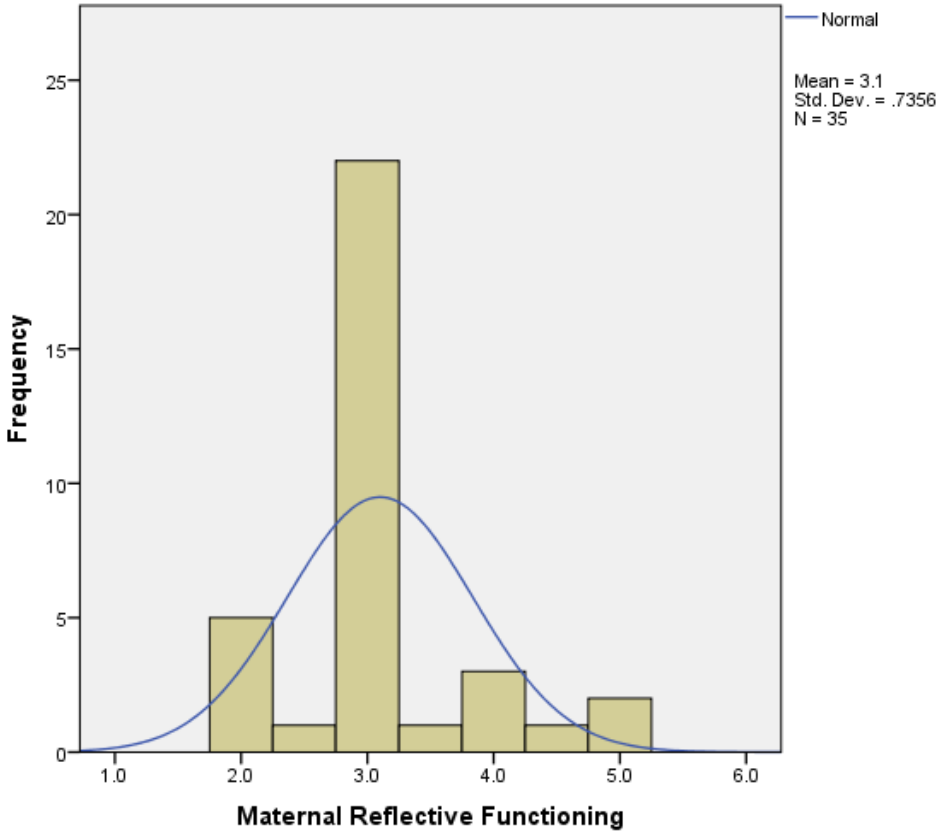

Figure 1. Frequency of Maternal RF scores across Sample.

Because the RF variable did not meet criteria for normal distribution, Spearman's Rank Order correlations, rather than Pearson's, were calculated between RF and DR variables. Results, shown in Table 2, indicated that Maternal RF had a significant

correlation with a medium effect size for both Overall DR (r_s = .48, two-tailed p = .003) and with High DR (r_s = .48, two-tailed p = .003), but a small correlation with Low DR that did not meet tests for significance (r_s = .21, two-tailed p = .24).

Table 2.
Spearman Correlations between RF and DR variables

Variables	r_s	p
RF and Overall DR	.48	.003**
RF and Low DR	.21	.24
RF and High DR	.48	.004**

Note: $^{**}p < .01$

Given the tight peak of cases rated at the RF level of 3, an interesting question was whether or not DR scores varied for the same RF rating. An analysis of DR just for these women with Questionable or Low RF indicated that all three DR variables had a relatively wide range of scores for the RF scores of 3: Overall DR ranged from 2.25 to 4.75; Low DR ranged from 1.99 to 4.75; and High DR ranged from 3.25 to 6.00. This suggests that DR and RF may be measuring different but related constructs or evaluating one latent construct in different ways.

Hypothesis 2: DR and patterns of infant attachment.

Overall DR, Low DR and High DR were examined in independent t-tests comparing mothers of disorganized infants and mothers of infants with secure patterns of attachment (D vs. B). Of the 33 mother-infant dyads who completed the attachment assessment at one year, 13 infants were rated disorganized and 14 infants were rated secure. Analyses for Overall DR and High DR across these groups had small to medium effect sizes but did not meet criteria for significance. For Overall DR, the mean for mothers of infants in the disorganized attachment category (M_D = 3.56, SD_D = *1.03*) was

not significantly lower than the mean for mothers of infants with secure patterns of attachment (M_B = 4.05, SD_B = .55) although there was evidence for a medium effect size (two-sample $t(25) = 1.58$, two-tailed $p = .13$, $d = .59$). For High DR, the mean for disorganized dyads (M_D = 4.60, SD_D = .99) was again not significantly lower than the mean for secure dyads (M_B = 4.86, SD_B = .48), and the effect size dropped to a small effect (two-sample $t(17) = .86$, two-tailed $p = .40$, $d = .33$). Means for Low DR, however, were significantly lower for disorganized dyads than for secure dyads, with a large effect size (M_D = 2.67, SD_D = .57 for disorganized (D) and M_B = 3.25, SD_B = .69 for secure (B), two-sample $t(25) = 2.34$, two-tailed $p = .026$, $d = .92$).

Demographic Associations

Significant results from our examination of a priori hypotheses were examined for the impact of certain demographic control variables. The independent variables considered included woman's age, race/ethnicity and infant gender; in addition, maternal reflective functioning was considered for attachment outcome. For race/ethnicity, two groups, Black/African American and Hispanic/Latina, together described nearly the entire sample (31 out of the 33 women completing the attachment assessment); for this analysis, they were grouped into one dichotomous variable of Black/African American (8 women) vs. Hispanic/Latina (21 women). Only subjects who endorsed one or the other, but not both, were included. Descriptive statistics of the independent variables are listed in Appendix A.

Demographic associations for a priori hypothesis 1. Our first analysis indicated a medium-sized correlation between Overall DR and RF and between High DR and RF. Analyses of Overall DR and RF were performed to assess to what extent this

relationship was impacted by demographic associations, including age, race/ethnicity, and infant gender. Since RF was not normally distributed, a Spearman's rank order correlation was performed, as shown in Table 3.

Table 3.
Spearman Correlations between Overall DR, High DR, RF and Demographic Variables

Variables	r_s	p
Overall DR and Age	.42	.012†
Overall DR and Gender	.38	.027†
Overall DR and Black/Hispanic	.33	.077
High DR and Age	.44	.008†
High DR and Gender	.35	.044†
High DR and Black/Hispanic	.009	.96
RF and Age	.070	.69
RF and Gender	.052	.77
RF and Black/Hispanic	.055	.78

Note: †$p < .05$. The alpha level for examining demographic variables was set to .05 rather than the .033 of the three independent DR variables.

Thus, while there were medium effect-sized correlations between DR variables and age and gender, the demographic variables had very little correlation with RF, and controlling for these variables would have no meaningful impact on the relationship between DR and RF.

Demographic associations for a priori hypothesis 2. Our second analysis indicated that Low DR had a significantly lower mean for disorganized than for secure attachment outcome. Analyses of Low DR and attachment outcomes were performed to assess what impact certain demographic variables had on the original independent-dependent attachment relationship.

Independent variables were first examined for correlations with Low DR to determine the merit of including them in a regression model with Low DR, as shown in Table 4.

Table 4.
Spearman Correlations between Low DR and Demographic Variables

Variables	r_s	p
Low DR and Age	.28	.10
Low DR and Gender	.35	.045†
Low DR and Black/Hispanic	.26	.17
Low DR and RF	.21	.24

Note: † $p < .05$. The alpha level for examining demographic variables was set to .05 rather than the .033 of the three independent DR variables.

Thus, there was a small effect-size correlation between Low DR and the gender of the infant, where mothers of male infants were more likely during pregnancy to have poorer lower-bound differentiation-relatedness scores; that is, lower Low DR scores. Women pregnant with male fetuses had a Low DR that was in the range of boundary confusion and non-differentiated states ($M = 2.73$, $SD = .66$) while women pregnant with female fetuses had a Low DR in the more stable range of mirroring ($M = 3.25$, $SD = .65$). The other three variables, age, race/ethnicity, and maternal reflective functioning, had small to medium effect sizes that did not reach significance for our sample of 35 women. In a larger sample, these variables might also have reached levels of significance.

The demographic variables were then investigated to assess the extent to which they were related to attachment outcome (D vs. B). As shown in Table 5, age, race/ethnicity, and maternal reflective functioning had very small to no correlation with attachment outcome in this sample. Gender showed a small correlation, but it failed to reach significance, as shown in Table 5. Thus, of the four exploratory variables, only

gender was likely to have an impact on results that would be observable for this study's sample size.

Table 5.
Spearman Correlations between Demographic Variables and Attachment Outcome

Variables	r_s	p
Age and D/B	-.048	.81
Gender and D/B	.23	.26
Black/Hispanic and D/B	.17	.42
RF and D/B	.097	.63

Note: †$p < .05$. The alpha level for examining demographic variables was set to .05 rather than the .033 of the three independent DR variables. D/B refers to the binary treatment of attachment outcome for values disorganized (D) and secure (B) that could then be compared with demographic variables in the Spearman's rank order correlation.

A binary logistic regression was first performed with just Low DR and infant attachment outcome (D vs. B). As in the t-test, Low DR reliably distinguished between disorganized and secure patterns of attachment outcome (chi square = 5.34, $p = .021$, df = 1). Nagelkerke's R^2 of .239 indicated a small to moderate relationship between prediction and grouping. Prediction success overall was 59.3% (46.2% for disorganized and 71.4% for secure). The Wald criterion demonstrated that Low DR's contribution did not reach our more stringent threshold of a two-tailed $p < .033$ ($p = .041$). Nevertheless, as the entire model reached significance and the effect size is large, this was likely due to the small sample size of our study. The EXP(B) value of 4.53 indicated the odds of an infant being rated as secure rather than disorganized were 4.5 times greater for each scale point increase in an expectant mother's Low DR.

A logistic regression was also attempted with Low DR as the forced entry block and gender as a conditional forward step block, but even with a loosened entry parameter of .10, gender was not included in the model. Binary logistic regressions were examined

for each exploratory variable in its own right, confirming that each failed to predict attachment outcome on its own, as shown in Table 6.

Table 6.
Binary Logistic Regression Examining the Individual Impact of Low DR and Demographic Variables on Attachment Outcome, D vs. B

Variables	Outcome	β	S.E.	Wald	Exp(β)	*p*
Low DR	D versus B	1.51	.74	4.17	4.53	.041
Gender	D versus B	.94	.81	1.36	2.56	.24
Age	D versus B	-.065	.18	.13	.94	.72
RF	D versus B	.61	.78	.61	1.83	.44
Black/Hispanic	D versus B	.73	.87	.71	2.08	.40

Note: * $p < .033$. Each exploratory variable was examined as its own independent input in a binary logistic regression model to see if it separately predicted to attachment outcome of disorganized (D) or secure (B).

