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THE IMPACT OF PRENATAL COCAINE-USE ON MATERNAL REFLECTIVE FUNCTIONING

By

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A dissertation submitted to the Graduate Faculty in Psychology in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York

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Abstract

THE IMPACT OF PRENATAL COCAINE-USE ON MATERNAL REFLECTIVE FUNCTIONING

by

Dahlia Wohlgemuth Levy

Advisor: Professor Arietta Slade

The purpose of this study was to assess the impact of prenatal maternal cocaine-use upon Reflective Functioning (RF) within the context of the parent-child relationship. RF refers to the capacity to reflect upon a wide range of emotions experienced by both self and other. Within the context of parenting, RF refers to a parent's capacity to put herself in her child's mind, try to imagine her child's experience, and use this understanding to guide her emotional response to her child. There is now ample neuropsychological research to suggest that both executive functions and the ability to regulate affect are impaired in women who use cocaine as their drug of choice. There is also some neurobiological evidence to suggest that cocaine co-opts certain biologically-produced behaviors that are intimately involved in the building of human relationships and essential for the development of the parent-child bond. The aim of this study was to explore the impact of these affective, cognitive, and biological impairments produced by cocaine upon RF. It was hypothesized that RF in cocaine-using women would be significantly impaired as compared to RF in non-cocaine-using women. Furthermore, it was hypothesized that cocaine-using women would respond to questions on the PDI in

more consistently concrete, unelaborated ways, with almost no glimmers of reflection. Their individual profiles would show little evidence of the fluctuations in RF that one normally sees across responses to different situations, even among parents who score quite low along the RF scale. 46 mothers were interviewed using the PDI (Aber et al, 1985), half of whom had used cocaine prenatally and half of whom had not. Their children were between four and seven years of age at the time of the interview. Cocaine-using women had significantly lower overall RF scores than did non cocaine-using women, confirming the first hypothesis. The second hypothesis was not confirmed. These results suggest that cocaine-use negatively affects RF through its impairment upon affect regulatory systems. This model is elaborated to include external risk factors as potentially mediating the negative consequences of cocaine upon RF. The clinical implications of these findings are discussed.

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While writing this dissertation, I have oscillated between wanting lots of personal space and wishing to be tightly surrounded and supported. My family has been artfully able to satisfy these needs in ways that still amaze me. My parents are so close even though they are so far. Their pride and support is tangible from across the ocean and my reaching this point is mostly a tribute to them. My parents-in-law, also my editors, have seen me through these past few years with love and pride. I am deeply thankful for them.

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CHAPTER I. INTRODUCTION

> "None of us can be with a baby, care for a baby, or study a baby without ascribing to him or her certain thoughts, feelings, and wants at any particular moment. In a baby's presence, we are forced to invent that baby's inner worlds...parenting itself depends on these interpretations...most parents need and want to know what is going on inside a baby's head at certain moments – when she is hungry, say, or stares fixedly into the distance, or suddenly fusses in the middle of playing a game. At such times, parents try to slip beneath the baby's skin and into her mind and act as if they have a fair idea of what is going on there...(the baby's) wishes, motives, feelings are relatively undefined. It is your interpretation that helps her to define them, to structure her world." (Stern, 1990, pp.2-3)

In his introduction to Diary of a Baby, Stern eloquently describes the caregiver's need to imagine what might be happening inside the child's mind. From the moment a child is born, the parent finds herself trying to make sense of the infant's cries, expressions, and gurgles in an attempt to connect with her infant on a deeper emotional level. We might imagine a baby's cry to be one of pain, hunger, frustration, or tiredness. A smile might mean contentment or pleasure at the experience of something new. A parent soon finds herself using both her imagination and growing experience with her child to better understand the emotional meaning behind an expression or behavior. This, in turn, can guide the parent's emotional response to her child.

As the parent develops her repertoire of ideas about her child's emotional world, she is beginning to develop what researchers call "a representation of her child". All parents develop representations of their children. However, there are large individual differences in the quality of these parental representations. These individual differences have been understood in several different ways. A structural approach classifies parental representations into categories that are highly correlated with the parent's own attachment classification. In other words, parental representations of her child will be influenced by the parent's representations of her own early caregiving experiences. A content approach argues that a parent's representations of her child

are continually changing with each new developmental phase. Thus, representations are first formed based upon one's own early caregiving experiences but begin to change and adapt to the reality of the individual child's demands and needs. The changing content of these representations are largely based upon the parent's shift from the childhood perspective of being cared for to the caregiving perspective of providing care. A third, quite clinical approach discusses maternal representations as maternal attributions which are determined by the mother's ongoing assessment of the causes of her child's behavior, her child's personal characteristics, and situational circumstances. These attributions become internalized by the child and help determine his attachment classification. A fourth approach focuses upon affect regulation. Here, parental representations of the child are first influenced by the parent's own early models of attachment relationships but become increasingly defined by the different feelings that the child evokes in the parent and by the parent's own feelings about being a parent.

The fifth approach, focusing on reflective capacity, provides the premise for the proposed study. It argues that the quality of parental representations is influenced by the parent's ability to reflect upon those feelings that are evoked in her by her child and by her own changing sense of self as a parent. This reflective capacity refers to the parent's ability to put herself in her child's mind, to imagine what her child might be feeling, and to express these feelings to her child. According to some theorists, it is as important for the parent to be able to access and express her own feelings in the context of parenting her child as it is for her to reflect upon her child's feelings. As the parent begins to appreciate the range of feelings that exist within herself and her child, she will develop a rich, full representation of both her own and her child's emotional experience. This optimal caregiving situation teaches the child to tolerate and accept a range of

emotions that he will experience over the first few years of life. Reflective capacity is therefore critical for the development of rich, complex parental representations.

The proposed study will assume that the individual differences seen in parental representations result from differences in reflective capacity. Researchers have now turned their attention to the measurement of this capacity and to gaining a better understanding of its role in the development of representations and security of attachment. Recently, the term "reflective functioning" (RF) has been coined by Peter Fonagy (Fonagy et al, 1991, 1993, 1995) and refers to the capacity to reflect upon affective experience. Fonagy established an interval scale to measure this capacity in parent's responses to affectively-laden experiences. The proposed study will use an adaptation of this scale as its measure of reflectiveness.

Despite the important role played by reflective capacity in raising a child, it is one that has been developed and investigated primarily with middle-upper class samples. There are virtually no studies that explore reflective capacity in a high-risk sample of parents.

"High-risk" can be defined in many different ways. For this study, a cocaine-using sample of women and a matched sample of non-cocaine-using women from a poor socioeconomic background are identified as the high-risk sample of mothers. While cocaine abuse has largely been seen to cut across socioeconomic class and gender, two trends in the past decade have raised good reason for concern. The first is the increasing use of cocaine and other substances among women living in impoverished inner city neighborhoods (See Mayes & Bornstein, 1996 for a review). Some major cities in the United States report 50% of women receiving prenatal care at inner city hospitals have used cocaine regularly during their pregnancy and for several years prior to their pregnancy. The second related trend is the increasing number of children born to cocaine-using women and/or growing up with substance-abusing parents.

Reports estimate that over 350,000 infants are born per year to mothers who have used cocaine with or without other substances throughout their pregnancy. These trends have led to two expanding areas of research, the first being an exploration of the effects of prenatal exposure to cocaine on infant's and children's development and, the second an exploration of the characteristics of women who abuse substances and the effects of that substance abuse on their ability to parent their child.

The goal of the proposed study is to expand the research on the impact of cocaine upon parenting capacities by comparing RF in women who used cocaine while pregnant to women who were not cocaine-users during pregnancy. The study of RF in cocaine-using mothers is critical for two reasons. First, there is strong empirical evidence to assume that cocaine-using women will have a more diminished capacity for RF than will non-cocaine-using women. To date, there is neuropsychological and neurobiological research to confirm that cocaine affects self-regulatory capacities in both adults who use cocaine and in children prenatally exposed to cocaine. Adults and children exposed to cocaine exhibit impaired capacities for frustration tolerance, affect tolerance, and emotional expression. Since the capacity to reflect upon emotional experience is so dependent upon the capacity to tolerate those emotions, one might expect cocaine to impair the quality of parental reflections. The study of RF in cocaine-using women is therefore, a different, more clinical lens through which the effects of cocaine upon parenting can be assessed.

Second, most of the available research on the psychology of cocaine-using women and the effects of cocaine-abuse on their ability to parent has focused upon their levels of self-esteem, sense of competency, depression, and incidence of abuse/neglect through the administration of questionnaires, surveys, and some home observations. Some studies have

closely examined mother-child interactions in controlled laboratory-based settings to explore the impact, if any, that cocaine may have upon the quality of the mother's language and play with her child. There are virtually no studies that employ more clinical, less structured methods of interviewing the parent. This type of interviewing offers parents the opportunity to represent themselves in multiple different ways which could afford a deeper understanding of the ways in which cocaine-abuse might impact a parent's sense of herself and of her child, and consequently the parent-child relationship. The proposed study will use a semi-structured, clinical interview to obtain measures of RF which closely examines the quality of representations of self and other, as well as parental representations of a woman's relationship with her child. This interview is designed specifically to examine thoughts and feelings that occur within the context of the parent-child relationship as opposed to thoughts and feelings that are related to external events. By using this instrument, these mothers will have the opportunity to discuss the multiple influences and emotional experiences that they have encountered in the process of raising their children.

CHAPTER II. LITERATURE REVIEW

This literature review will begin by defining the term "representation" and describing the importance of representations in the development of attachment relationships. These initial sections will introduce the narrower term "parental representations of the child" and review the theories of how they are formed and assessed. Particular emphasis will be placed on the notion of parental reflections and the importance of this reflective capacity for the development of parental representations.

The sections that follow will argue the usefulness of researching the concept of reflectiveness in a cocaine-using population as a new way to explore the relationship between cocaine-use and parenting. The first part of this section will review the current research on the impact of substance abuse upon the individual's capacity to parent a child and highlight the ways in which the proposed study is methodologically guided by yet deviates from this research. The second part of this section will provide an overview of the psychological and neuropsychological theories of the impact of substance abuse on the individual that speak to difficulties in affect tolerance and regulation – two abilities that are necessary for reflective capacity. These theories will therefore provide the basis for the argument that cocaine uniquely effects reflective capacity.