It was also of interest to consider whether the gender variable might have been a mediating variable in the model that was obscured by the small sample size. The question is whether the mother's representation of having an infant of a specific gender is influencing both her Low DR and attachment outcome. A forced entry block with both Low DR and Gender was attempted for the infant attachment outcome (D versus B), for a sample size of 26 that happened to be evenly split between boys and girls (13/13) and attachment outcome (13 infants rated D vs. 13 infants rated B). While the model as a whole no longer met significance levels (chi-square = 4.91, $p = .086$, df = 2), the classification table was improved, with an overall prediction rate of 69.2%, where 53.8% of disorganized infants and 84.6% of secure infants were correctly predicted. Unfortunately, due to the small sample size (N = 26), a logistic regression analysis with two exploratory variables was not sufficiently robust to draw conclusions.

Post-Hoc Analysis

This study examined attachment outcome at the extremes, that is, disorganized and secure groups (D vs. B) for the analysis of hypothesis 2; however, other attachment outcome studies have also used other groupings (e.g. Miller, 2010) including disorganized versus organized (D vs. non-D), insecure vs. secure (non-B vs. B); and level of infant disorganization (D-ness), a continuous outcome variable related to the determination of the disorganized attachment category outcome. To explore the nuances of this study's finding, and to provide corroboration of the finding with a larger sample of cases, these other ways of looking at attachment outcome are examined here.

Post-Hoc Analysis 1. Mothers of disorganized infants will exhibit significantly lower levels of Low DR during pregnancy than will mothers of infants with organized patterns of attachment.

Low DR was examined in independent t-tests comparing mothers of disorganized infants and mothers of infants with organized patterns of attachment (D vs. non-D). Of the 33 mother-infant dyads who completed the attachment assessment at one year, 13 infants were rated disorganized and 20 infants were rated organized. Means for Low DR were significantly lower for disorganized dyads than for organized dyads, with a large effect size (M_D = 2.67, SD_D = .57 for disorganized (D) and $M_{non\text{-}D}$ = 3.21, $SD_{non\text{-}D}$ = .65 for organized (non-D), two-sample $t(31) = 2.45$, two-tailed $p = .020$, $d = .88$).

A binary logistic regression was performed with just Low DR and infant attachment outcome (D vs. non-D). As in the t-test, Low DR reliably distinguished between disorganized and organized patterns of attachment outcome (chi square = 5.80, $p = .016$, df = 1). Nagelkerke's R^2 of .218 indicated a small to moderate relationship

between prediction and grouping. Prediction success overall was 69.7% (46.2% for disorganized and 85.0% for organized). The Wald criterion demonstrated that Low DR made a contribution that was significant (p = .029). The EXP(B) value of 4.37 indicated the odds of an infant being rated as organized rather than disorganized were 4.4 times greater for each scale point increase in an expectant mother's Low DR.

Post-Hoc Analysis 2. Mothers of insecure infants will exhibit significantly lower levels of Low DR during pregnancy than will mothers of infants with secure patterns of attachment.

Low DR was examined in independent t-tests comparing mothers of insecure infants and mothers of infants with secure patterns of attachment (non-B vs. B). Of the 33 mother-infant dyads who completed the attachment assessment at one year, 19 infants were rated insecure and 14 infants were rated secure. The mean for Low DR was lower for insecure dyads ($M_{non\text{-}B}$ = 2.82, $SD_{non\text{-}B}$ = .59) than for secure dyads (M_B = 3.25, SD_B = .69) but did not meet this study's threshold for significance (two-sample $t(31) = 1.93$, two-tailed p = .064, d = .67). The effect size was in the moderate range, suggesting that a larger sample size would be needed to distinguish secure from insecure patterns of attachment on the basis of Low DR scores. Thus, it appears that Low DR's impact is more robust with respect to distinguishing disorganization of attachment from other kinds of attachment (that is, D vs. B and D vs. non-D) as opposed to distinguishing security of attachment from insecurity of attachment (B vs. non-B).

Post-Hoc Analysis 3. Low DR displayed by women during pregnancy will be inversely correlated to level of infant disorganization across the sample.

Low DR was also examined in a bivariate correlation with level of infant disorganization (D-ness). Spearman's rank order correlation coefficients were chosen due to lack of normal distribution for the D-ness variable. The correlation between Low DR and D-ness was $r_s = -.26$, two-tailed $p = .14$. Thus, while Low DR showed a weak inverse relationship to D-ness with a small effect size, it did not reach the level of significance. The D-ness scale was not normally distributed on the more organized end (from 1 to 4): all the secure infants were rated at a 1 for disorganization, making the scale less reliable for our sample.

Summary of Findings

Two major hypotheses and three post-hoc hypotheses were analyzed. Results are summarized in Table 7 below:

Table 7.
Results Summary Table

Hypotheses	Dependent Variable	Significance of Findings	Effect Sizes
Hypothesis 1: DR will be positively correlated with RF.		Supported for Overall DR and High DR	Moderate (r_s = .48 for both)
Hypothesis 2: Mothers of disorganized infants will exhibit significantly lower levels of DR during pregnancy than will mothers of infants with secure patterns of attachment.	D vs. B	Supported for Low DR	Large (d = .92) EXP(B) = 4.5
Post-Hoc Analysis 1: Mothers of disorganized infants will exhibit significantly lower levels of Low DR than will mothers of infants with organized patterns of attachment.	D vs. non-D	Supported for Low DR	Large (d = .88) EXP(B) = 4.4
Post-Hoc Analysis 2: Mothers of insecure infants will exhibit significantly lower levels of Low DR than will mothers of infants with secure patterns of attachment.	Non-B vs. B	Not Supported	Moderate (d = .67)
Post-Hoc Analysis 3: Low DR displayed by women during pregnancy will be inversely correlated to infant level of disorganization.	D-ness	Not Supported	Small (r_s = -.26)

Chapter 6: Discussion

The overall goal of this study was to examine the ways mentalization theory and object relations theory are related during pregnancy and to explore how their related scales, maternal reflective functioning and differentiation-relatedness, predict to attachment outcome. After summarizing the results of this study, I will explore two compelling questions: what does it mean that Low DR is linked to attachment outcome for our sample? And, second, what contributions can this study offer regarding the nature of the expectant mother's relationship with her baby during pregnancy? Finally, limitations and directions for future research will be explored.

Summary of Results

The results of this study were reported in two chapters: first, an analysis of the individual DR relationships and second, an analysis of the two main hypotheses using composite DR variables. In the first Results chapter, differentiation-relatedness for the unborn child (Baby DR) was found to be significantly lower than that of other relationships, by approximately a point on the DR Scale. The expectant mother's ability to differentiate from and relate to her unborn child was most strongly correlated to her ability to engage in these psychological processes towards herself (Self DR). A factor analysis demonstrated that scores for the four relationships shared a great deal of variance. Therefore, in order to proceed with the analysis of the two main hypotheses, the twelve relationship scores were collapsed to three scores: overall strategy (Overall DR), lower-bound score (Low DR) and upper-bound score (High DR).

Two a priori hypotheses were then analyzed. The first hypothesis proposed that reflective functioning and differentiation-relatedness would be positively correlated, but

that DR would provide a greater level of discriminating detail at lower levels of the Reflective Functioning Scale. This hypothesis found significant support. A woman's level of reflective functioning was correlated with her overall strategy and with the upper-bound scores for differentiating from and relating to others; however, RF was *not* significantly related to lower-bound scores (Low DR).

The second hypothesis proposed that RF and DR would predict to attachment outcome. This hypothesis met with significant support for Low DR. While maternal RF, Overall DR and High DR were not significant predictors of attachment outcome, Low DR was a significant predictor of attachment outcome when comparing attachment groups of disorganized and secure infants. Taking this finding further, a post-hoc analysis examined Low DR's ability to distinguish between other groupings of attachment outcomes (D vs. non-D, B vs. non-B, and D-ness). Low DR in pregnancy was also shown to distinguish disorganized attachment outcomes from organized attachment outcomes (D vs. non-D). Small to moderate effect sizes that did not meet significance levels were found when comparing Low DR for secure and insecure dyads (B vs. non-B) and when relating Low DR to infant level of disorganization (D-ness).

No demographic variable was found to be a significant predictor on its own for distinguishing disorganized from secure attachment outcomes. The variables examined were woman's age, woman's race/ethnicity and infant gender. Infant gender was identified as having the potential in a larger study to be a mediating variable between Low DR and attachment outcomes. Further analysis of mediation was problematic due to this study's small sample size, but this area merits further study.

Reliability & validity. Achieving reliability for applying the DR scoring method to the PI is discussed in the Methods chapter. Efforts included: 1) both raters achieved reliability when scoring the ORI; 2) a manual was developed with specific examples of DR as applied to the Pregnancy Interview; 3) the second rater scored 20% of the sample (7 interviews); 4) raters worked to come to agreement on scores. The results of this study support that, using the above method, differentiation-relatedness can be reliably scored during pregnancy for all four relationships on the Pregnancy Interview. Validity of the application of DR to the PI is suggested by the finding that Overall DR and High DR were significantly correlated with RF on the PI. The validity and reliability of using the PI to score RF has been previously established (Patterson, Slade, & Sadler, 2005; Miller, 2008). Second, Low DR was shown to have significant ability to predict to infant attachment outcome. Predicting to attachment outcome is a respected method of demonstrating predictive validity in early infant research.

Reflective Functioning, Differentiation-Relatedness and Attachment

Relationship between RF and DR. This study demonstrated a positive correlation between RF and both Overall DR and High DR. The moderate effect size of the relationship between RF and Overall DR confirms a conceptual link between the two scoring systems and the underlying constructs. This makes intuitive sense. There are many similarities in how the scales are conceptualized. Both scales incorporate a developmental progression of awareness of self and other. They both have incorporated the individual's ability to understand others in increasingly complex ways.

On the other hand, the moderate effect size also argues for differences between the RF and DR. One difference that was readily noted was that, although it can be

broadly stated that an RF level 3 corresponds to a mean DR level of idealization/denigration (DR level 4), it was not a simple one-to-one relationship: there was a range of DR scores that corresponded to Questionable or Low RF (RF level 3). This variation seems to support the theory that the DR scoring system is providing additional meaningful detail for women at the low end of the RF Scale. This makes sense when considering how each scale was developed. RF has strong ties to attachment theory and its observations of typically developing children and adults; DR, based on object relations theories, is theoretically and empirically linked to psychopathology, particularly for the lower end of its scale.

Relationship between Low DR and attachment outcome. The additional important finding is that Low DR is predictive of attachment outcome. Low DR is not the overall strategy of differentiation-relatedness by the women, but rather transient dips to lower levels of differentiation-relatedness. Low DR was found to distinguish disorganized attachment outcomes (D) from secure attachment outcomes and also, in the post-hoc analysis, when comparing disorganized with all organized patterns of attachment (D vs. non-D). Regression analysis confirmed the model, which was most robust when predicting disorganized attachment to organized attachment (likely due to the increased power of using the entire sample size). An expectant mother's odds of having a child rated as organized rather than disorganized are 4.4 times greater for each scale point increase in an expectant mother's Low DR during pregnancy.

To illustrate the impact of Low DR on attachment outcome, two women from the study will be presented, one with a secure infant attachment outcome and one with a disorganized infant attachment outcome. For a woman in the sample with a secure infant

attachment outcome, the mean Low DR score during pregnancy typically sat midway between mirroring and idealization/denigration (Low DR between levels 3 and 4). On the other hand, for a woman with a disorganized child, the mean Low DR score during pregnancy tended to dip down to a state midway between self-other boundary confusion and mirroring (Low DR between levels 2 and 3). Thus, during pregnancy, the expectant mother of a disorganized infant displays transient moments of non-differentiated states, something the mother of an infant with a secure pattern of attachment does not do.

Maya: An example of secure attachment outcome. Consider a woman from this study, here named Maya, 18 years old and Latina. In her pregnancy interview, Maya was rated as having the RF and DR scores matching the means of women in our study with securely attached infants: a Questionable or Low level of Reflective Functioning (level 3), an Overall DR of idealization/denigration (Overall DR Level 4.00), and High DR approaching semi-differentiation (High DR 4.75). Her Low DR sat mid-way between mirroring and idealization/denigration (Low DR 3.50), indicating that Maya did not dip into the non-differentiated levels that appear to be a risk factor for disorganized attachment. Each of Maya's relationships will be explored here.

Maya's description of herself was rated at the level of idealization/denigration (level 4), but dipped occasionally to moments of mirroring (level 3). This was scored as Self DR 4 (3, 4). For example, her overall strategy was evident when she represented a positive version of herself and indicated a sense of agency: "I'm going to do physical therapy," she announced proudly. Then later in the interview, there were signs she was wrestling with self-denigration: "I just didn't seem like the type of person to get pregnant." These representations of herself as capable and yet as flawed were not

integrated, and were also not oscillating within passages. They were separate representations that were co-existing.

Maya's representation of the father of the baby was also rated at a level of idealization/denigration, coded as FOB 4(4, 6), and also provides a nice example of Maya's RF rating of 3, that of Questionable or Low reflective functioning.

I: Can you remember the reaction of the father of the baby when he found out?

M: Yes.

I: Describe that moment.

M: He was happy. (laughs)

I: And how did you feel about his reaction?

M: That he was crazy.

I: And why do you think he was happy?

M: I really don't know. I guess he wanted a baby, but then again, he was happy, but not happy, because he wanted it to come later and not now. But he was just happy.

Here, Maya is able to identify her boyfriend's mental state ("he was just happy"), but struggles with forming a mental model of how mental states or behavior can influence that mental state. There is a sense that *something* makes the father of the baby think the way he does, but Maya is not able to clarify what that something is, either to herself or to the interviewer. This example provides a possible link between the RF level of 3 for Questionable or Low reflective functioning and the DR level of 4 for idealization or denigration. This passage was scored at a DR level of 4 because the depiction of the father of the baby is one-sided and positive, but not nuanced. There is some suggestion

of qualifiers that almost lift this passage to a higher score, but in the end she settles for a static state of happy.

Maya's relationship with her mother was rated higher, at the level of semi-differentiation, with a lower-bound level of idealization/denigration. In discussing her mother's reaction to her pregnancy, Maya noted:

> M: Yeah, my mother she…she started yelling, she was cussing….she kicked me out but then let me back in the next day.
>
> **I: Uh huh. And how did you feel about her reaction?**
>
> M: I was expecting it. Cuz', like, I know she is. She said she don't want no grandkids…she already told me like before I got pregnancy what she was going to do. So, I was just ready.

Here, Maya describes an emotional situation in a tightly defended way. She makes an attempt to come to terms with her mother's response, and has cognitive justifications for her mother's behavior. With less distress and anger, this response might have risen to a higher score. The clues to her distress lie in the pauses in her description (noted with the ellipsis) and in the choice of verbs that are less formal such as "cussing." There are other places in the interview where she continues a pattern of attempting to understand her mother by taking the blame upon herself:

> **I: Since you've been pregnant what has your relationship with your mother been like?**
>
> M: We talk, we play, she gives me whatever I want. Sometimes she locks me out of her room cuz' I aggravate her so…"

Here, Maya begins with an idealization of the relationship then flips to a negative representation; this flipping is often seen at DR level 5, semi-differentiation. Shortly thereafter in the interview, Maya gives voice to her anger, stating: "I'm not going to do

the things that she did, and I'm going to be there for my child." Maya's relationship with her mother was scored as Mom DR 5(4, 5).

Maya's representation of the baby was scored at the mirroring level, DR level 3, with some upper-bound moments of idealization/denigration, level 4: Baby 3(3, 4). Throughout the interview there was a sense that her daughter existed for Maya, but at a very physical and concrete level.

I: Would you say you have a relationship with the baby now?

M: Somewhat. Cuz' she likes daddy more than she likes me.

I: **Can you think of two words that describe that relationship?**

M: Funny.

I: Funny…?

M: Exhausting.

I: What makes you say the relationship is funny?

M: Cuz' when she starts kicking and my mother she even seen it…she laughs. When she starts kicking I'll rub my stomach and she'll start kicking my hand like for me to move but when my boyfriend puts his hand on my stomach she'll like calm down and then that's it. Then when he moves his hand she'll start kicking again and it kind of hurts so he just leaves his hand there all night. And then when he be gone at work or something it's kind of difficult because I'm trying to like rub and rub and rub and she's just kicking.

Here, Maya is given an opportunity to describe a relationship with the baby, one that many women in the study used as an opportunity to describe a sense of merger with the baby. For Maya, however, there is instead an experience of opposition, of being separate while together, and also a sense of thwarted agency, where she is trying to change her baby's behavior with her own behavior, but is unable to do so. The relationship

described between Maya and her baby is very heavily informed by negative physical sensations: kicking, pain, rubbing. Maya also expresses a mildly paranoid belief that the baby likes the father more than her, suggestive of a DR level 4 score for denigration but also for level 2 in terms of a sense of animosity or paranoia in her relationship with the baby. While suggestive of a DR level 4, Maya does not engage in a unilateral characterization of the baby as either good (idealization) or bad (denigration) that is a more typical level 4 response and that was seen in responses by other women across the sample of Pregnancy Interviews. In the end, the passage was scored as an atypical 3.

Lisa: An example of disorganized attachment outcome. The case of Lisa, a 17-year-old Latina, illustrates how occasional DR dips to non-differentiated states are risk factors for a disorganized attachment classification. Like Maya, Lisa was rated as having a Questionable or Low level of Reflective Functioning (level 3). Her Overall DR score was three-quarters of a scale point lower, closer to mirroring (Overall DR Level 3.25), and her upper-bound High DR was the same as Maya's, approaching semi-differentiation (High DR 4.75). Lisa's Low DR, however, dropped to a level of boundary confusion between self and other that is either intellectual or affective (Low DR 2.00). In fact, she displayed these transient dips to a level 2 for all her relationships.

Lisa's representation of herself was scored at a level of idealization/denigration, with dips down to boundary confusion, and upper-bound peaks of emergent sense of self and others: Self 4(2, 6). A common strategy Lisa used was endorsement of one side of a representation while dismissing the counterpart:

I: And how did you feel about the way he was reacting?

M: I felt happy too, - because you can't feel sad about it [laugh]."

Also like Maya, Lisa was struggling with a currently negative depiction of herself where it appeared she had formerly had a more idealized representation:

> M: I used to be smart. Like, I used to have a B or a C (**Uh-huh**), and this year it's like, different. I don't know nothing about math (**Yeah.**) I've been, I've been lost. Everybody, all, like, I'm the only one. I feel like I'm the only one dumb in the class. (**Ahh**) Uh, but my teacher will be, like "Don't worry about it, that's normal, it's because I'm pregnant."
>
> **I: -- pregnant. Yeah So –**
>
> M: I feel like – [sighs] I'm just dumb.

Lisa had a dip that was rated at a state of boundary confusion when describing the moment she found out she was pregnant:

> M: Uh, I remember [Laugh], I remember when I used to be in school, I used to go to [school name] at that time (**Uh-huh.**) And I went to the, uh, to the, uh, nurse (**Uh-huh.**) You know her, [First name] (**Uh-huh**). And then, uh, I told her I was I talking about – I was talkin about with her about, uh, birth controls and stuff like that. And I was telling her that I was feeling – how I was feeling weird, like, I have stomachaches and throwing up, and wasn't feeling good. And then she do'd – she did a, uh, a pregnancy test in case, and it came out positive. Well, by that time, I was in school.

Here, the determination of a dip to a level 2 for the Self Low DR score was driven by the incoherence of the passage. As a reader, it is very difficult to follow Lisa's train of thought. She uses less sophisticated language "she do'd – she did." Her narrative becomes circular – she begins and ends by emphasizing she was in school. It is interesting to think about how to measure the process of differentiating from and relating to one's own self. In the description, there is a minimal sense of the "I" observing the "me." Instead, Lisa is caught up in re-experiencing the event, and she has become emotionally dysregulated in re-telling this story. This emotional dysregulation may be a key link between Low DR and attachment outcome.

Lisa's scores for her mother were in the same range as for herself: a general strategy of idealization/denigration, with an upper level of a level 6 and a lower level of a 2: Mom 4(2, 6). Her typical strategy of idealization/denigration is seen in statements such as "she always support me and helps me, and tells me not to worry and stuff." She had a brief moment of attempting to integrate aspects of her mother, stating she wanted to "be a good mother and sometimes, um, a strict mother" and then concluding "although my mom is not that strict, but – I'll probably be stricter." The attempt to integrate aspects of her mother – both good and strict -- was fleeting.

When describing how her mother found out that Lisa was pregnant, Lisa had another dip into a place of boundary confusion:

M: Yeah, I was in [school name]. (**Yeah.**) Then I had – well, my mom then knew it, because she saw me in a weird way – she was looking at me. She was, you know, so she, she knew.

I: Before you even had the test?

M: Uh-huh.

Here the boundary confusion is evident in the magical thinking. Her mother is capable of knowing she is pregnant by looking at her. There is a mild sense of paranoia, as well.

When describing the father of the baby, Lisa struggled. The scores were markedly low, with an overall and low score of a 2 and an upper-bound score of a 3: FOB 2(2, 3). Her descriptions were very difficult to follow. By the end of the interview, the reader still struggled to imagine any qualities that identified the father of the baby. There was incoherence in the narrative and in Lisa's thought process:

I: Um, can you remember the father of the baby's reaction?

M: He was happy, cause I didn't tell him. He didn't knew it, like until two months, so he was happy.

I: Uh-huh. You, you didn't tell him right away?

M: No. I just told him, because I wanted to make sure, really sure, that I was, until I see my belly grows a little. (Uh-huh.) So he was kind of happy. Well, he was excited.

This passage had a bizarre quality, almost as if Lisa was splitting a part of herself into a representation of her boyfriend. Perhaps a part of herself that did not know about the pregnancy could therefore be happy? This passage was scored at between a 2 and a 3, reflecting the confusion in the narrative and the sense that Lisa was attributing her own emotional responses to her boyfriend. Later in the interview, the interviewer asks if the relationship with the father of the baby has been affected by the pregnancy. Lisa's response instead discusses her own ways of reacting to the father of the baby:

M: Well, during my pregnancy, I used to be sad and I used to be telling him to get away from me and – cause that, that's how I felt it – like. Well, for my pregnancy, I felt it, like I didn't, I didn't want him close to me at all (**Uh-huh**), but now that I'm in my eighth month, I feel, I feel different I feel like I, I don't talk to him like that no more. So I – it depends, the reactions about it, so it changed a little.