Attachment theory

From behavior to representation

Attachment theory originates from the work of John Bowlby and Mary Ainsworth (See Bretherton 1985, 1995/Belsky & Cassidy, 1994/Karen, 1997, for comprehensive reviews).

According to Bowlby, the infant's attachment system is a biological, motivational system, whose purpose is to increase proximity to an attachment figure and whose evolutionary function is protection of the infant from danger. An important concept within Bowlby's theory is that of "internal working models" (Bowlby, 1969; 1973). He believed that humans construct internal working models of attachment on the basis of their experience with their primary attachment figures. A child will build a set of expectations that are based upon the history of his relationship with his primary caregiver. If the attachment figure consistently acknowledges the child's needs for comfort and protection while simultaneously respecting the child's need for independent exploration of his environment, that child will likely develop an internal working model of self as valued and self-reliant. Conversely, if the child's needs for comfort and independence are rejected, he will likely construct an internal working model of self as unworthy or incompetent. These internal working models become the child's basic internal representational models of attachment and lead to a host of predictable and patterned responses to relationships as an adult.

Bowlby's ideas about patterns of attachment responses were empirically validated by Ainsworth in a series of ingenious experiments using the Strange Situation, which led to a more comprehensive classification system of childhood attachment patterns. (Ainsworth & Wittig, 1969; Ainsworth et al, 1978). The more recent, seminal work of Mary Main provided ways to empirically assess both the child and adult's representational models of attachment/internal working models of attachment. In this way, she most directly moved attachment theory and research from the behavioral to the representational realm (Main et al, 1985).

Main and her colleagues developed the Adult Attachment Interview (AAI: George et al, 1985), a structured clinical interview to assess an adult's overall state of mind with respect to attachment, specifically the adult's representational model of attachment. The interview asks for

descriptions of early relationships and attachment-related events and for the adult's sense of the ways in which these relationships and events have affected her personality. Based upon the adult's responses to these questions, particularly contradictions and linguistic incoherencies in her descriptions of early childhood attachment experiences, the adult's attachment classification may be obtained. Three distinct patterns of responding have been identified: The autonomous-secure parent presents a clear and coherent account of early attachments (regardless of whether these have been satisfying); the preoccupied parent speaks of many conflicted childhood memories about attachment but does not draw them together in an organized, consistent picture; and the dismissing parent is unable to remember much about attachment relations in childhood. In some interviews, the dismissing adult's parents are idealized on a general level but influences of early attachment experiences on later development are denied. Specific memories, when they do occur, suggest episodes of rejection.

Representations/ metacognitive monitoring/reflective functioning

The concept of adult representations is closely associated with two other concepts that exist in the attachment literature, namely metacognitive monitoring (Main 1990, 1991, 1995) and reflective functioning (RF: Fonagy et al, 1991; Fonagy et al, 1993; Fonagy et al, 1995). For Main, the capacity to represent past experiences in a coherent fashion is the most compelling aspect of adult security, as measured by the AAI (See Slade, 1997, for a review). A coherent interview is one that seems both believable and "true" (Grice, 1975) to the listener, and the events and affects intrinsic to early relationships are conveyed without distortion, contradiction, or derailment of discourse. Metacognitive monitoring is the adult's capacity to "step back and consider his or her own cognitive processes as objects of thought or reflection." (1991, p.135).

Main suggests that coherence is a product of the adult having formed a single, internally consistent working model of attachment which allows for the integration of all relevant attachment information and memories. Multiple models of attachment are formed when the acknowledgment of such memories threatens the self or current relationships. The adult's distortions and incoherence become the cognitive and linguistic manifestation of multiple contradictory models.

Fonagy takes a more affective view of metacognitive monitoring. He suggests that coherence and other manifestations of metacognitive monitoring signal the capacity to reflect upon internal experience, particularly affective experience. The presence of RF allows the person to consider and reflect upon his own emotional experience and that of others:

> "Reflective functioning involves both a self-reflective and an interpersonal component that ideally provides the individual with a well-developed capacity to distinguish inner from outer reality, pretend from 'real' modes of functioning, intra-personal mental and emotional processes from interpersonal communications." (Fonagy et al, 1997, pp 5).

Thus in the mother-child relationship, RF allows the mother to understand her child's mental states, thereby creating the context for a secure relationship. The mother who is able to reflect upon her own and her child's experience forms a representation of her infant as intentional, as "mentalizing, desiring, believing" (Fonagy, 1995, p.257). This maternal sensitivity gives the child a sense of his inner life and affective experience. Fonagy further elaborates the importance of the capacity of RF by underlining its protective role in the face of trauma. A child who has the capacity to conceive of the mental state of the other can also conceive of the possibility that the parent's rejection of him may be based on false beliefs. Therefore, the child is able to moderate the impact of negative experience. The capacity for RF is therefore particularly important for individuals who are raised in emotionally inconsistent and chaotic environments.

Within attachment theory, the concepts of representational capacity, metacognitive monitoring, and reflective functioning have become increasingly important. This is largely because of their hypothesized role in the intergenerational transmission of attachment, namely in the way in which security of attachment is transmitted from parent to child. Many studies following the development of the AAI have shown that adult patterns of attachment are empirically correlated with infant patterns. Thus, a dismissing parent tends to have an avoidant child, a preoccupied parent is likely to have a resistant child, and an autonomous parent tends to have a secure child (Benoit & Parker, 1994; Fonagy et al, 1991; Fonagy et al, 1993; Grossman et al, 1988; Main & Goldwyn, 1997; Ward & Carlson, 1995; Zeanah et al, 1993). These studies suggest that a child's attachment is powerfully influenced by his mother's representations of her own early attachment experiences (see Van Ijzendoorn, 1993, for a review).

While most studies have produced results to suggest an intergenerational transmission of attachment, few actually suggest how this transmission occurs. Recent work in this area has focused upon the importance of representations in this process of transmission. Cassidy (1994) postulates a theory of emotional reflection, expression and regulation to help explain the nature of an intergenerational transmission of attachment. It is a theory that is closely linked to that of reflective functioning. She believes that a child's ability to freely express and tolerate both positive and negative affect will largely depend upon his mother's ability to freely express and tolerate a range of affect. Thus, an avoidant child, with a dismissive mother, learns to minimize emotional expression due to his mother's chronic rejection of his attachment needs. This mother is unable to tolerate strong affective reactions within herself or in her child. The child learns that too much affect, particularly negative affect, will disrupt the attachment bond and alienate the attachment figure upon whom he depends for survival. An ambivalent child, with a preoccupied

mother, tends to heighten his emotional expression. The preoccupied mother is often overwhelmed by affect and tends to act upon his intense feelings rather than to regulate them internally. The child therefore experiences inconsistent parenting and learns to use negative expression to attract the mother's attention. The secure child expects a sensitive, accepting response from his securely-attached parent when he expresses both positive and negative affect, making him less threatened by the expression of negative affect. In Mary Main's language, a mother who can coherently acknowledge, access, and evaluate her own attachment experiences will be able to respond to her child's attachment needs in a sensitive and nurturing way.

A second explanation, posed by Slade, Belsky, Aber, & Phelps (1999), focuses upon the parent's representation of her relationship with her child, as the medium through which attachments are transmitted. They found that a mother's current representation of the child acts as a more powerful predictor of sensitive caregiving behavior than her own early attachment history. Since the quality of these representations is largely determined by a parent's ability to tolerate and express affect, this explanation is closely linked to Cassidy's theory. The study below is based upon this theory.

Parental Representations of the Child

How they are constructed and assessed

Bowlby's motivational theory of attachment suggests that parents instinctively comfort and protect their children in much the same way that infants instinctively seek comfort and protection from their parents (George & Solomon, 1995). The motivation to provide care leads to a parent developing a representation of the child. Several theories have been proposed to

understand the ways in which parents construct representations of their children. These theories both help explain differences in the quality of these representations among individuals and have yielded two main instruments for assessing these representations. Zeanah and Benoit (Benoit, Parker, & Zeanah, 1995; Zeanah, Benoit, Hirshberg, Barton, & Regan, 1994; Zeanah & Benoit, 1995) adopt a structural approach. They developed the Working Model of the Child Interview to classify parental representations as either balanced, disengaged, or distorted. These categories are similar to Mary Main's secure, dismissing, and preoccupied classifications. They discovered high correlations between AAI classifications and the classification of parental representations. In other words, a parent's representations of her child will be influenced by her representations of her own early attachment experiences. Furthermore, they report high concordance between the classification of parental representations and Strange Situation classifications, suggesting that parental representations of the child influence the child's quality of attachment.

Solomon and George (1996) refer to the development of representations of the child in the context of the parent-child relationship as the caregiving representational system. They propose that the caregiving representational system has its roots in the construction of internal working models within attachment relationships, but that it then follows its own distinct developmental trajectory. In their view, the mother assimilates the child into her already existing model of attachment, but also accommodates to the reality of the child and to the larger caregiving context. The caregiving representational system is therefore the product of the balance between assimilation and accommodation, and is considered to be "a mature transformation of the attachment system." (Solomon & George, 1996, p.15). These internal working models of the child are continually changing with each new developmental stage of the child. The parent finds herself adapting her caregiving behaviors to correspond with her child's

changing developmental needs. This is consistent with Bowlby's view that working models are modifiable with new incoming information.

Another approach to parental representations is offered by Lieberman (1997). She discusses representations as maternal attributions. Maternal attributions are fixed beliefs that the mother has about her child that she perceives as objective, accurate perceptions of her child but might in fact reflect her fantasies, fears, and conflicts about her child's function in her life. These attributions are determined by her speculations about the causes of her child's behavior, her child's temperament, and her life circumstances. Lieberman continues to focus extensively upon the ways in which maternal attributions are internalized by the child and their important role in the intergenerational transmission of attachment.

Other theorists (Benedek, 1959) propose that mothers begin developing representations of their children during the early stages of pregnancy. These initial representations are largely shaped by the mother's fantasies about her unborn child and influenced by her own early models of attachment relationships. Slade & Cohen (1996) posit that once the child is born, maternal representations of the child undergo further differentiation and become increasingly defined by the child's actual personality characteristics and the feelings evoked by the child in the parent over the course of development. In their view, parents simultaneously develop complementary representations of themselves as parents, which embody their own feelings about being a parent. These representations of self as parent similarly undergo revision to incorporate the new demands and challenges parents face as their child continues to develop and mature.