I: So I, I'm a little confused. When you first were pregnant (Uh-huh**) you didn't want to be with him anymore?**

M: Like I didn't want to be around him or I wanted him to be in front of me. Like, every time I see him, I felt like spazzing him or hitting him (**Uh-huh**.) but now that I'm in my eight month right now I don't – I changed. I don't talk to him like that no more. Like, I talk to him normal like I'm talking to you.

Lisa's response again lacks coherence. She appears to resort to defining her own states as a way of defining her boyfriend. After another attempt by the interviewer to get clarity, Lisa then reveals that she and the boyfriend are no longer together. She goes on to state:

M: I told him he could see his baby (**um-hmm**). He could see his son and – he could come and visit as much as he want, because he's

> the father (**um-hmm**), but the only thing I told him is that ever – everywhere my baby goes, I go, because I don't trust. You know, you never know – you know how the world is right now (**Uh-huh**). So I told him every – anywhere my son goes with him, I'll go (**Uh-huh**). So he's not going to take my son by, like –
>
> **I: By himself.**
>
> M: -- just take him. Then I'll be worried where is my son at.

This passage was again scored at between a 2 or a 3. There was a general sense of paranoia, a diffuse sense of danger and confusion, and, most importantly, still no sense of any attributes or qualities that could be attributed to the father of the baby. The Pregnancy Interview provides several opportunities for the woman to discuss each of her relationships, so it was quite unusual for the reader to have no sense of the father of the baby at all, not even basic personality traits.

Lisa's descriptions of the baby were generally at the level of mirroring, much like those of Maya's. There were dips to level 2 and peaks at level 4: Baby DR 3(2, 4). Several of her depictions were positive in tone:

> M: Uh, at first I didn't knew it was going to feel like it feels usually, because, -- but then I started, uh, liking it, because it feels, it feels nice (**Uh-huh.**) It's, it's like, a, uh, how do you say that? Uh, like it relax you and if you – it make you feel happy (**Uh-huh.**) Like, sometimes when he moves, I start laughing, because there's stuff – when he kicks, I jump and I start laughing (**Uh-huh.**) and it's because it's – I found it funny. He gets me to laugh – sometimes.

This passage was rated at a level of 3 because there is a sense that the baby is another person, but is not rated higher because the relationship is defined in physical terms. Later in the interview, however, when Lisa is asked to describe her future relationship with her baby, Lisa imagines a confrontational relationship:

> **I: You started to say that you might be more strict than she is?**

M: Oh, yeah, well, she's not that stricted, but I think, I think I'm going to be stricter, because there's, like, if he start cursing, I'm going to — I-- I'm going to be, "Don't say that," **(Uh-huh.)** and he's not going to listen. So I'm going to punish him in a room. You know, I would never hit my son. So, but I'll probably be a little rough, like, tell him not to curse.

I: Tell him not to what?

M: To curse **(Uh-huh)** or do stuff that's he's not supposed to be doing.

I: Okay. Um-- are there things that you're afraid you'll do as a parent?

M: Like what?

I: I don't know, maybe any — something, things that your parents did to you that you don't want to do, or — (Um— [pause]) **I mean, are there things that you always, you know, when you were a kid, thinking, "When I'm a parent, I'm — I don't want to do that."**

M: Uh, like, I don't want to be hitting my son or yelling at him **(Yeah)**, or cursing at him, none of that.

I: Do you--do you have any worries that you would do, do that or (Um--**) or you're not worried?**

M: I don't worry, because I'm not going to do that.

The lapse into direct discourse ("I'm going to be, 'Don't say that") is an indication of how the affect is disrupting the narrative. This passage was scored between a 2 and a 3. While there is a sense of a differentiated baby, which normally would bring the passage to at least a 3, the disruptions and incoherence in the narrative lowered the score.

What is Low DR? Interpreting the findings. The Low DR represents an average of the lowest level of DR recorded for each relationship. It is plausible that Low DR is capturing a regression to non-differentiated states that is transient, and therefore not captured with the RF scoring system, thus offering a possible explanation for why Low

DR and RF are not significantly correlated. It furthermore appears that a woman's vulnerability to periodic low DR levels during the Pregnancy Interview, rather than a woman's most consistent strategy of self-differentiation and other-relatedness, is the predictive piece for attachment outcome.

Could these lower-bound DR scores relate to lack of coherence on the Adult Attachment Interview (AAI)? The unresolved classification on the AAI reflects instances when a woman may lose coherence in her narrative when discussing affect-laden events. This is similar to the scoring criteria for level 2 of the DR Scale, where an individual may appear overwhelmed at the task of differentiating from and relating to others. The unraveling of coherent narrative is thought to represent unprocessed traumatic events. It may be that individuals exposed to trauma are at risk for this type of regression, particularly during pregnancy, and that this regression, even though transient, may be particularly damaging for infant attachment outcome.

The findings of this also study relate to a study by Crawford and Benoit (2006) documenting a link between the disrupted representations on the WMCI, administered prenatally, and disorganized attachment at one year. A revised version of the Working Model of the Child Interview added a scale, WMCI-D, that incorporated items related to disruption as determined by Lyons-Ruth's AMBIANCE assessment of maternal behavior (Lyons-Ruth, Bronfman, & Parsons, 1999). 35 WMCIs administered prenatally were recoded using the revised scale. Women with a prenatal disrupted classification were significantly more likely to receive an unresolved classification on the AAI; they were also significantly more likely to be rated with disrupted caregiving behaviors toward their

infants using AMBIANCE; and, significantly more likely to have infants with disorganized attachment at one year using the Strange Situation.

Disorganized attachment is now linked with non-differentiated states on the PI, lack of coherence on the AAI, and disrupted representations on the WMCI. The common link in these measures is the assessment of verbal representation while speaking of emotionally charged situations. This points to the possibility that affect dysregulation is affecting the woman's ability to represent her relationships verbally. The ability to symbolize is eroded, at least temporarily, and this appears to be correlated with woman's inability to contain disruptive affect. This naturally leads to the question of how a mother's trauma history may play a role in the infant's disorganized attachment outcome.

Trauma, affect regulation, and non-differentiated states. The lowest DR scale levels, levels 1 and 2, represent boundary confusion between self and other. When the DR scoring system is applied to 5-minute ORI samples, levels of 1 and 2 are more generally seen in a severely mentally ill population on an inpatient unit. In this study, by capturing a more transient regression to poorly differentiated states, it became evident that low levels of DR are not seen merely on inpatient units. These transient dips to lower DR scores may reflect the high exposure to traumatic stressors reported by the women in the MTB study.

In the case of Lisa, there were clear signs of exposure to violence in her narrative and her history. Her PTSD index was a 95, the fifth highest in the sample. A preoccupation with how to punish her son effectively is evident in much of her interview. Early in the interview, Lisa is asked how she felt when she found out she was pregnant:

M: I was, I was scared and happy (**Uh-huh**), but I was scared.

I: Scared, yeah.

M: Because I thought my mom was going to punish me or hit me [inaudible].

I: You thought your mother was going to punish you?

M: Yeah.

I: So –

M: But she didn't.

I: She didn't, okay. Um, why do you think you reacted the way you did?

M: Maybe because I – I don't know. Uh, that's how people usually react when it comes to a moment, a time like that (**Uh-huh.**) So, I don't know.

Lisa appears to equate intense negative affect with physical punishment.

Schechter and colleagues (2005) found that trauma history appears to have an impact on the maternal affect regulation system and the mother's representational ability. Additionally, Cloitre and colleagues (2009) have explored the nature of Complex PTSD (Herman, 1992) and demonstrated that cumulative exposure to traumatic events in childhood (but not in adulthood) is linked to increased complexity of symptoms as adults. The women in the present study have reported similar exposure to cumulative trauma. How does a woman exposed to this kind of cumulative trauma respond to her own child, particularly when that child is distressed? Schechter and colleagues (2005) noted that women in their study who met criteria for PTSD symptoms rated their child as one of the three greatest stressors of their lives. These women often cited their child's temper tantrums as particularly difficult to tolerate. When confronted with a child who is screaming and crying, who cannot be consoled, any mother may become dysregulated

herself. But Lisa has more risk factors than a typical mother, including a high endorsement of PTSD symptoms, likely exposure to violence in the home, and a demonstrated tendency to dip into non-differentiated states when experiencing intense affect. It may be the case that Lisa becomes lost in her child's distress. In such a case, and with the loss of ability to represent situations with words, how much more likely is it that a mother might resort to physical threats or actions to restore her sense of self?

Fonagy and colleagues suggest that the primary caregiver's response to the infant's distress is critical for the infant to develop intersubjectivity. The infant is in the process of developing the ability to form mental representations and therefore cannot clearly distinguish experiences internal from external mental states. In effect, the DR Scale would assign the baby's experience to the boundary confusion of levels 1 and 2. Ideally, the mother assists the child in differentiating his experience from hers through consistent affect-regulative mirroring. Affect-regulative mirroring occurs when the mother is able to mirror the infant's affect back to the infant but mark it as her own. Two related achievements occur through this affect-regulative marking: affect regulation is improved in the child because intense negative affects become less threatening over time; and, the young child develops a sense of self as separate from the outside world. Affect regulation and differentiation-relatedness are developmentally linked in this theory. For the mothers in this study, poor affect regulation and low levels of differentiation-relatedness are found in tandem; likewise, in their children, we see the beginnings of poor affect regulation in the disorganized attachment outcome at one year. Fonagy and colleagues note that these parents, having difficulties with emotion regulation themselves, "are readily overwhelmed by the infant's negative affect and produce a realistic

unmarked emotion expression [which] disrupt[s] the development of affect regulation" (Fonagy et al., 2002/2004, p. 9). Thus, the mother's difficulty regulating affect is linked to boundary confusion and psychic equivalence, and this in turn impairs the child's development of self-differentiation as well as the child's ability to regulate his own emotions.

Schechter and colleagues (2008) found that a pregnant woman with a history of trauma may be protected from affect dysregulation by high reflective functioning. In our sample, however, few women had access to the higher levels of reflective functioning that could have had a positive impact on affect regulation. It is one of the goals of the MTB project to improve the reflective functioning of the women in the intervention group. If higher reflective functioning assists these women in tolerating, marking and therefore regulating their children's negative affect, this may reduce the incidence of disorganized attachment outcome in their children and promote secure patterns of attachment.

Long-term implications of the disorganized infant attachment outcome. The stakes in preventing disorganized attachment could not be higher. Longitudinal studies have documented the implications years later for infants with disorganized attachment. Fearon and colleagues (2010), for example, conducted a meta-analysis demonstrating the link between early disorganized attachment and later externalizing behaviors. Even when restricted to the subset of 24 studies (N = 3161) that identified infant attachment outcomes through the Strange Situation Procedure, the meta-analysis found a link between disorganized attachment and later externalizing problematic behaviors with a combined effect size of d = .27. Additionally, Lyons-Ruth (1996) found that

disorganized infant attachment was linked to disruptive and aggressive behavior in middle childhood. In a longitudinal study by Carlson (1998), infants with disorganized behavior were more likely to have dissociative behavior from middle childhood through adolescence. Main and Cassidy (1988) reported on a longitudinal study beginning in infancy. They found that a majority of six-year-olds who had initially been given a disorganized attachment classification during infancy were observed displaying role-inverting, or controlling, behavior towards their parents. Hesse and Main (2000) continued to report on this study, following 44 subjects from infancy, when they were administered the Strange Situation Procedure, to 19 years of age, when they were administered the AAI. While a majority of secure, insecure-avoidant, or insecure-resistant infants were rated as secure-autonomous as adolescents, *none* of the infants classified as disorganized (N=12) were rated as secure-autonomous at 19 years of age, and two were classified as unresolved/disorganized. Hesse and Main theorize that an infant's disorganized attachment outcome comes about not just from direct maltreatment by a parent but from a "second-generation effect" of a parent who is frightening to or frightened by her children due to her own unprocessed traumatic experiences (p. 1103).