Thus, a mother's ability to access and regulate her feelings about her own parents, her self as a parent, and those feelings that are evoked in her by her child, will influence the quality of her representations of her child (Slade et al, 1999). Aber, Slade, Berger, Bresgi, & Kaplan,

1985) developed the Parent Development Interview (PDI) to assess the quality of these parental representations. The PDI is a semi-structured clinical interview, also analogous to the AAI, that is designed to assess parents' representation of their relationship with their child. The questions ask the parent to explore their child's behavior or feelings in different situations, and how they respond to these behaviors and feelings. It also asks the parent to represent her own self as a parent and to describe feelings that are evoked in the context of parenting her child. In this way, the parent's representations of her child, of her relationship with her child, and of herself as a parent can be thoroughly explored. In contrast to the AAI, the PDI asks parents to describe their current relationship with their child, by providing examples from ongoing everyday life. It therefore provides a view of a relationship that is currently being formed and is still evolving. While the AAI evokes prior and relatively solidified representations, the PDI is presumed to tap into experiences that are live and immediate and into representations that are still being constructed.

The PDI has thus far been administered to over 500 mothers in various research settings and analyzed both empirically (Slade, Belsky, Aber, & Phelps, 1999; Aber, Belsky, Slade, & Crnic, in press) and reviewed qualitatively for content, structure, and themes (Slade & Cohen, 1996). For the purpose of empirical analysis, a PDI coding system (Slade, Aber, Cohen, Fiorello, Meyer, DeSear, & Waller, 1993) was constructed. This coding system was divided into three sections. First, features of the parent's representations of the affective experience of parenting were assessed, namely anger, neediness, separation distress, guilt/shame, joy/pleasure, and competence/efficacy. Second, the parent's representation of the affective experience of the child was assessed, in terms of anger, dependence, independence, separation distress, and joy/pleasure. Third, the overall quality of the representation as manifested in the coherence of

the representation of the child and in the richness of perception of parental representations was examined.

Using this coding system, the authors conducted analyses to examine the relationship between mothers' AAI classifications, qualitative features of maternal representations of the child, and behavioral indices of positive and negative mothering. Significant findings emerged in both these areas. Mothers who were classified as autonomous on the AAI displayed less negative mothering than those classified as dismissing or preoccupied. Results linking parental representations of the child with mothering revealed that mothers who expressed more joy/pleasure in the relationship displayed more sensitivity, provided more cognitive stimulation, and expressed more positive affect and less negative affect than other mothers. Mothers who were better able to modulate expressions of anger in the interview engaged in more positive mothering than mothers who scored high on negative affect. These findings are consistent with the notion that the capacity to integrate and freely describe positive and negative affect within an attachment relationship in a coherent manner influences the quality of responsiveness to the child. These findings are also consistent with the concept of RF described earlier and contribute to a final theory that the quality of parental representations will be determined by the presence or absence of a reflective capacity.

The role of RF – theory and assessment

Slade's model of affect regulation and Fonagy's model of reflective functioning both suggest that differences in parental representations of the child result from differences in the ability to access and regulate affect within the parent-child relationship. When a parent is able to put herself in her child's mind to better understand that child's emotional experience, she will

gradually develop representations of her child as a complex, emotional, desiring person. The parent's capacity to reflect upon a wide range of emotional experiences will be dependent upon her ability to tolerate and regulate these emotions. Since the primary goal of the PDI is to capture these differences in reflective capacity, the PDI has recently adopted Fonagy's RF scale as its coding scheme. The RF scale was originally constructed to assess the quality of reflectiveness in adult representations on the AAI. Each response is assigned a code from –1 (negative RF) to 9 (exceptional RF). An overall code is then assigned to each interview. When applied to the PDI, this scoring system provides the researcher with a simpler way of capturing reflectiveness in parents' individual responses as well as in their overall reflective capacity. One is better able to observe differences in parents' responses to positive versus negative affect, and any differences in parents' ability to reflect on their own versus their child's affective experience. The applicability of RF to the PDI is fully explored and discussed in an addendum to the original RF scoring manual (Fonagy, Steele, Steele, & Target, 1998) for use with the PDI (Slade, Bernbach, Grienenberger, Levy, Locker, 1999).

Despite the importance of RF for the development of parental representations and ultimately for security of attachment in children, RF is a concept that has not been well researched in different clinical populations. One would expect to see qualitative differences in reflective capacity among individuals with different attachment classifications and with differences in levels of affect tolerance, affect regulation, and tolerance for human intimacy. The study of RF, as assessed by the PDI, in a cocaine-using population is a particularly useful one for several reasons. First, there has been a recent surge of interest in the parenting styles of women who abuse cocaine prenatally and postnatally. To date, most studies have used questionnaires and other structured methods of interviewing to obtain measures of parenting such as levels of

stress, depression, and competency. This will be elaborated in the sections below. RF as measured in the PDI offers this area of research both a more clinical outcome measure of parenting and a more open-ended style of interviewing. Second, the sections below will present the theory and research that have found impairments in affect tolerance, in affect regulation, and in the ability to sustain love relationships in individuals who use cocaine. One might therefore expect to find impairments in RF in these individuals, making RF a particularly interesting measure to research in a cocaine-using population.

A review of the impact of substance abuse on parenting behaviors:

This section will review four of the principal methods used to assess parenting styles in cocaine-using adults, namely questionnaires, indirect observations, observations of parent-child interactions, and home observations, and describe the advantages and disadvantages of their use in studies of cocaine exposure. It will highlight the ways in which the proposed study both builds upon and deviates from this research.

To date, most studies of cocaine and parenting have used the questionnaires to assess the impact that substance abuse has upon parenting abilities. Outcome measures include the level of stress or competency that parents experience when caring for their children, their self-representations, namely describing themselves as "negative self" or "positive self" (Avants et al, 1993), and the adult's own experience of being parented (Bernadi et al, 1989). The parent's perception of her role is also assessed using the *Parental Attitudes Research Instrument* which provides factors describing the degree of parental control, use of supports, and reliance on authoritarian techniques for discipline (Wellisch & Steinberg, 1980). On such measures,

substance-abusing mothers report a broad range of parenting difficulties including a reliance on a more disciplinarian, threatening style of parenting and negative reinforcement (Bauman & Dougherty, 1983). Depression inventories, amongst other psychological/psychiatric questionnaires, are often used to conclude that substance-using parents are significantly more depressed than their non-substance-using counterparts.

While these studies have yielded interesting information regarding the quality of parenting in substance abusing adults, the use of questionnaires as the primary method of data collection has several important shortcomings (Mayes & Bornstein, 1995). First, self-report instruments are often inaccurate or distorted when completed by substance-abusing adults. In addition, they do not address whether or not active cocaine abuse limits or distorts a mother's immediate interactions with her children. Second, they often force parents to consider many serious and difficult issues on paper, without giving them the opportunity to verbally process their reactions. Third, they fail to address the parents' own perception of the effects of their substance abuse on parenting, or to offer parents the opportunity to more fully express their thoughts and feelings. For example, maternal attitudes toward the child are partially influenced by worries and guilt over potentially damaging a child through cocaine-use. Such worries may be enough to discourage a mother's participation in treatment programs for herself and her child for fear that others will remind her of what she believes she has done through her addiction. Given these shortcomings, a less structured, more clinical instrument, namely the PDI, is introduced in this thesis as a method of obtaining more reliable data on parenting styles in cocaine-using adults. A more open-ended interview also allows parents to ponder and process those aspects of parenting that they find more difficult and provides time for the discussion of complex feelings that arise within the context of their relationship with their children.

Parenting styles among substance-abusing adults have also been examined with indirect measures, such as the presence of physical or sexual abuse in the home, the potential for child abuse (Williams-Petersen et al, 1994), neglect, abandonment, and foster placement. These measures are selected largely because of the increased incidence of physical abuse and neglect in such families (Black & Mayer, 1980; Wasserman & Leventhal, 1993) and by the proportionately higher than national average numbers of children from substance-abusing families who are in foster care and other placements (Lawson & Wilson, 1980; Rogosch et al, 1995). While these measures are not vulnerable to the distortion by self-report seen in questionnaires, they are far removed from the individuals personal thoughts and feelings.

Studies of direct observations of play interactions between mothers and infants are more successful in obtaining first-hand, accurate data on specific parenting styles in substance-abusing adults, albeit in a controlled, laboratory setting. There are only a few studies that use observational measures of mother-child play in substance-using families (for heroin/methadone using families, Bernstein et al, 1984, and Bernstein et al, 1986; for cocaine using families, Burns et al, 1991). Bernstein et al (1984) reported that mothers participating in a methadone-maintenance program in comparison to a non-opiate-addicted group reacted less often and less contingently to their four month old infants' communicative bids and tried less often to elicit or encourage communicative play with their infants. Burns et al (1991) reported similar impairments in a group of five polydrug-using mothers, two of whom used cocaine primarily, with no comparison group. These five mothers showed a reduction in reciprocal behaviors with their infants and infrequently structured and mediated the environment.

Importantly, not all substance-abusing women interact poorly with their children. Bernstein et al (1984) reported that 47% of a group of methadone-maintained women received

adequate scores for their interaction and communication with their children. Women with poor interaction scores showed lower IQ's, lower SES, and had fewer contacts with their child's father, indicating that there are other factors apart from substance-abuse that contribute to impaired parenting styles. Rosen (1990) examined the maternal behaviors of 75 multirisk infants, half of whom were methadone exposed, and found no relation between the severity of maternal drug use and the degree of maternal responsiveness toward the infant. However, mothers using methadone who were also diagnosed as having antisocial personality disorders were significantly more dysfunctional in their interactions with their 24 month old children than were methadone-maintained mothers without significant psychopathology (Hans et al, 1990, reported in Griffith & Freier, 1992).