Finally, Lyons-Ruth and colleagues more recently reported results from a prospective study that found links between observed parent-child interaction in infancy and middle childhood borderline symptoms and suicidality during adolescence (Lyons-Ruth, Bureau, Holmes, Easterbrooks, & Brooks, 2013). They found maternal withdrawal in infancy was a significant predictor of borderline symptoms and suicidality during adolescence. They also found that disorganized controlling child behavior at age 8 independently contributed to the prediction of borderline symptoms. There are additional

studies that have made and continue to make connections between disorganized attachment in both infancy and early childhood and later problematic outcomes in middle childhood, adolescence and adulthood (see Slade & Holmes, in press, for a review).

Differentiation-Relatedness and the Baby

What contributions can this study offer regarding the nature of the expectant mother's relationship with her baby during pregnancy? The most concrete contribution is that this study demonstrated that an expectant mother's differentiation-relatedness toward the unborn child was developmentally at a lower level, on average a full point lower on the DR Scale, than the woman's differentiation-relatedness for her other relationships. For most women, the overall strategy for differentiating from and relating to her unborn child was at the level of mirroring (DR level 3). This indicates that the expectant mother is beginning to differentiate and relate to the baby despite very few concrete interactions. As the mother comes to know her child, the Baby DR score would be expected to improve. Considering DR as having a developmental progression, DR scores would be expected to rise from pregnancy to infancy and then to toddlerhood. Sadler and colleagues (2013) demonstrated in this same sample that maternal RF improves from pregnancy to early childhood. In addition, Poznansky (2010) found that maternal RF increased from infancy to toddlerhood. These DR findings add to this literature in support of both RF and DR as developmental progressions that unfold over time.

Additionally, this study made a surprising observation that added to the knowledge about the expectant woman's representation of the baby during pregnancy and resulting attachment outcome. This had to do with different kinds of drops in Baby DR and the possible relationship with the benefit or risk of regression.

Benign and Troubling Baby Low DR: Regression as a benefit or a risk? Dips in DR were readily seen for the women in this study, both towards the baby and towards the other relationships of self, mother and father of the baby. The average of these dips, across all relationships, has been shown to predict to infant attachment outcome, where the lowest dips were most likely to result in disorganized attachment. It is hard not to come away from this finding feeling that regression is risky and to be avoided.

However, other studies have documented that regression in the service of the ego can promote security of attachment. For example, Frank, Tuber, Slade & Garrod's (1994) findings suggest that mothers of infants with secure patterns of attachment had a greater ability during pregnancy to access primitive unconscious fantasy "without sacrificing perceptual accuracy" on Rorschach responses than did mothers of infants with insecure patterns of attachment. The current study's population is far different from the population of the study by Frank and colleagues in terms of the percentages of attachment outcome, SES, education level, marriage status, age, and race/ethnicity. But nevertheless the contrast in these findings deserves exploration. Does our finding contradict the benefit of regression found in the prior study?

Of the 35 women in this study, 25 dipped to Baby Low DR score of level 1 or level 2, indicating transient dips to non-differentiated states and boundary confusion regarding their unborn children. Qualitatively, it appeared that there were two different types of dips in the Baby DR scores: benign or troubling. A benign level 2 score would be noted when, for example, the expectant mother expressed a sense of merger with the unborn child (e.g., the fetus understood how the mother was thinking and/or feeling), but in a way that was experienced by the mother as pleasurable or calming. In contrast, a

troubling level 2 score expressed this sense of merger, but also tended to include other elements associated with level 2 such as lack of coherence, a flood of details, or a sense of animosity or paranoia either towards the fetus or from the fetus towards the mother.

It is possible that underlying these two kinds of level 2 scores, benign and troubling, is a distinction between regression that is in the service of the ego and regression that instead represents a loss of sense of self. The latter may in fact sacrifice the perceptual accuracy noted by Frank and colleagues. It can be also argued that a kind of regression that was truly in the service of the ego would drop from a place that was higher on the DR Scale than the mean of the sample in this study, just under scale level 4 (out of 10 scale points), the level for self-other idealization or denigration. A score of 6 or 7 would be desirable to indicate a more stable and consolidated integration of object representations. Only one woman had an Overall DR score of 6 or higher in this sample, insufficient for a good analysis. A future study with a larger sample might examine the differences in attachment outcome for benign versus troubling drops in DR.

For the women in this study, it was clear that levels of differentiation-relatedness were not fixed or stable, but prone to fluctuation over the length of the interview and across the relationships discussed. Pregnancy is theorized to be a time when an expectant mother is highly prone to moments of regression, potentially even to psychotic states, as previously stable identifications are being re-worked. An ongoing question to explore is whether the dips to non-differentiated states seen in this study were due to the upheaval of pregnancy, a vulnerability to emotional dysregulation in a more general sense, or a combination of the two.

Limitations of the Present Study and Directions for Future Research

Results of this study indicate that lower-bound levels of differentiation-relatedness during pregnancy distinguish disorganized attachment outcome from other attachment outcomes. A second finding was that maternal reflective functioning was shown to be positively correlated with overall and upper-bound levels of differentiation-relatedness. There are several limitations to this study, and so findings should be interpreted with caution.

The risk of Type I error. To reflect both the exploratory nature of this study and the reliance on three independent variables, significance levels were set to .033, representing an alpha of .10 divided by three. Given the broad alpha, there is a risk that our finding that Low DR can distinguish attachment outcomes may reflect a Type I error. At the same time, this concern is potentially mitigated by the large effect size of the finding.

Difficulty in generalizing results to broader population. The larger MTB project was designed to reach a population of women with a high number and degree of stressors who could most benefit from the intervention. As a consequence of this choice, it is problematic to generalize these results to the population as a whole. Maternal RF and DR scores typically cover the full range of their scales; in this population, scores were concentrated on the lower end of the both scales. Thus, the correlation found between maternal RF and Overall DR applies to the lower end of the scales, and it is not known if the correlation would hold at higher levels. The attachment outcome breakdown (42% secure and 39 % disorganized) for this sample appears consistent with the larger MTB study for the overall control group (Sadler et al., 2013), but is markedly

different from findings in the broader population. For example, Ainsworth and colleagues (1978), reported secure attachment to be approximately 67% in middle-class SES populations. Additional studies are needed to clarify if Low DR would distinguish attachment outcome for a broader population.

Need for replication. This is an exploratory study. Future studies replicating these results would add confidence to the findings, and additional reliability and validity studies should be performed to increase the confidence that the method of applying the DR scoring system to the PI is consistent, accurate, and reflective of the DR scoring scale against other instruments such as the ORI.

Modifications to the DR level 3 (mirroring). As discussed earlier in this chapter, there were instances where DR scoring for the baby did not fit neatly into the DR scale. In particular, the scoring level of mirroring (DR level 3) was expanded to include atypical types of very basic physical differentiation between the expectant woman and the fetus that, while moving past the self-other boundary confusion of level 2, did not seem to reach the levels of idealization or denigration seen in level 4. Future studies could explore whether these atypical types of DR level 3 are justified.

The influence of individual DR relationships. The results of this study were confined to observations about composite scores (Low DR, Overall DR, and High DR) that represented the averages of the DR scores for four relationships. Therefore, the relative importance of each relationship remains an area for further exploration. It does appear that the lower-bound DR scores for the father of the baby and for the woman's mother (FOB Low DR and Mom Low DR) made significant contributions to the Low DR score. If further studies supported these observations, interventions could be expanded to

address the woman's relationships with these key figures as well as her relationship with the baby, all with the goal of improving the attachment outcome of the infant.

The influence of gender. Gender was not a significant predictor in this study; however, there was a suggestion in the findings that with greater power, a larger study could find that infant gender was a mediating influence between Low DR and attachment outcome. For several of the cases, it was striking how discussing the gender of the baby appeared to be an affect-laden trigger leading to incoherence in the narrative. Having a baby boy was particularly difficult for some of the women to accept, and it appeared to impede their ability to differentiate from and relate to their child. This finding was particularly striking given that the majority of the sample was Hispanic. In addition to anecdotal evidence, at least one published study has documented a son preference in the Hispanic community (Unger & Molina, 1997). It is possible that domestic violence or absence of the father is counteracting this traditional son preference. Another possibility is that the younger women in this study may be expressing a need to develop their own sense of self by differentiating from and relating to a female child.

Screening for high-risk dyads. One of the aims of the MTB project is to improve attachment outcomes by improving the reflective functioning of mothers through home-based visits with nurses and social workers. The results of the present study suggest that evaluating Low DR on Pregnancy Interviews could be used as a screening tool to assist the MTB project (and other intervention projects) in identifying pregnant women at increased risk of raising children with disorganized infant attachment outcome at one year. Providing increased services for this subset of women might improve their

reflective functioning to a level that could serve as a protective factor against affect dysregulation and these transient dips to non-differentiated states.

Conclusion

To help a parent; to improve the outlook for a child: these are the worthy goals of intervention projects such as Minding the Baby. By focusing on women in tremendous need, projects such as MTB hope to have the greatest impact in breaking an intergenerational transmission of trauma that has resulted in affect dysregulation and transient dips to non-differentiated states for many women in the project. Identifying those *most* at risk in such a highly traumatized population is challenging when *all* the women appear to be in need. For MTB, for example, the reflective functioning level of the women at entry into the program is too consistent, and too low, to be helpful in the task of identification. The most important finding of this study is that lower-bound dips of differentiation-relatedness predict to attachment outcome. An expectant mother who dips to non-differentiated states of boundary confusion is at risk of raising a child with a disorganized attachment outcome at one year of age. By adding an assessment for differentiation-relatedness into baseline screenings during pregnancy, intervention projects may gain an important tool for identifying those dyads most at risk for disorganized attachment outcomes. Drastic and intensified services for these dyads may be warranted in order to break the pernicious cycle of intergenerational transmission of trauma and promote security of attachment.

Appendices

Appendix A: Descriptive Statistics of Variables

Continuous variables.

Table A8.