These findings indicates that co-existing maternal psychopathology contributes to greater impairments in parenting among substance-abusing adults, and that substance abuse alone does not necessarily indicate impairments in parenting. Such findings begin to answer one of the most difficult empirical questions with which these researchers are faced: Do cocaine-abusing parents have impaired relationships with their children that are different from impairments found in other dysfunctional or disadvantaged families not affected by substance abuse (Mayes & Bornstein, 1995, Mayes, 1996)? In other words, cocaine abuse in an adult may or may not indicate that he/she is a dysfunctional parent but rather may indicate other conditions that negatively affect parenting, such as depression or any other psychological/psychiatric disorder. Cocaine-using adults have indeed been found to be more depressed than non-cocaine-using adults, and report being more vulnerable to cocaine use when depressed (Avants et al, 1993; Strickland et al, 1993). Such findings highlight the importance of obtaining some measure of maternal psychopathology in studies of drug abuse and parenting so that any impairment in parenting in

substance-abusing adults can be more accurately assessed and understood. The proposed study will include measures of stress in the parent-child relationship and the impact that life events may have upon parenting in its consideration of maternal psychopathology.

Other studies have employed the method of home observations in response to the need for less structured, more clinical modes of data collection when working with drug-using parents. These studies suggest an increased incidence of disrupted or disturbed relationships between parents and children as measured by higher rates of disorganized attachments behaviors (Main & Solomon, 1986; Rodning et al, 1989, 1991). However, higher rates of insecure attachment may be related more to postnatal environmental conditions than to the effects of prenatal drug exposure on infant behavior. Rodning et al's (1989) findings suggest that drug-exposed children raised by their biological mothers may be more likely to be insecurely attached than those raised by a foster parent. Rodning et al (1991) also found a higher incidence of disorganized attachment patterns in drug-exposed children raised by their biological mothers who continued using drugs than in drug-exposed children whose biological mothers discontinued drug use. This highlights the impact of postnatal drug use upon child outcome and the importance of collecting this data in studies of drug use, parenting, and child outcome.

It is important to note that differences in attachment style by rearing conditions have not been consistently found (Rodning et al, 1991). These inconsistencies may reflect a difficult empirical problem encountered by these attachment studies, namely the identification of the child's primary caregiver. Children born to substance-abusing women are often cared for by many different adults, so that the caregiving situation at the time of the attachment assessment may be quite different from the caregiving situation even one month earlier. It is therefore

difficult to conclude a correlation between prenatal drug exposure, child rearing environment, and the child's attachment classification in any definitive way.

In summary, these studies suggest that parents who abuse drugs are more likely to exhibit negative parenting styles as measured by their poor interactions with their children, increased incidences of abuse, and an increased likelihood of insecure attachments in the children. These findings are often attributed to parents' lack of self-esteem and poor sense of competency, factors that are usually a sustaining force in raising of child. As well as providing preliminary results, these studies have raised many questions regarding the impact of substance abuse upon parenting skills. To what extent are negative parenting styles a consequence of drug use or other contextual factors such as parental psychopathology, parental support systems, or significant life events? If drugs are indeed, thought to be the most reliable predictor of poor outcome, how can this effect be more closely studied? Is there a more finely-tuned outcome variable that can better clarify the ways in which drugs impact the ability to care for ones child? The following sections will review some of the theoretical and empirical work that correlates cocaine use with difficulties in affect regulation and an impaired ability to sustain love relationships, and suggest that the consequences of these impairments might be more closely studied using RF as a measure.

Theories of substance-abuse

Psychoanalytic approach

While many theories have been proposed to explain the underlying psychology of substance-abuse, the psychoanalytic theories which highlight the addict's difficulties with affect

regulation and tolerance are most useful in the context of the present study. Most psychoanalytic theories agree that drugs act as an external substitute for absent internal functions (Morgenstern, 1993). Kohut, for example, conceptualizes these absent internal functions in substance abusers as a disorder of the self. Like many other psychoanalytic theorists, he believes that the development of a central defect in the self is established during infancy and early childhood. During these early years, the child suffers from inadequate nurturing and inconsistent caregiving behaviors. As a result, the child is not given the opportunity to omnipotently control his caretaker as if she were part of himself and to gradually internalize important ego functions. As an adult, the addict turns to drugs as a substitute for the early nurturing object who failed him during infancy. By ingesting the drug, he is symbolically merging with the idealized object in an effort to regain the magical power of omnipotence and feel as if he is finally in control (Flores, 1993). The addict eventually craves the drug that he comes to believe is capable of curing the central defect in the self.

Krystal's (1970, 1974) theory elaborates upon the relationship between the development of an addiction and an early, inconsistent caretaking environment. In early infancy, the primary caretaker needs to act as an auxiliary ego for the growing infant (A. Freud, 1965; Mahler, 1975). The infant's threshold of resistance against stimulation is, as yet, unable to defuse too much physiological or psychological discomfort that may quickly accelerate into the experience of real pain. Khan (1963) points out that the mother supplements the infant's stimulus barrier by acting as a protective shield against stimulation, to prevent an intolerable build-up of internal tension in her infant. If the mother fails in this role, the infant repeatedly experiences frustration and pain and becomes a victim of a cumulative trauma. Krystal & Raskin conceptualize the drug-dependent individual's plight as living in the dread of being overwhelmed with painful affect as

a result of the repeated bombardment of painful affects she experienced as an infant, without the normal anticipation of relief. This individual never developed a tolerance for anxiety and frustration. The drug therefore becomes an artificial stimulus barrier to help the individual cope with the persistent threat of psychic trauma. While the healthy individual uses early internalized modes of self-soothing and impulse control, the drug-dependent individual substitutes for her weakened ego with drugs. In some drug-dependent patients, the drug represents a slightly improved version of the parent's response in regard to pain – the drug gives relief, but only postpones the anxiety temporarily because it is itself experienced as dangerous.

The addict's disturbance in the regulation of affect manifests itself as alexithymia, namely the inability to name and use one's emotions (Krystal, 1988). According to Krystal, alexithymics are unable to decipher the meaningful aspect of feelings and instead experience emotions mainly in terms of physiologic states. They are not able to put their emotions into words and therefore cannot use them as signals to understand them. In addition, their emotions are often undifferentiated; they are vague and unspecific so that separate responses to feelings such as anxiety and depression do not seem to appear. In Krystal's words,

> "Because of the concomitant diminution in the verbalization of affects, these patients experience somatic, often distressing reactions rather than complete emotions. Only when one experiences the cognitive aspect of an emotion – the meaning of the affect and some indication of the "story behind it" – and simultaneously has the expressive reaction and an adequate capacity for reflective self-awareness, can one observe that one is experiencing a "feeling" and identify it. Alexithymics often cannot tell whether they are sad, tired, hungry, or ill. They are not accustomed to recognizing their feeling states and discovering their reactions to events in their lives". (Krystal, 1988, p.243)

The inability for reflective self-awareness is typical of alexithymia. McDougall (1974) comments that alexithymics who are prone to addictive behavior do not only lack the ability to self-reflect and express themselves, but they show a hypochondriacal preoccupation with the

affect-related distressing sensations in their bodies and a driven need to block them. In other words, reflective self-awareness is replaced by an overabundance of sensory perceptions related to touch, smell, and taste. In this way, the person insists upon concretizing and externalizing affect so that he appears detached from himself and others. Those who have worked with alexithymics prone to addictive behavior describe some of these patients' affect as deadened to the point of psychosis, sapped of all humanity (Krystal, 1988). While many addicts may not be driven to this extreme, they do often experience difficulties with affect regulation and expression.

Neurobiological approach:

This approach is related to the idea that drugs are an external substitute for absent internal functions. For psychoanalytic theorists, drugs substitute for impaired ego capacities such as self-soothing and affect regulation. Neurobiological theorists have focused upon the way in which cocaine co-opts the biological system involving oxytocin (for a review, see Leckman & Mayes, 1999). Oxytocin is centrally involved in a variety of parental behaviors and infant attachment. Several studies have shown that when oxytocin is given centrally to virgin female rats, these rats demonstrate full maternal behaviors within minutes. Importantly, virgin female rats display little interest in infants and when presented with foster young will either avoid or cannibalize them. Thus, oxytocin induces a rapid and dramatic shift in motivation from a lack of interest to a driven, relentless pursuit of nest-building, retrieval, licking, grouping, and protection of pups. Conversely, the blocking of central oxytocin pathways results in a blocking of the initiation of maternal behavior and maternal reproduction.

Cocaine addiction is a form of psychopathology that is related to the mental states and behaviors active in romantic and parental relationships. New parents often describe an intense state of preoccupation with their newborn to the exclusion of all else. Winnicott (1958) describes this altered mental state as "primary maternal preoccupation" which largely characterizes the first few weeks of a mother's relationship with her newborn. Throughout the day, parents can experience intrusive thoughts, particularly after returning to work, that may interfere with their ability to concentrate. These parents experience a feeling of exclusivity and oneness with their infant that is also associated with specific behaviors. Parents report gazing for long periods of time at their infant, experiencing exclusive, synchronous communication with him, and exaggerating their vocal and gestural communications with him. These feelings allow the parent to closely attend to their infant's behaviors and communications, reflect upon them, and gradually learn the meaning behind many of them. Similarly, cocaine addicts become preoccupied with satisfying their craving for their drug which lead to compulsive drug-seeking and drug-taking behaviors. Just as an infant becomes a mother's primary preoccupation, the drug becomes the addict's preoccupation which gradually overtakes her existence so that other major role obligations at home, school, or work are neglected. Children and household duties are neglected.

There is some evidence to show that these cocaine-related behaviors are in part oxytocin-related although more research is needed to uncover these mechanisms. Drug addicts present an exclusive like relation with their drug, which consumes their thinking and activity, similar to the idea of maternal preoccupation, in which oxytocin plays an important role. Furthermore, some of the characteristics of the most severe forms of cocaine addiction have obsessive-compulsive like features, a disorder in which oxytocin is also implicated. Cocaine co-opts those behaviors

that are so intimately involved in human relationships. The drug becomes the primary object of intimacy with which the addict is preoccupied and for which the addict craves. The addict becomes incapable of nurturing other love objects, let alone feel preoccupied by them. Consequently, she finds herself removed from the world of intimate love relationships – the necessary context for the development and enhancement of reflective functioning. One would expect to see an even more pervasive effect of cocaine upon RF in the addict's relationship with her children as opposed to her relationship with her romantic partner. A child demands total exclusivity from his parent in terms of care, comfort, and security, without being capable of returning this care. A cocaine-using parent will feel particularly incapacitated in her role as mother as the demands made upon her emotional availability and reflective capacities increase.

Neuropsychological approach:

The neuropsychological approach to substance abuse complements the theories explained above and provides us with empirical evidence to help explain the addicts severe disturbances in affect tolerance, in affect regulation, and in the capacity to sustain love relationships. Over the past decade, there has been a surge of interest in the developmental outcome of children prenatally exposed to cocaine. Results from these outcome studies provide much of the available data on the neuropsychological impact of cocaine on the human brain. These results indicate that cocaine affects areas of the brain that are involved in basic neuropsychological functions such as arousal and attentional modulation and the regulation of anxiety (see reviews by Mayes, 1994; Mayes & Bornstein, 1995). Recent studies demonstrate that cocaine-exposed infants have difficulties in reactivity, modulation of arousal in response to stimulation, and attentional regulation (Chasnoff et al, 1989; Eisen et al, 1991; Mayes et al, 1993), as manifested by impaired

habituation performance. The ability to habituate is dependent upon two functions that are thought to be affected by exposure to cocaine - the maintenance of attention and information processing - and is therefore a useful measure for these outcome studies. Mayes et al (1993) found that twenty-four hour old cocaine-exposed infants demonstrated a decreased habituation performance on the Neonatal Behavioral Assessment Scale compared to non-cocaine-exposed infants. These findings have since been extended to habituation performance in three month old infants (Mayes et al, 1995). They found that a larger percentage of cocaine-exposed infants that non-cocaine-exposed infants became fussy and irritable at the start of the procedure and were unable to habituate at all. This supports the neurological prediction that cocaine-exposed infants are more sensitive in response to stimulation because of self-regulatory difficulties.

Adults who use cocaine are also irritable and will likely experience similar difficulties in regulatory capacities, leading to an inability to tolerate extreme emotional states. Cocaine-using adults often have poor models of attachment from which to draw examples of child-rearing, having themselves been raised in inadequate caretaking conditions. An adult who resorts to using cocaine is more likely to be depressed and more likely to exhibit a lack of self-confidence and self-esteem. The adult is unable to represent herself in a complete, rounded way, but is filled with negative self-representations that become even more limited with continual cocaine use. As she continues to use cocaine, the adult will experience two significant psychological changes. One is an increased preoccupation with her drug, which gradually replaces all love objects. The other is an impairment in emotional regulation so that she will become much less able to tolerate emotional changes in herself or in her child. In her efforts to keep her internal equilibrium, she may move closer to her drug which has become her object of intimacy and her method for self-soothing. Her child however, continues to place new demands on his parent that requires a

flexible parenting style, an ability to tolerate swift changes in mood, and a general capacity to be engaged and feel involved with the child. All these parenting skills contribute to the fundamental parenting skill that is the ability to reflect upon and interpret her child's emotional states. The cocaine-using parent however, tends to either avoid confrontation and emotional conflict or to respond impulsively and inappropriately. This might manifest itself as a limited or even absent reflective capacity. The question that remains, however, is to what extent do these impairments in the capacity for human intimacy and emotional regulation affect reflective capacity and ultimately a parent's representation of her child? The proposed study will attempt to answer this question.

It is important to add that these biologically-based deficits as a result of cocaine-exposure, namely impairments in affect tolerance, regulation, and expression, are extremely sensitive to environmental influences. Exposure to cocaine does not necessarily predict behavior or performance on tasks. In several individual cases, cocaine-exposed children demonstrate more competent regulatory abilities and are less oppositional behaviorally as they grow older. They are gradually better able to sit through a lengthy testing procedure and respond to verbal instruction. A closer examination of these children's caregiving environment often reveals an improvement in the quality of parental care. For instance, the parent has been shown to have undergone drug treatment or extended family members have been more actively supportive in raising the child. Furthermore, there are some non-cocaine-exposed children whose development does not progress adequately with age. The child's environment is often either a regulator or disregulator of child development which will buffer or exaggerate the child's neuropsychological difficulties. The significant impact that the environment, specifically parental care, has upon child outcome makes it important to examine more closely the type of

nurturing environment in which these children exist. It is equally important to consider the parent's nurturing environment or support system in all studies of drug-use. This issue will be carefully considered throughout this thesis.

STATEMENT OF PURPOSE

The purpose of the proposed study is to study the quality of parental representations in a sample of cocaine-using women by measuring their reflective capacity. It is the first study to explore reflective functioning in cocaine-using women. It will compare RF in a group of cocaine-using women to RF in a group of non-cocaine-using women. The study of the quality of parental representations in this sample will allow for a closer, more psychological examination of the mother's capacity for affect tolerance, expression, and regulation that may partially result from her cocaine addiction. In other words, to what extent is the presence of cocaine one of several important variables related to difficulties in affect regulation? If cocaine-use does indeed contribute to impairments in a person's ability to regulate and tolerate affective change, then one might expect a more impaired performance on a measure of reflective functioning, such as the PDI, where attention to emotional experience is so critical.

HYPOTHESES

Three hypotheses are proposed, the first of which tests differences in overall RF scores, the second of which tests differences in individual RF scores, and the third of which tests differences in the RF profiles across the interview of women in each group.

Hypothesis #1

It is hypothesized that women who have used cocaine during pregnancy and, in some cases, continued to use postnatally, will have an impaired ability to reflect upon their own affective experience, their child's emotional experience, and their relationship with their child, as compared to non-cocaine-using women. Cocaine-using women will have significantly lower overall RF scores on the PDI than non-cocaine-using women. They will be less able to discuss positive and negative feelings that arise within the context of parenting but will more likely to rely upon description of events without reflection. Significant findings here would point to the impact that cocaine has upon the regulatory capacities that are so critical for reflection, tolerance, and understanding of emotional experience. Lack of such skills will have an enormous impact upon ones ability to raise ones child.

Hypothesis #2

It is hypothesized that cocaine-using women will also have significantly lower individual RF scores on the 15 demand questions asked than will non cocaine-using women, as well as significantly different overall RF scores.

Hypothesis #3

Finally, It is also hypothesized that cocaine-using women will tend to respond to questions on the PDI in consistently concrete, unelaborated ways, with almost no glimmers of reflection, keeping their overall RF scores well below average. Their individual profiles of RF will be unusual in that there will be little evidence of the fluctuations in RF that one normally sees across responses to the different situations referred to in the PDI. There will therefore be a more restricted range of RF scores on individual passages of women in the cocaine-using group than in the non cocaine-using group. Mothers in the non cocaine-using group will demonstrate more of the ebbs and flows in RF that usually characterize the struggle to understand one's own and one's child's mind.

A sub-group of women who have undergone drug treatment will be formed from the cocaine-using group of women. Knowledge of drug treatment will be obtained from self-report during the interview procedure or from previously collected records. The proposed study will also perform a qualitative comparison of responses from cocaine-using women who have undergone some form of drug treatment and have remained drug-free since treatment and cocaine-using women who have not undergone any treatment. This comparison may yield a meaningful improvement in the ability of women who have undergone treatment to reflect upon emotional experiences. Any improvement will be influenced by the quality and frequency of the drug treatment as well as the fact that reflective functioning is a long-standing, relatively stable trait that may be resistant to significant positive or negative influences. However, any improvement will begin to highlight the restorative role that treatment could play in the reflective capacity.

CHAPTER III. METHOD

Subjects

The 46 mothers who participated in this study were chosen from a larger sample of 591 mothers enrolled in a longitudinal study investigating the effects of prenatal exposure to cocaine on social and cognitive development in children in the first six years of life. Each mother was originally invited to join the longitudinal study when they presented for prenatal care at the Women's Center of the Yale New-Haven Hospital or, in the case of no prenatal care, when they were admitted to the postpartum ward. After obtaining verbal consent for an interview, all women were questioned about substance abuse in a detailed interview that covered lifetime use of cocaine, tobacco, alcohol, marijuana, and other drugs (e.g., sedatives, opiates). The frequency and amount of use of these agents during the preceding thirty days was also obtained. The interview was administered by trained substance abuse clinicians working either in the prenatal clinic or, in the case of women with no prenatal care, on the postpartum ward.

For all women, regardless of drug use history, a urine sample was obtained for toxicology. Urine was screened for cocaine, heroin, methamphetamine, and tetrahydrocannabinol. Maternal cocaine exposure status was therefore determined by self-report of use during pregnancy and/or by a positive urine screen at a prenatal visit or at delivery. Non-cocaine exposure status was ascertained by repeated maternal urine samples and a negative maternal history of either cocaine or opiates during pregnancy and at the time of delivery. Women were not excluded from either the cocaine-using or non-cocaine-using groups on the basis of alcohol, tobacco, or other substance abuse such as marijuana. However, they were

excluded from both groups if they reported dependence on opiates, had psychotic or suicidal tendencies, or were not English speaking.

On recruitment, the mother's background information was obtained, including her date of birth, the child's date of birth, her level of education, and living situation (i.e., members of household). All mothers consented in writing to a long-term follow-up of their children.

23 cocaine-using women and 23 non-cocaine-using women were interviewed for this study. For inclusion in the study, the mother had to be the biological parent of a child between 4-9 years of age who was currently enrolled in the larger project and the primary caretaker of this child since birth. The demographics of this sample are listed in Table 1. Table 2 includes the results of statistical tests performed on some of the demographic differences between the two groups of women. T-tests show that cocaine-using women were significantly older than non cocaine-using women ($df=44$, $p=<0.01$) and that cocaine-using women had significantly more children than non cocaine-using women ($df=44$, $p=<0.01$). While a higher percentage of cocaine-using women were single than were non cocaine-using women, this difference was not significant on a chi-square test ($df=1$, $p>0.05$). A chi-square test to analyze the difference in the incidence of depression between groups, as measured by the Structured Clinical Interview for DSM (SCID, Spitzer et al, 1990), just missed significance at the 0.05 level, even though the number of depressed cocaine-using women was higher than the number of depressed non cocaine-using women ($df=1$, $p=>0.05$)[1].