Descriptive Statistics of Continuous Variables

Variable	N	Min	Max	Mean	SD
Self DR	35	2	7	4.11	1.37
Self Low DR	35	1	6	2.91	1.07
Self High DR	35	2	7	5.06	1.16
Mom DR	35	2	6	4.23	.88
Mom Low DR	35	2	5	3.40	.85
Mom High DR	35	4	6	5.00	.84
FOB DR	35	2	6	4.29	1.18
FOB Low DR	35	2	6	3.74	.98
FOB High DR	35	2	7	4.97	1.10
Baby DR	35	2	6	3.03	.95
Baby Low DR	35	1	3	2.03	.75
Baby High DR	35	2	7	4.17	1.25
Overall DR	35	2.00	6.25	3.91	.93
Low DR	35	1.75	4.75	3.02	.71
Low DR winsorized	35	1.99	4.75	3.03	.70
High DR	35	3.25	6.75	4.80	.86
Maternal RF	35	2.0	5.0	3.10	.74
Wks Pregnant – PI	35	23.4	38.1	32.90	3.66
Age	35	15	25	19.1	2.5
D-ness	33	1	8	4.09	1.99

Table A9.
Descriptive Statistics of Continuous Variables for Disorganized Attachment Outcome (Category D)

Variable	N	Min	Max	Median	Mean	SD	Skew-ness	Kurt-osis	Shapiro-Wilk Sig.
Overall DR	13	2.00	5.75	3.50	3.56	1.03	.49	.29	.882
Low DR	13	2	3.5	3	2.67	.57	.003	-1.55	.027
Low DR - winsorized	13	2	3.5	3	2.67	.57	.003	-1.55	.027
High DR	13	3.25	6.50	4.75	4.60	.99	.50	-.52	.448
Maternal RF	13	2.0	3.5	3.0	2.81	.48	-1.05	.005	.000
Age	13	16	24	20	19.23	2.5	.17	-.69	.390
D-ness	13	5	8	6.00	5.92	.95	.85	.22	.024

Table A10.
Descriptive Statistics of Continuous Variables for Secure Attachment Outcome (Category B)

Variable	N	Min	Max	Median	Mean	SD	Skew-ness	Kurt-osis	Shapiro-Wilk Sig.
Overall DR	14	3.00	5.00	4.13	4.05	.55	-.32	.02	.800
Low DR	14	1.75	4.75	3.5	3.23	.73	-.13	1.04	.414
Low DR winsorized	14	1.99	4.75	3.5	3.25	.69	.12	.81	.396
High DR	14	4.25	5.75	4.78	4.86	.48	.44	-.54	.200
Maternal RF	14	2	4	3.0	2.96	.57	.16	.87	.005
Age	14	16	22	19	18.93	1.94	.34	-.98	.223
D-ness	14	1	5	3.00	2.71	1.64	.045	-1.84	.006

Categorical variables.

Table A11.
Descriptive Statistics of Categorical Variables, Summarized and by Attachment Outcome (D vs. B)

Variable	N	Proportion (%)
Infant Gender – Female	18	52.9
Infant Gender – Male	16	47.1
All Infant Gender	34	100
Infant Gender – Male, Disorganized	8	62.5
Infant Gender – Male, Secure	5	37.5
All Male Infants in D vs. B		100
Infant Gender – Female, Disorganized	5	37.5
Infant Gender – Female, Secure	8	62.5
All Female Infants in D vs. B		100
Attachment Category – Insecure Avoidant (A)	1	3.0
Attachment Category – Secure (B)	14	42.4
Attachment Category – Insecure Resistant (C)	5	15.2
Attachment Category – Disorganized	13	39.4
All Attachment Outcomes	33	100
Attachment Group – Insecure (non-B)	19	57.6
Attachment Group – Secure (B)	14	42.4
All Attachment B and non-B	33	100
Attachment Group – Organized (non-D)	20	60.6
Attachment Group – Disorganized (D)	13	39.4
All Attachment non-D and D	33	100
Race/Ethnicity of Entire Sample		
Hispanic/Latina, non-Black	21	60.0
Black/African American, non-Hispanic	8	22.9
Caucasian	2	5.7
Other (multiple races and/or ethnicities)	4	11.4
All Race/Ethnicity	35	100
Race/Ethnicity completing Attachment		
Hispanic/Latina, non-Black	20	60.6
Black/African American, non-Hispanic	8	24.2
Caucasian	1	3.0
Other	4	12.1
All Race/Ethnicity completing Attachment	33	100

Hispanic/Latina – Disorganized	10	55.6
Hispanic/Latina – Secure	8	44.4
All Hispanic/Latina in D vs. B	18	100
Black/African American – Disorganized	3	37.5
Black/African American – Secure	5	62.5
All Black/African American in D vs. B	8	100

Appendix B: Adaptation of the Differentiation-Relatedness Scale of Self and Object Representations (Diamond, Blatt, Stayner, & Kaslow, 2011) for Use with the Pregnancy Interview (Slade, 2003)

Author: Amy E. Daley

This manual is intended as an adaptation of the Differentiation-Relatedness Scale of Self and Object Representations (Diamond et al., 1993, revised 2011). In this document, the DR scoring method is applied to the Pregnancy Interview (PI), developed by Slade and colleagues in 1987 and revised by Slade in 2003.

Instructions for scoring the Pregnancy Interview with the Differentiation-Relatedness Scale of Self and Object Representations:

1. Raters should first obtain reliability in the DR scoring method before learning to apply the DR scoring method to the PI.
2. Read through the entire interview at least **twice** before attempting to score. Reading the interview aloud can be particularly helpful to capture the rhythm and affect of the speakers.
3. Four relationships are scored for each interview: self, mother, father of baby (FOB), and baby. Given the length of the interview, this generally results in several scoreable responses for each relationship.
4. For each of the relationships, note the main or most typical score, followed by the range of the lowest and highest examples of functioning in parentheses:

   Self: 5 (4,6)
   Mother: 5 (3,6)
   FOB: 4 (4,5)
   Baby: 3 (2, 4)

   For example, Baby: 3 (2,4) would indicate that the pregnant woman expressed a range of responses scored from a 2 to a 4, with some blurring of emotional boundaries and some idealization or denigration, but that the overall level of differentiation-relatedness was scored at a 3, indicating the predominant way the pregnant woman was describing her relationship to the unborn child was at the mirroring scoring level.
5. Overall DR is the average of the main scores across all relationships. Low DR is the average of the lowest scores across all relationships. High DR is the average of the highest scores across all relationships. In the example given above:

   Overall DR = 17/4 = 4.25
   Low DR = 13/4 = 3.25
   High DR = 21/4 = 5.25

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Scoring Notes

Humor: As mentioned in the Differentiation-Relatedness scoring manual, humor in responses should be considered in the scoring. The scorer should consider if this is playful, good-natured humor (warranting a higher score) or humor that deals with conflict in an angry and distancing way, such as sarcasm (lower score). Conflict-laden humor such as sarcasm should not score above a 5 for any of the DR ratings (Diamond et al., 2011).

Anxiety: The ability to discuss anxiety without becoming disorganized or closing down a relationship should be considered adaptive and possibly result in a higher score. Conversely, if anxiety appears to disrupt the depiction of the relationship, that may lower the score.

Self-Other Boundary Compromise (1) and Self-Other Boundary Confusion (2): The DR manual advises that when there are two or more scores of 1 (Self-Other Boundary Compromise) in a response, the entire response should receive a score of 1. This should continue to be used as a guideline when scoring the self, the mother, and the father of baby. Towards the baby, this rule can be considered more of a guideline. It is noteworthy that self-other boundary compromise or confusion might be less indicative of a psychotic process and more indicative of a difficulty with the differentiation process during pregnancy. Nevertheless, self-other boundary compromise is a noteworthy score, and not an expected score for women during the third trimester. By this stage of the pregnancy, most women have begun the process of differentiation. They can feel the baby moving and are aware that the baby is a separate physical entity. Moreover, they usually are aware that feelings and thoughts are their own and separate from the baby's.

No Score (NS): If insufficient information is available about a relationship, it may unscoreable. This can be indicated with NS. When calculating Overall DR, Low DR, and High DR, account for the lack of information by summing only the scores that are available and dividing by that number of relationships. So if the Mom DR is set to NS, then add only the scores for Self, FOB and Baby and divide by 3.

Scoring for Individual Relationships

Self DR Score: It is possible to think of the Self representation as having both differentiation and relatedness components. The expectant woman is discussing her thoughts and feelings about herself – the "I" discussing the "me." The Self DR score is most applicable to questions about how the expectant mother views herself, what are her anxieties, what are the negative and positive parts of the pregnancy, and when did she first know that she was pregnant. Indicators of a higher Self DR score include an awareness of self as distinct from others, an awareness of ways the woman has of relating to other key figures, expressed differences in how she relates to one person versus another person, expressed awareness of changes in her view of herself over time, and a willingness to engage in thinking about herself. The Self DR score may differ from the DR scores of others.

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Mother DR Score: Developmental theory suggests that the DR score for the mother would show signs of positive change during the pregnancy as the woman reworks her identifications (Bibring et al., 1961; Slade et al., 2009). That is, that the process of the pregnancy may lead to an improved DR score, for example from a 4 to a 5, or a 5 to a 6. For women in the third trimester of pregnancy, if the DR score of the pregnant woman about her mother is higher than other DR scores, this may be an indication of change in a clinically therapeutic direction, and a good prognostic indicator for the mother-infant relationship.

Father (FOB) DR Score: When an expectant mother has a poor relationship with the father of the baby, consider how she is coping with this additional stressor. The score for the father may influence the score for the baby. Some research indicates the expectant mother may draw on representations of the father when beginning to differentiate from the fetus – as in "he seems to be like his father [in specific behaviors]." (Diamond & Kotov, 2003; Diamond et al., 1996).

Baby DR Score: This score is more of a projective. Of particular interest is whether the expectant mother shows an ability and willingness to form a relationship prior to the birth of the baby. A healthy response may combine a flexible and free imagination about what the baby may be like with a grounded sense of reality. In particular, it may be healthy for the woman to acknowledge that her relationship is based in fantasy and will change once the baby is born, and that the relationship will continue to evolve as the baby grows. Combined with other indicators, this might put the mother-baby DR score in the 7 or 8 range. It is developmentally appropriate for the expectant mother to discuss the ultrasound and/or hearing the baby's heartbeat as moments when the mother began to differentiate from the baby; that is, when she began to experience the baby as real and other than herself. Positive indicators also include talking/reading to the baby, having a name or playful nickname for the baby, knowing the sex of the baby, and being willing to imagine a future for the baby (particularly a future that shows that both the mother and child are differentiated and related). Anxiety or refusal to imagine the baby may warrant a lower score. Delays or disruptions in the differentiation-relatedness process (e.g. refusal to accept the pregnancy until late in the pregnancy, refusal to imagine the baby in the future, continuing to discuss desiring an abortion in the third trimester) may warrant a lower score. When the mother is unable or unwilling to discuss the baby, are there clues about boundary confusion (a 1 or 2), disappointment from the baby not being the correct sex (potentially a mirroring issue, 3), idealization or denigration of the baby (a 4), or an expression of agency or oscillating conflict (a 5)?

Scoring Examples

Level 1: Self-other boundary compromise (physical).

The DR Scoring guide notes: "A basic sense of physical cohesion or integrity of representations is lacking or is breached. Descriptions are difficult to understand, confused, fragmented and often bizarre and peculiar. …The body of self or other maybe

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experienced and described as permeated by or merged with the physical presence or properties of another person or something in the environment. Thoughts and feelings may seem unbounded and lack a firm sense of being anchored in a physically defined, intact, cohesive bodily self" (Diamond et al., 2011, p. 21). With adult relationships, level 1 descriptions may be marked by thought disorder; however, for the case of describing the unborn child, this scoring level may apply when the woman expresses confusion or denial about the existence of the fetus, or experiences the pregnancy as a threat to her physical integrity. It is important to remember that the pregnancy interviews are generally conducted in the third trimester of the pregnancy. At this stage, the pregnant woman generally has a differentiated sense of self and baby.