The parent was invited back without her child, for a 1-2 hour parent interview. She was told that the interview asks questions regarding her feelings about being a parent, what she finds easier about being a parent, and what she finds more difficult. She was asked to describe her

[1] Six cases were rejected due to missing data, likely contributing to a probability value which just misses the significance level of .05.

child in detail and talk about what may have influenced her experience of being a parent. She was also told that the interview would be taped but when transcribed, all identifying information would be removed. To further protect her confidentiality, the tapes were identified by codes and made available only to the staff of the infant follow-up project. For this extra visit, the mother was paid a small amount of money and provided with transportation to and from the clinic if she so requested. All this information was written in the consent form presented to the subject at the start of each interview (Appendix A).

Measures of the parent's postnatal environmental status are repeatedly administered at each of the parent's follow-up visits to the clinic. Amongst other things, the mother was asked to complete the Parenting Stress Inventory once a year from the moment her child is enrolled in the project. This measure of current maternal stress was included in this study since it provided information regarding levels of stress the mother was experiencing (included in Table 1). Mothers were also interviewed using an abbreviated version of the SCID to obtain a measure of depression, which was also used to differentiate the two groups of women in this study.

Materials

Parent Development Interview, consent form, tape recorder, microphone, cassette tape.

Procedure

Each interview took place in a room consisting of a table, two chairs, and a tape recorder. The parent was asked to attach a microphone to herself for the purpose of audio-taping the interview. The Parent Development Interview was then be administered. The interviews were administered by two members of the staff of the infant-follow up project, both of whom were

first trained in the administration of the PDI. The interviewers were blind to the cocaine status of the subject. Each interview was then transcribed verbatim and scored using the Reflective Functioning Scale for use with the PDI, by one of the four coders who co-authored the application of the RF scale to the PDI, and who has achieved reliability.

Data on prenatal substance-abuse and enrollment in drug treatment were obtained from records collected by the project over the past several years and self-disclosure by the parent during the interviewing itself.

Measures

Parent Development Interview (PDI)

The PDI was administered to mothers of four to five year old children (see appendix B). This instrument is a 45 question semi-structured clinical interview that assesses a parent's mental representations of her relationship with her child. The parent is given the opportunity to describe her affective experience in relationship to a particular child, in a flexible and coherent manner (Slade et al, 1999). Typically, the mothers in this project have had more than one child. They were therefore asked to focus upon the child between 4-9 years of age who was currently enrolled in the larger project throughout the administration of the PDI. Importantly, the mother is not asked simply to describe her child, herself, or her attitude toward her child; rather she is asked to describe her own and her child's experience in moments of interaction and relatedness. The PDI is therefore, presumed to be a relationship-specific measure of an ongoing relationship, not a representation of the child or the self and not an assessment of the parent's description of features of the child or the self as parent.

The parent is first asked to talk about her view of her child by describing her child's favorite and least favorite moments of the day, similarities and differences between herself and her child, and what she likes most and least about her child. The parent then chooses five adjectives to describe her relationship with her child, providing reasons why she chose those adjectives. The interview continues to prompt the parent to discuss her view of her relationship with her child. The next part of the interview is concerned with the parent's affective experience of parenting, where she is asked to describe her strengths and weaknesses, and her similarities to and differences from her own parents. She is asked about her child's responses to routine separations and about how her child has changed her. Many questions include probes eliciting the mother's ability to represent and reflect upon the child's and her own emotional responses to various situations, which help assess her mental representations of the relationship.

The coding system for the PDI is adapted from Fonagy's Reflective Functioning Scale as used with the AAI. It is a ten point scale that ranges from –1 to 9, with –1 being the lowest point (negative RF) and 9 being the highest point (full or exceptional RF). An average rating is captured by a score of 5 (see appendix C). As in the AAI, the questions in the PDI fall into one of two categories: (1) demand questions – those that explicitly demand that the subject demonstrate his or her reflective capacity within the context of the parent-child relationship, and (2) permit questions – those that permit the subject to demonstrate his or her reflective capacity, but do not explicitly ask the subject to use mental state language. Each interview is assigned an overall score that captures the parent's overall reflective capacity. In order to obtain this overall score, the coder first reads the entire interview, assigns an individual score between –1 and 9 to each demand question, and notes those responses to permit questions that demonstrate especially high or low RF. The rules and guidelines for this process are detailed in the manual.

Inter-rater reliability for the RF scale, as assessed by interclass correlation coefficients, was achieved on a sample of PDI's previously collected by Slade, Aber, Belsky, & Phelps (1999). The ICC(2,k) on overall RF scores was 0.87. The mean ICC(2,k) for individual passage scores within interviews was 0.88 with a range from 0.78 to 0.95.

Parenting Stress Index/Short Form (PSI/SF)

The PSI/SF was developed from the full-length PSI (Abidin, 1995) in response to the request of clinicians and researchers who indicated the need for a valid measure of stress in the parent-child system that could be administered in less than 10 minutes (see appendix D). The PSI is based on the assumption that the total stress a parent experiences is a function of certain salient child characteristics, parent characteristics, and situations which are directly related to being a parent.

The full-length PSI is a 101 item parent report questionnaire designed to yield a measure of the relative magnitude of stress in the parent-child system. Three major domains are assessed by this PSI: (1) child characteristics (adaptability, demandingness, mood, hyperactivity/distractibility, acceptability, child reinforces parent), (2) parent characteristics (depression, sense of competence, attachment), and (3) situational variables (relationship with spouse/partner, social isolation, parental health, restrictions of role).

A factor analysis of the 101 question full-length PSI resulted in a three-factor solution that were labeled as follows:

(1) Parental distress (depression, restriction of role, social isolation, relationship with spouse/partner). Items within this factor signal parental distress such as "I feel

trapped by my responsibilities as a parent", "having a child has caused more problems than I expected in my relationship with my spouse (male/female friend)".

(2) Parent-child dysfunctional interaction (child acceptability, child reinforces parent, parental attachment). Items in this factor suggest that the parent does not derive satisfaction from interaction with the child and the child does not meet parental expectations. For example, "My child is not able to do as much as I expected", "my child rarely does things for me that make me feel good", "I expected to have closer and warmer feelings for my child than I do and this bothers me".

(3) Difficult child (child's adaptability, demandingness, mood, and level of distractibility and activity). The content of these items is associated with the child's self-regulatory capacity, such as "my child seems to cry or fuss more than most children", and "my child makes more demands on me than most children".

These three subscales, each of which have 12 items, nicely capture the primary components of the parent-child system by focusing on the parent, the child, and their interactions. Test-Retest reliability were .85 for the parental distress factor, .68 for the parent-child interaction factor, .78 for the difficult child factor, and .84 for the total score. A correlational analysis of the total stress score of the full-length PSI and the total stress score of the PSI/SF yielded .94, giving this instrument concurrent validity.

The parent is asked to circle a number from 1 (strongly agree) to 5 (strongly disagree) in response to each item on each subscale. The total stress score is obtained by adding the value of each of the circled numbers. Parents who obtain a total stress score above 90 are experiencing clinically significant levels of stress.

This is a particularly useful instrument for this study as it is designed to assess the level of stress experienced within the role of parent, as opposed to levels of stress experienced in other life roles and events. Levels of stress and depression are likely to be higher in high-risk mothers without solid support systems. Studies of high-risk families must find ways to quantify levels of stress as a variable that will likely influence any measure of parenting style. While parents are given several opportunities to speak to these feelings in detail in the PDI, the PSI/SF allows us to somewhat quantify the impact of parental stress on the mother's self-representations and her representations of her child.

Structured Clinical Interview for DSM (SCID)

The SCID is a semistructured clinical interview for making the major Axis I and Axis II diagnoses. For the purpose of this study, the module covering mood syndromes was administered to identify major depressive symptoms in the participating women (See Appendix E). The questions are asked to obtain information regarding onset of depressive symptoms, how long these symptoms have persisted, and how severe they are. The SCID identifies those women who currently meet the DSM diagnosis of depression.

CHAPTER IV: RESULTS

Quantitative Analysis

Hypothesis #1

A t-test was performed to test the hypothesis that the mean overall RF score in the cocaine-using group (x=3.43, SD=1.44) would be lower than the mean overall RF score in the non-cocaine-using group (x=4.3, SD=1.4). Results from this analysis showed a significant difference in reflective functioning between the two groups (t=2.079, df=44, p=.043)[2]. It is also noteworthy that both group means were below what is considered to be average RF of 5. In other words, one below average group mean was significantly lower than the other below average group mean.

The mean difference of 0.9 of a point on the RF scale between groups is further amplified when looking at the distribution of overall RF scores across both groups (see graph 1). In the cocaine-exposed group the mode score is 3 while in the non cocaine-exposed group the mode score is 5.

In order to further understand this difference between groups, three demographic variables were correlated with overall RF scores: number of children in the family, marital status, and presence of depression as measured by the SCID. In this sample, cocaine-using women had significantly larger families than non cocaine-using women and a larger percentage of women in the cocaine group were unmarried and depressed. These variables were therefore chosen to test the hypothesis that these environmental risk factors were associated with cocaine-use and may therefore mediate the apparent relationship between cocaine use and lower RF. In other words,

women in stable relationships, who had fewer children to raise, and who were not depressed were less likely to be cocaine addicts and would be better able to reflect on emotional experiences in themselves and in their children. Put another way, those cocaine-using women who were in stable relationships, who had smaller families, and who were not depressed, would have higher RF scores than those cocaine-using women who lived with these risk factors. None of these correlations however, were significantly related to outcome (r=.106, -.224, and .081 respectively). When these demographic variables were controlled for in a multiple analysis of covariance, the difference in overall RF between groups remained significant, further suggesting that these contextual risk factors, as measured in this study, could not be used to explain the variance.

Hypothesis #2

T-tests were then performed on the RF scores for each of the 15 individual questions to test for mean differences between groups at this level. The individual RF scores for women in the control group were always slightly higher than the individual RF scores for women in the exposed group with one difference reaching significance at the 0.05 level of significance (df=43, $p<0.05$). This was the question regarding routine separations and how both the mother and the child felt about this separation. Women in the control group had significantly higher RF scores on this question than did women in the cocaine exposed group.