Baby

And how do you feel about things being different or having to do things differently during your pregnancy? M: It's not really — I don't really feel that different or anything, because I'm used to it the surrounding of – of – you know, my aunt having — being pregnant and, you know. **I: You've been around family —** (Uh-huh) **— being pregnant before. So it doesn't feel —** (Yeah) **— so different.** (Uh-huh) **Okay. Can you remember the moment you found out that you were pregnant?** (Yes) **Um, can you tell me about it?** M: Um, yes. Yeah – when it was six months. I found out when — yeah — when it was six months. **(Okay)** Yeah, because I was losing a lot of weight and some bumps comin' out on my skin, and I'm not eating. So, you know, I tell my mom to bring me to the doctor and, you know, everything. **Scoring Note:** In this example, there is no sense of a differentiated baby, and the pregnant woman's experience is fragmented. She recounts not being aware of the pregnancy until six months into the pregnancy. Her narrative of being pregnant focuses on physical aberrations that appear to affect her sense of bodily integrity.

Baby

I: Okay. Um, so — I mean, do you feel like you have a relationship that's just not a happy one, or — or is — or — or you just don't feel like there's a connection between the two of you right now? M: I don't know, 'cause sometimes I just — like it comes in my mind every day to get an abortion still. **Scoring Note:** Given that this woman is being interviewed in her third trimester, the preoccupation with ending the pregnancy is both a fantasy escape and a reflection of tremendous conflict that has resulted in a complete failure to differentiate from and relate to the baby as a separate person. The score for the baby should not be confused with the score for the self; in this case, more evidence of how the woman is representing herself is needed, but there is a suggestion of 4 or 5 levels of polarized and control-oriented views towards herself.

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Self

I: Okay. And why do you think you feel this way—why do you worry about the baby crying a lot or eating a lot? M: Oh, not the baby eating a lot, but like, the fact that if I crave for something and I don't get what I crave, the baby ends up, um, with their mouths open or their tongues out, and—the fact that if I cry a lot the baby end up having that-- crying a lot at night. **Scoring Note:** The pregnant woman is here expressing her worry that if she doesn't eat something she craves, her baby will be physically deformed. The relationship between self and baby is bizarre and peculiar, and reflects an unusual magical thinking of the power of the self's wishes to impact the health of the child. The worry may be due to cultural or religious beliefs, cognitive impairment or mental illness. In order for the overall rating to be at a 1, there would need to be a severe distortion in one passage or more than one passage rated at a 1 throughout the interview.

Level 2: Self-other boundary confusion (intellectual, affective).

The DR scoring guide notes: "The affective and intellectual boundaries of self and other are compromised; emotional reactions are confused. Representations of self and other appear as physically intact, but feelings and thoughts are amorphous, undifferentiated, or confused. Description may consist of a single global impressionistic quality or a flood of details with a sense of confusion and vagueness. It is difficult to form an idea of the described person" (Diamond et al., 2011, p. 25). An "I don't know" response may be scored at this level if there is a sense that the task has overwhelmed the individual. (In contrast, an "I don't know" that represents a refusal to answer and gives a sense of agency would be scored a 5).

Baby

I: Okay, so try to imagine your child in the future. What kind of person do you imagine your baby's going to be? Like, what idea or picture comes to your mind? M: Umm--I don't know. I don't even know. [Laughter] **I:Do you ever get, like, a picture in your mind of what he'll be like?** M: Yes, smart. He will be smart, because, you know, I'm smart. **(Uh-huh)** [Laughter] **Scoring Note:** In this example, the pregnant woman initially appears overwhelmed by the question, suggesting her capacity to imagine what her child might be like is compromised or shut down. In the follow-up query, she uses qualities she identifies as belonging to her, potentially a higher score of mirroring (3), but associates them with the baby in an amorphous, undifferentiated and confused way.

Baby

I: Um, would you say that you have a relationship with the baby now? M: Uh-huh. **Can you, um, think of two words to describe the relationship?** M: Oh, yeah. Um, like, I think he — like, he understand me and, you know, love is

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there I guess. **Scoring Note:** In this example, the pregnant woman expresses a diffuse sense that the baby understands her. The relationship is vague and confused.

Baby

I: Okay alright. So you would you say that you have a relationship with the baby right now? M: Yeah. **I: How would you describe that?** M: She knows her mummy's feelings. Like I can feel it. Like I know when she knows when I'm upset or when I'm in pain or something. I don't know it's weird. **I: What changes for you that makes you feel like she knows that, that that's going on?** M: Her changes her moods like one minute she will be moving all over the place, and it will start hurting me, I will go and lie down and I will be in pain and she will stop. **Scoring Note:** This response expresses a physical separation between the mother and baby, so it is not a level 1 response. Instead there is an emotional merger. It is important to remember that level 2 responses for describing the baby may occur despite higher scores for other relationships.

Baby

I: Would you say that you have a relationship with the baby right now? M: Yeah, I would say that. [Laughter] **I: Uh-huh. A connection? Tell me a little bit about that.** M: Uh, it's funny 'cause, um, to me it feels like he knows when I, like, don't feel good; 'cause he'll become more active. [Laughter] I don't know. It's, um — like, I don't have a lot of times when I'm feeling down or depressed or anything like that. But if that was to happen, it seems as if he kicks up his motion. **(Uh-huh)** So — **I: And what does that then do for you?** M: It — to me it just — it makes me feel like he's reminding me that there's something to be happy about. **(Mmm)** So that's what I take it as. **I: Okay. Wow. Can you give me another, um — another word or an example of your — of how your relationship is?** M: I would say it's strong. **(Uh-huh)** It's really strong. Like, it's — I feel like he understands me. **I: Uh-huh. In what ways?** M: Well, like, I don't know. He reacts to certain things that I say or, like I said, he knows when — like, he moves more in the off chance that I'm, like, not feeling real well. **(Uh-huh)** So it — it's just, like, he reacts at the right moments. **Scoring Note:** In this example, the pregnant woman is describing a sense that the baby understands her. If during other questions the pregnant woman expressed higher levels of differentiation and relatedness, these would also be recorded as part of the range for the Baby score, e.g. Baby 3 (2,4).

Level 3: Self-other mirroring.

The DR Scoring Guide notes: "Representation is an extension or mirror reflection of self or other. Characteristics of self and other, such as physical appearance, or body qualities, or behaviors and traits of character, are virtually identical. The individual talks about the self only in terms of comparison to the other, with use of the traits of the other to define

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the self." In addition, "there may also be some insistence on how different the other may be from the self. But in the latter cases it must be clear at this level that the individual is still only talking about the self with reference to the other" (Diamond et al., 2011, p. 31).

Mother

I: Do you imagine any ways that you'll be different from your mom? M: Not really. **(No?)** I don't — I don't see no difference, you know. So I think, you know — because she grow me like, um — you know, she want to grow me and — just like her. **(Uh-huh)** Uh-huh. Do you see it?— she look like me, though, right? **Scoring note:** Here, the pregnant woman has trouble differentiating herself from her mother, and notes at the end that they look alike, seemingly equating physical appearance with mental states.

Baby

I: My next question was what sort of a person do you imagine your baby's going to be? M: I think similar to me. **I: How so?** M: She will probably be very stubborn. (laughter) A dancer she loves music, she moves and I am hoping she's I don't know, it's probably the way I raise her. I am just hoping she's a loving person. **I: Okay. Can you pull up a picture in your mind about your baby? About what do you imagine when you pull that picture up?** M: A fair skinned baby that is long, I think that she is going to be tall. **I: Yes you have mentioned that before.** M: With curly dark hair. A lot a lot of hair. And probably with light eyes. If the genetics kick in. **I: The light eyes come from which side?** M: Both none of us were blessed with them so hopefully she will. Yeah **I: So when you imagine all of those, the way the baby looks do you how old is your daughter in that picture?** M: Newborn. **I: Just a first born.** M: Yeah. **I: Okay** M: I don't have a picture from when she's older I don't want to yet. (laughter) **I: You know the sex of the baby?** M: Female. **I: Yes. How do you feel about having a girl?** M: Excited, we were hoping for a girl first. **I: So you had a preference?** M: Yes. **I: What about having a girl did you prefer?** M: (laughter) The pink the hair the dresses I don't know, having a miniature me running around. **Scoring Note**: There are some indications of qualifiers ("probably be very stubborn,""hopefully she will") that could indicate a higher score, but overall, the differentiation during the pregnancy is at a place of mirroring, where the pregnant woman is using herself as a preliminary way of understanding who her baby might be. In addition, there is an unusual emphasis on physical characteristics.

Baby

I: Okay. So take a minute and imagine your child in the future. What kind of person do you imagine he's going to be? M: A good boy. **(Okay)** I think he should be. [Laughter] **I: Uh-huh. What — what idea or picture comes to your mind when you think about him as an older — ?** M: Hmm, I don't know. I

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think he's gonna be a smart little boy. **(Okay)** [Laughter] Like me. **(Uh-huh)** [Laughter] **Scoring Note:** The pregnant woman is attempting to define her baby using her own qualities as a guide.

Baby

I: Take a minute to imagine your daughter in the future. What will she, what kind of person do you think she's going to be? M: Probably she'll be like my niece. She'll probably be, um, I don't know. She will be quieter. **I: Why do you think quiet comes to mind?** M: Babies are different. Because I'm kind of crazy, so probably the baby will come out kind of quiet, without doing nothing. **Scoring Note:** The pregnant woman is attempting to use herself as a guide to predicting that her baby will be the opposite, in a very concrete way.

Level 4: Self-other idealization or denigration.

According to the DR Scoring Guide, "Descriptions at this level are characterized by extreme, exaggerated, one-sided idealization or denigration of self or other either-or...This all-encompassing quality lacks any reference to conditionality or any sense of qualification or modulation" (Diamond et al., 2011, p. 36).

Self, Baby

I:…and can you think of a specific time that you were feeling good about their reaction? M: All the time. **I: All the time. Okay. Um, have you had any hard or difficult feelings while you've been pregnant?** (No) **Nothing? Um, have you had any worries about the baby or concerns while you've been pregnant that have been worrying you or bothering you?** M: For now, no. **I: No? Okay. And not so far in the pregnancy you haven't? Okay. So no difficult or hard or bad feelings at all?** (No) **Scoring Note:** Despite repeated queries, this woman is unable to define any negative feelings about herself and the pregnancy, instead creating a unilaterally positive experience ("all the time") that appears flat and cliché.

Mother

I: What are your feelings towards your own mother during your pregnancy? S: Oh, I feel so close to her because she knows what I am going through. I don't know, she just, just the most loving person I know, and she is always there, and when I need a hug she is there, and I don't know, I got, I got so close to her, and now that I'm pregnant it's more, more closer to her (PI 4). **Scoring Note:** This example is representative of a positive response that, while sincere, nevertheless seems trite and cliché.

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Level 5: Semi-differentiation.