Hypothesis #3

In order to test the hypothesis that cocaine-using women would produce a more restricted range of below average scores on individual passages across their interviews than would non-

[2] The effect size of this difference was slightly larger than 0.6, which is in the moderate to large range.

cocaine-using women, the Levene's Test for Equality of Variances was examined. There were no differences in the Standard Deviations around the mean RF scores for each question thus rejecting the hypothesis that there would be greater fluctuations in reflective capacity and a larger range of RF scores in non-cocaine-using women across their interviews.

Observed Trends

Within the cocaine-using group, there was a tendency for women who have completed successful drug treatment programs to score in the higher reflective range than women who have not been in any form of drug treatment. Scores in the 5-7 range were only reached by women in the drug treatment group. All other scores were in the below average range. While the number of subjects was too small in these groups for statistical analysis, this trend begins to illustrate the restorative role that drug treatment may have to play in the development of RF.

Qualitative Analysis of Three Women

Three cases, one non cocaine-using woman, one cocaine-using woman, and one woman who underwent drug treatment, have been chosen to illustrate some of the clinical differences between these groups of women and the observed differences in RF.

Case 1

Carol is a 25 year old single mother of one four and a half year old son, Justin. Justin's father sees him about once every two weeks. Carol currently lives with her parents who help her care for him after school while she attends evening classes for herself. Justin was born with a heart condition that has required frequent hospitalizations over the past four years. Carol's

pregnancy however, was uneventful. She received prenatal care throughout and reported no substance abuse. All blood and urine tests at the time of delivery confirmed this and Carol was placed in the control group for the purpose of this study.

Carol responded eagerly to the invitation to participate in this study, pleased to have the opportunity to talk about her relationship with Justin. She responded thoughtfully and expressively to all questions asked and remained remarkably non-defensive in her ability to discuss painful experiences. While none of her responses were particularly sophisticated or surprising, they were filled with solid examples of mid-range RF across multiple domains. Her individual RF scores ranged from a 3 to a 6, with most of her scores clustered in the 5-6 range. For example, when asked whether she feels guilty as a parent, Carol says,

> "oh, just about every time I go out and do something else, leave him somewhere...and I come back and he says, 'I missed you', and I say, 'well, I missed you too, I wanted to be with you but this is what I had to do' or, 'mummy needs this time so I can be a good mum to you because if I don't have this time to myself I can't be as good of a mum to you'". (When asked how she thinks these feelings affect him, she replies) "I think sometimes he uses them to his advantage, like most children do. Other times he can see I'm all upset and he'll hug me and he says 'it's OK mummy, I had fun anyways', even though he wasn't where he wanted to be".

In this response, Carol provides a solid, straightforward example of trying to understand what Justin might be thinking or feeling in response to her own feelings of guilt. By describing Justin's two different reactions to her guilty feelings, Carol is demonstrating a basic understanding that one can have multiple reactions to one emotional situation.

Carol continues to demonstrate a solid understanding of her own and Justin's mental states in her responses to other parenting situations. When asked to describe a routine separation from Justin and the way they both feel about it, Carol talks about his arrival at school in the morning,

> "we have a routine in the morning. To get over the separation I tried to make him feel he was big and didn't need me so he needed to make me leave..he runs down the hallway and pushes me out..that was a way of saying I love you but I don't need you. And picking him up, he sees me and those big bright eyes light up and I'm just so proud that he's happy to see his mum and he runs across the room and jumps into my arms..and I'm just so proud when he does that push coz for a long time he couldn't and it was agonizing for him to have me leave him."

In this example, Carol describes how her son's happiness and developing accomplishments make her proud, thus appreciating the way in which mental states interact with each other and affect each other.

With an overall RF score of 6, Carol can safely be described as a mother who consistently reflects on a range of positive and negative feelings that arise while parenting her child. Carol's just above average profile of RF can be considered a consequence of various factors. First, having completed high school and now finding the time for further education amidst her child rearing responsibilities classifies her as a more highly educated woman. This is manifested in her capacity to eloquently express her feelings and use verbal detail in her examples of RF. Second, while she is a single mother, her parents provide her with the supportive and financial network she needs to spend quality time with her son and focus on the psychological aspects of parenting. Carol chooses to spend much of this time fostering reflectiveness in both herself and her child. Both of these factors have protected her from engaging in substance abuse and other self-destructive behaviors that interfere with the physiological and psychological ingredients necessary for the development of RF.

Case 2

Ann is a 32 year old mother of three children. Michael, who is exactly four years old, is her youngest child. Ann and her children live with her mother who helps Ann take care of them.

Michael's father lives out of the home but spends about three days a week with Michael at Ann's home. Ann used to work as a housekeeper but has not worked in 11 years, since she had her first child. She began her prenatal care at 8 weeks of pregnancy and reported no pregnancy or delivery complications. When interviewed soon after Michael's delivery, Ann reported to having drunk alcohol, to having smoked cigarettes, and to having used coke and cannabis during her pregnancy. She also tested positive for cocaine at the time of delivery and was placed in the cocaine-using group for the purpose of this study. Despite being offered several opportunities to discuss her drug use during her interview, Ann did not mention it at all.

Ann responded readily to the invitation to participate in this study. However, she was quite wary of the interviewer during the interview itself. She alternated between staring in a fixated way at the interviewer and glancing quickly around the room. She fidgeted in her chair and often laughed anxiously while responding to questions. Her answers were mostly brief and she required more prompting from the interviewer than is usually necessary. The interviewer was left with an uneasy feeling and wondered if Ann had been using just prior to her visit.

Ann's individual RF scores ranged from a 1 to a 3, illustrating her inability to reflect on herself or her son in any clear way. She often claimed ignorance as to the presence of mental states or denied them completely. For example, in response to the question of how she feels her relationship with Michael is affecting his development, she said, "I don't think it is", and when asked how he feels about separations from her, she replied, "Nothing, just he feels like, 'go ahead, I'm all right'".

She also tended to respond in concrete, behavioral terms to emotionally-laden situations. For example, in her responses to the questions of whether she ever feels needy and guilty as a parent, Ann replied,

> (Needy?) "Yes...I have any little money I get I never spend it on me, I spend it on them, so I say I'm more needy than they are. (When asked if she things these feelings affect her child, she answered), "Well, actually he don't see it...they have no needs cause I give them everything they need."
>
> (Guilty) "I feel guilty that I'm not working right now and that I can give them more. That's the only guilt." (When asked if she things these feelings affect her child, she replied), "No. None of my kids, it's just like in a sense of giving them more, like I could, we could go more places, we could do more things, but anything else we're a very tight family and we go out together and they all go out together, so it's not, it's pretty good."

In these answers, there is little use of mental state language and no acknowledgement that her negative feelings might affect her children in any way. When she did acknowledge the presence of feelings in herself or her child, she tended to describe them in more behavioral than reflective terms, using words like, "scared", "upset", and "special". On one occasion, Ann was able to partially reflect upon her own mental state when asked how having children had changed her:

> "I learned to share more because I didn't want to share before kids, but I learned by having kids that I had to share more".

Here, she acknowledges a change in her personality as a result of having children. However, her answer does not merit a score above a 3 because she fails to use clearer, more reflective language.

Ann's overall reflective capacity can be described as almost absent, often disavowing and very occasionally present in a naive and simplistic way. Despite having a similar form of social and financial support to Carol, and being one of the few mothers in the cocaine-using group to have fewer than four children, Ann cannot appreciate the presence of feelings in herself and her family. It seems as if the most significant intervening variable here is her use of cocaine and her failure to acknowledge her addiction and its impact on her capacity to think about her children in more complex ways.

Case 3

Jennifer is a 43 year old mother of four children. She had two children with her husband, who then died, and two children with a second partner, who no longer lives with her. Her oldest son was killed when he was 24 years old. She is left with a 21 year old son, an 8 year old daughter and four and a half year old son, Damon. She also has two grandchildren. Damon's father sees him once or twice a week and is reported to be a drug addict. According to Jennifer, her relationship with Damon's father ended because she could not reciprocate the love he felt for her. Instead, she still feels very connected with her husband and consequently feels unable to establish a new relationship.

Jennifer began her prenatal care at 18 weeks of pregnancy, which was then complicated by gestational diabetes and preeclampsia. She reported to drinking alcohol, and using coke and cannabis during her pregnancy with Damon. She tested positive for cocaine at the time of Damon's delivery and continued to use for the first 18 months of Damon's life. Jennifer reported having used drugs for at least 10 years prior to Damon's birth. When Damon was 18 months, she entered a drug rehabilitation program for six months during which Damon was cared for by her parents. She relapsed for a period of five months shortly after the program, but has now been clean for the past two and a half years. For the purpose of this study she was placed in the treatment group.

Jennifer's RF profile looked quite different from her drug using counterparts who had not undergone any treatment. Her individual passage RF scores ranged from a 1 (usually because she denied having experienced a specific emotion asked of her) to an 8, with most of her scores clustering around the 5-8 range. She demonstrated an above average capacity to reflect on extremely painful experiences and to readily discuss her experiences of loss, drug use, and

treatment. She was quite related to the interviewer and her responses were forthright and honest. Throughout the interview, she showed clear indications of an understanding of the complexity of feelings and the ways in which her mental states affect her children. For example, in response to whether she ever feels guilty as a parent, Jennifer replied,

> "When I was doing the drugs..you look back, your kids are doing certain things, is it because when you were drugging. Sometimes I think my guilt smothers Damon, I smother him with trying to love him up so much, and that's out of my guilt and maybe it can be overwhelming to him at times, because I just want him to sit on my lap and I just want to hold him and I just want to kiss him and bite his cheeks. I think it gets on his nerves because he would rather go riding bikes or something."

She demonstrates a sophisticated understanding of the ways in which her guilt from her drug use might cause her to smother her son, who may in turn feel overwhelmed by this. Her capacity to reflect upon the ways in which mental states interact and affect each other on an extremely painful subject, places her in the marked RF range. She often elaborates on her own emotions across many different situations in remarkably complex ways,

> (How has having a child changed you?) "it's like I have two sets of children, 24, 21, and then 8 and 4. They might not have needed me, but I needed them, see, cause if I didn't have Damon my 8 year old, where would that have left me? My oldest son was gone, and then it's just me and my second son, I think I would have been out there, maybe I would have been dead. So, like I said, they might not have needed me, but I needed them, cause I truly believe they saved my life, they keep me focused. They're the reasons I can't go back out there. I'm all my babies have."