The DR Scoring Guide notes: "Representation of self or others is dominated by primitive (extreme) polarization of experiences, and by oscillation between positive and negative representations of self or other. There may also be strong emphasis on concrete, physical properties of the object in an attempt to stabilize a tenuous cohesion of self and other experience" (Diamond et al., 2011, p. 39). A refusal to describe at this level is seen as "an assertion or will or agency, rather than an expression of the sense of confusion or loss of mooring, such as seen at level 2" (Diamond et al., 2011, p.45).

Baby

M: But it's kind of hard to like, picture the baby there, because it's like you really want to see it, so I try not to imagine it, because it's not going to be the same as how you imagine it. Sometimes it's going to be different, so sometimes you don't really want to draw that picture in…Because you see it's different, so I try to avoid that. **Scoring Note:** Here, the pregnant woman refuses to imagine the baby as an attempt to avoid disappointment. This type of refusal indicates an agency which is absent from a level 2 score.

Baby

I: Do you have a sense that the baby needs you now? M: Not really. I'm gonna be there anyways. They can't get rid of me now. **I: What do you think the baby will need once it's born? If you can imagine.** M: **** **I: Changing diapers, what else?** M: I don't know. Love is always gonna be there, care is always gonna be there, there's a lot of money that is gonna be wasted. **I: That's gonna be what?** Wasted on him. **Scoring Note:** In this example, the pregnant woman expresses anger and envy of the baby's needs being met. She expresses conflict indicating a fear of being rejected by the baby ("They can't get rid of me now.")

Baby

I: Do you know the sex of the baby? M: Well, they think it's a girl, they're not sure, they couldn't tell the first ultrasound. She's like, well, I'm 90% sure it's a girl, but I guess sometimes you can't tell. Personally I couldn't tell so I just gave up. (laughs). **I: How do you feel about not knowing? Does it matter either way what sex it is?** M: It doesn't matter, but it's just like, it'll help if you know. And do whatever you have to do to get through it. But it's doesn't really matter. At first I did, but now, it doesn't matter. **I: And whether it's girl or a boy?** M: At first I had ***, but now it doesn't matter. I guess it takes time, but it doesn't really matter. I'd rather it's a boy, but there's still a part of you that just doesn't know. **Scoring Note:** Here, the pregnant woman has a great deal of conflict about being disappointed that the baby is a girl. She articulates at the end that she

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refuses to accept the baby's identity as female, choosing instead to ignore this information.

Self

I: Okay. All right. Do you remember what your family's reaction was? M: Disappointment. Just because I hadn't finished school or nothing. And I have a lot of goals. **I: Okay and what was that like for you? How did you feel about them having that reaction?** M: I didn't care. I didn't care. No. **I: It didn't matter one way or the other?** M: No. After that they became supportive so it doesn't matter. **Scoring Note:** In this example, the woman refuses to engage with the interviewer about her feelings. There is also some evidence of an oscillation between intense feelings of anger and disappointment in herself and her family and then a need to portray her family in a positive and idealized way.

Self

I: How do you feel about your family's reaction, because they had such a different reaction from your reaction. M: They didn't — I — they were surprised that I was crying. I was like, no this can't be, so I was just like a little shocked. But they were more welcome, like okay, you're not getting rid of it, because if you get rid of it, we're getting rid of you, so it was like a — I knew they were going to react like this. I knew they weren't going to be mad, but they were mad of how I reacted, like okay, you shouldn't be crying, you've just got to deal with it. And I'm like okay, you've got to understand my feelings, so it's been a conflict of that, but other than that, I knew that that's how they were going to act. **Scoring Note:** In this example, the pregnant woman conveys attempts to understand her family, but anger and aspects of control continue to feature in the representation, preventing this from being a higher score.

Level 6: Emergent, ambivalent constancy and cohesion, and an emergent sense of relatedness.

The DR Scoring manual notes: "Starting from this level, the representations of self and of others are more integrated. However, at this transitional level, unique characteristics of self or other are lacking. Descriptions reflect an emerging consolidation of disparate aspects of self and other, expressed in somewhat more modulated, integrated and stable representations, but are marked by a hesitant, equivocal or ambivalent movement towards this integration and stabilization" (Diamond et al., 2011, p. 47).

Self, Baby

I: …if you had to think of five years from now and your little baby is five years old — M:I can't wait. [Laughter] **I:— and you had three wishes for your child —** (Uh-huh) **— what would they be?** M: Um, five wishes — no, three wishes. [Laughter] Okay. Three wishes for five years. **(Right)** Okay. Well, I

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would hope that he learns something from me and is able, you know, to communicate well with others; you know; has friends. Um, I hope that he's smart. You know, obviously, I think he will be smart, 'cause I have a lot of ideas for that. Um, I — I just — I just hope he's, you know, happy, just happy, you know. I think bein' a parent is a hard job, you know; because you're always tryin' to keep your kid happy. But sometimes you just — you can't, you know. You have to try your best, and sometimes your best is not enough, you know. So I just — I just hope that I'm — I can do it, that's all, you know. I just want him to be happy. Well that hurt. [tearing up…laughter]. **Scoring Note:** In this example, the pregnant woman is able to articulate her anxiety that she will not be a good enough mother. The qualities she hopes for in her child are placed in the context of the importance of relationships to the well-being of the child as well as the role the parent has in cultivating these qualities. She conveys a tentative consolidation of herself as an agent that affects the people around her.

Mother

I: We are going to switch gears a little bit, speaking of your mother, how would you say your actual relationship or your feelings towards your mother changed since you've been pregnant? M: I didn't really respect my mother, now I kind of respect her more, now that, because me and my mother had a difficult relationship, we had problems, like problems, not problems issues that we need to address and we've done that now more than ever. Because she tells me now you're going to see what it's like to be a mom, to make a mistake, and have your kids look at you differently. **I: And how have those feelings towards your mother affected your actual relationship?** It's gotten better. We talk more now than we used to talk before. **I: It's been both of you that's changing.** Yeah, cause me and my dad are really close and me and my mom aren't, but since I've been pregnant, me and my mom got closer. And me and my dad are just the way we used to be. **I: The same?** Yeah. It hasn't changed. **Scoring Note:** This example is a good illustration of the psychological changes taking place during the pregnancy for the pregnant woman. There is a tentative move toward object consolidation.

Mother

I: Okay. And, um, any other examples of how you guys have — how your relationship is now? M: Uh, I think the pregnancy has made us become more understanding of, like, our different personalities; 'cuz I'm — well, I've always been kind of more of a loner. [Laughter] And she's always been an "in-your-face" person. And, I guess, now that I'm pregnant, she kind of understands that I do need that space to myself. But other than that, it's been awesome. Like, I don't really have any complaints about it. **Scoring Note:** At the end of this passage, the pregnant woman retreats to a more comfortable way of describing her experience through idealization, which might by itself indicate a level 4 score. Overall, however, the pregnant woman attempts to articulate a

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change in her relationship with the mother and relate it to a change in how the mother interacts with her now that the woman is pregnant. There is a tentative attempt at reconciling differences. The descriptions are somewhat static and trite, preventing this from being a level 7.

Father of Baby (FOB)

I: So in what ways do you expect him to be involved with the baby when the baby — ? M: I know he's gonna wanna see him a lot and take him places when he gets older and things like that. So it's, uh, um, support and also as a father figure. I know that he wants to be there. He doesn't want to be the absent father or the person that occasionally shows up or the person that you never see and — but sends gifts. Like, he wants to actually physically be involved. [Clears throat.] And I think that's mainly because he never knew his dad. So he's trying to be somebody different. **Scoring Note:** In this example, the pregnant woman is describing a sense that the FOB will be a good father, but it moves beyond the cliché that might be scored as a 4 because she conveys a sense of the individuality and life experiences of the FOB. However, there remains enough uncertainty and tentative sense of the other that this would not be scored a 7.

Level 7: Consolidated, constant (stable) sense of self and other.

The DR Scoring Guide notes: "Representations at this level are integrated, differentiated and modulated. Distinguishing qualities and characteristics are emphasized and there is a sense of tolerance for and integration of disparate aspects of self and others. Relationships may be described in unidirectional terms, but there are indications of understanding of others' thoughts, feelings and motivations in depth" (Diamond et al., 2011, p. 55). There is some reference to awareness of context – either due to time or environment. Humor at this level is playful rather than defensive.

Baby

M: Um, I would say another goal would be for her to be a free spirited person. Not to worry about what's mommy and daddy going through. Just to worry about her. (**M'hm**) Like not to take on the responsibility of her having to grow up too fast. **Scoring Note:** Here the pregnant woman is able to acknowledge that her child will be impacted by her parents' emotional states, but also express her hope that her child will still be able to develop in her own way. There is a clear sense that the mother is hoping the child will be differentiated. At the same time, the emphasis on differentiation at the expense of relatedness prevents this from being a higher score.

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Level 8: Cohesive, individuated, empathically related self and others in reciprocal relationships.

The DR Scoring Manual notes: "At this level a new dimension is added to the description of self and other as both more uniquely defined and reciprocally related. Descriptions of relationships are not unidirectional, as can be the case at level 7. In addition to a modulated, integrated and coherent portrait of the self and other found in level 7, descriptions are marked by a definite sense of the unique consolidated identity of self and other , by an in depth understanding and relatedness to others, and by a capacity to understand the perspective of others" (Diamond et al., 2011, p. 63).

Baby

I: And when you think about the first, um, six months of the baby's life, what, um — when do you imagine you'll be the happiest? M: The first time he smiles at me. **I: Mmm. Why do you think it'll be then?** M: I think it will be then because I think that's just the number one thing that you — that you wait for, that you want them to do; because it just — it intensifies the connection that you already had. **I: Mmm. Tell me more about that.** M: Um, I know it — it, um — it's kind of like — it clears up anything in your mind about any worry of having them as early as you did or any of the problems that you went through in the pregnancy, if you had any. And it establishes the fact that the baby actually knows who you are, and you had some kind of connection; and you did what you needed to do in order for them to recognize you. And it shows that they love you as much as you love them. **Scoring Note:** In this example, the pregnant woman articulates her desire for a moment of connection with her baby and places it in context of an evolving relationship between the self and the other. The expression at the end – her wish that "they love you as much as you love them" indicates a wish or need for the relationship that in a less differentiated response might warrant a lower score.

Level 9: Integrative, unfolding self and other in reciprocal relationships.

The DR Scoring Manual notes: "At this level, there is a demonstration of a cohesive sense of self and others in reciprocal relationships that transform both the self and the other in complex, continually unfolding ways. In addition to an integrated, cohesive sense of self and other, descriptions at this level are marked by reciprocal affective and intellectual exchanges between self and other, in which the behavior of one affects the other and each makes a unique contribution to the relationship" (Diamond et al., 2011, p. 69).

No examples are available at this time.

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Level 10: Integrated, creative constructions of self and other in empathic, reciprocally attuned relationships with conscious recognition of the intersubjective process of constructing meaning and the relational matrices that contribute to evolving sense of self and other.

The DR Scoring Manual notes: **"**In addition to an articulated sense of integration and reciprocal relatedness to which both self and other contribute in a unique way (as at level 9), a further dimension is added in descriptions at level 10: a recognition that one participates in and contributes to the construction of systems of meaning that are interwoven with one's experience of self and other" (Diamond et al., 2011, p. 73).

No examples are available at this time.

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