Rather than deny the impact her drug use may have had on her capacity to parent her child, Jennifer fills her answers with thoughts and worries about her addiction and the way it almost ruined her life.

> "I thought I had did some damage to Damon, when I was drugging when he was in the womb and I carried an awful lot of guilt, although I can't see nothing physically wrong with him. But like when he can't sit still I wonder if it has anything to do....it's all about the kids now, cause now that I don't drug, it's like you're trying to make up for all this lost time, and now that I'm not drugging anymore I have nothing to do".

When questioned about her own upbringing, she makes references to her own childhood and links her early experiences with her eventual drug use and wish to be a better parent. All these examples are indications of Jennifer's attempts to integrate her own and her child's state of mind, often in ways that feel new and surprising to the reader. While she may have been unable to demonstrate this in the past, Jennifer has clearly developed a stable psychological model of the mind. Even though some of her answers are not in the above average range for RF, the fact that she can repeatedly score in the 7-8 range places her overall RF in this range.

For the first 20 years of being a mother, Jennifer was at great risk for losing her children to the state, and as she herself believes, to losing her own life. Jennifer attributes most of these potential disasters to her cocaine abuse, which co-opted her physical well-being and her psychological state of mind. In her own words, she sold everything she owned for money to buy drugs, "it got to be like a job, getting high". Her capacity to enroll in drug rehabilitation and "take a step back" from the all consuming effects of the drug, allowed her to find the space in her mind for reflection on herself and her children. This is what paved the way for the development of her reflective capacities.

CHAPTER V: DISCUSSION

The overall goal of this study was to examine the impact that prenatal parental cocaine use has upon RF. Three hypotheses were tested. The first hypothesis proposed that cocaine-using women would have lower overall RF scores than would non cocaine-using women. The second hypothesis proposed that cocaine-using women would also have lower individual RF scores on the 15 demand questions asked than would non cocaine-using women. The third hypothesis proposed that cocaine-using women would demonstrate a more restricted below average range of RF scores on individual passages than would non cocaine-using women. In other words, cocaine-using women would respond in more consistently concrete, unelaborated ways, with fewer of the ebbs and flows in RF that usually characterize the struggle to understand different emotions and behaviors.

Hypothesis #1

A t-test confirmed the first hypothesis by showing that the mean overall RF score in the cocaine-using group was significantly different from the mean overall RF score in the non cocaine-using group. Women who used cocaine while pregnant with their child and for a period of time after giving birth scored, on average, almost one point lower on the RF scale than did women who did not use cocaine at all. The scores of women in the cocaine group were clustered around 3 while the scores of women in the control group were clustered around the higher score of 5.

By demonstrating that the overall RF score in the cocaine-exposed group was significantly lower than the overall mean RF score in the control group, two goals were

achieved. First, this finding provides evidence of the previously discussed theories that emphasize links between cocaine use and affect regulation. From a neuropsychological perspective, cocaine impairs those executive functions necessary for RF. In the context of parenting, the capacity for RF is dependent upon the ability to tolerate rapid, moment to moment emotional changes in her child. The parent must be able to maintain some appreciation of her child's internal states even during the many struggles and conflicts that arise with each developing stage in the child. This, in turn, helps guide the parent's response to her child and prevents her from acting on impulse. There is ample neuropsychological evidence to show that cocaine causes impulsive behavior and difficulties in tolerating and regulating affect, which, in turn, may explain the observed difficulties in RF amongst women in the cocaine-using group. The PDI, which asks parents to focus upon and describe many difficult feelings, may feel quite intolerable to a mother who has difficulties in attention and affect regulation. This effect is further amplified by the fact that children exposed to cocaine, who have their own difficulties in affect regulation, are often more irritable and more extreme in their displays of emotion than are children who are not exposed to cocaine. This type of child will feel even more intolerable to the cocaine-using mother. Instead of responding to questions on the PDI in reflective ways, these mothers more often resort to the safety of describing actual behavior or denying the presence of emotion at all.

Psychoanalytic theories discuss cocaine as a substitute for impaired ego capacities such as self-soothing and affect regulation, impairments that originate from inadequate and inconsistent early parenting. The addict substitutes for her weakened ego with drugs, having no early internalized resources upon which to rely. Since RF is dependent upon strong ego

capacities such as affect tolerance, affect regulation, and the capacity to soothe, it explains why cocaine-using mothers exhibit lower RF than non cocaine-using mothers.

From a neurobiological perspective, this finding demonstrates the way in which cocaine co-opts the biological system involving oxytocin which is central to the development of parental behaviors and attachment. In other words, the drug becomes the object of the addict's primary preoccupation instead of her child. The mother exhibits the kind of exclusive like relation with her drug that one expects to see with a child. As a result, the mother finds herself removed from the world of intimate love relationships which is the necessary context for the development of reflective functioning. Asking a parent to reflect on her child's emotional experience is equivalent to asking a parent to immerse herself in the workings of her child's mind. This kind of immersion requires the parent to attain a certain level of intimacy and exclusivity with her child, two features that are pushed aside by cocaine. Again, this helps explain the difference in levels of RF between the two groups of parents.

While this significant difference provides further evidence of an already established link between cocaine and affect regulation, it does so in qualitatively new ways, and thus achieves the second purpose. First, we used a semi-structured, clinical interview to look for differences in an affectively-based measure, namely RF. Most studies of the effects of cocaine exposure on behavior use questionnaires which require self-report and which can often be unreliable and generally less informative than a more open-ended, clinical-type interview. Second, most of the research also tends to use more cognitively-based outcome measures to assess the impact of cocaine on behavior, as opposed to RF which focuses upon the adult's capacity to regulate affect and understand emotionally-laden situations. That is not to say that RF does not have strong cognitive roots – Mary Main's concept of metacognitive monitoring is closely related to RF.

However, its emphasis is on affect regulation and affective responses. Third, this study uses this more affectively-based approach solely in the context of parenting, allowing for an exploration of the effect cocaine has upon a parent's understanding of emotion in her developing relationship with her child.

Hypothesis #2

An analysis of mean differences in RF on individual questions asked produced a trend that was to be expected in confirmation of the hypothesis that cocaine negatively impacts RF. Cocaine-using mothers were always lower on their mean RF scores on all questions asked than were non cocaine-using mothers. The fact that these differences did not reach significance meant that the differences on an item by item level were too small. When used together to produce an overall RF score, however, this trend was amplified to produce an overall difference which was significant.

The one significant difference that emerged at the item by item level might have been a random occurrence but is still interesting in and of itself. When asked to describe a routine separation and how their child feels about this, non cocaine-using women scored significantly higher on RF than did cocaine-using women. The concept of separation is central to the theory of attachment. The way in which children behave when separated and then reunited with their parents determines their attachment classification. In other words, separation events are emotionally loaded enough to distinguish between securely and insecurely attached children. In this sample of women, the topic of simple routine separations evoked particularly powerful memories of actual year-long separations from their children while they were in drug rehabilitation or as yet unrealized fears of losing their children if their drug use was disclosed.

The literature discusses how RF, similar to security of attachment, comes under test in more emotionally laden situations, and can be quite protective if it is strong enough to withstand the test of trauma. The fact that the drug-using women were significantly lower in RF than the control women in the arena of separation suggests that, on average, levels of RF could not be maintained during this particularly evocative parenting situation.

Thus far, these findings illustrate that cocaine-use differentiates the women in this sample with regards to overall RF on the PDI. This finding must be interpreted with caution since the significant difference in overall RF levels between the two groups did not extend to the smaller differences seen in individual RF scores between groups. The numbers tested in this study were small which emphasizes the need for caution. With these cautionary statements in mind, the results suggested that women who used cocaine had lower overall RF scores than women who did not use cocaine. In this sample, the scores of women in the exposed group clustered around the below average score of 3 while scores of women in the control group clustered around the average score of 5. In other words, even in the average to low average range of reflectiveness, cocaine was still a differentiating factor between these groups.

Hypothesis #3

The third hypothesis tested was not confirmed. A Levene's test for Equality of Variances on each individual question did not produce a significant difference between groups. In other words, cocaine-using women did not show a more restricted range of individual passage scores clustered around the lower end of the RF scale than did non cocaine-using women. A parent's overall RF score is influenced by her ability to produce even occasional responses which merit higher scores, even while some of her other scores may be in the average to low average range.

Her ebbs and flows in RF across her interview are indicative of her capacity to struggle with her feelings and her attempts to make some sense of them. She demonstrates a capacity to reach into higher reflective domains even while she cannot always maintain these levels. One might have expected to see more of these struggles in non cocaine-using women who are better able to tolerate the struggle over difficult feelings than are cocaine-using women. However, these differences were not large enough or frequent enough to reach significance.

Discussion of demographic variables: A multiple pathway model

Demographically, the two groups in this sample differed from each other in several important ways. Cocaine-using women were significantly older than women in the control group, and had significantly larger families than did women in the control group. The cocaine-using women were also more likely to be single and depressed, although these differences were not significant. In other words, these risk factors may have led women to their cocaine use or conversely, their drug use may have led them increased depression, to an increased number of pregnancies, and to unstable relationships. In this way, their drug use can be seen as a summary factor of their social structure. If this is the case, then RF should be influenced by a variety of environmental factors as well as by the presence of cocaine itself. However, there were no significant correlations between these demographic factors and RF, suggesting that these variables, as measured in this study, were not directly contributing to the observed differences in RF.

Two conclusions can be drawn. First, it confirms that cocaine use, as opposed to other risk factors, is the significant variable influencing outcome in this study. Indeed, when

controlling for other risk factors, the difference in overall RF between groups remained significant.

Second, while the results suggest that these demographic factors, as measured in this study, are functionally irrelevant to the outcome, it does not imply that contextual variables in general are irrelevant. In fact, it would be shortsighted to propose a model of RF that attributes sole importance to cocaine abuse, without considering external life circumstances that co-exist with cocaine-use and likely influence RF. Mayes & Truman (in press) highlight the primary problem in many studies of substance abuse as adopting definitions that are categorical and do not readily permit consideration of interactions among the multiple factors contributing to an adult's substance abuse. Furthermore, it is well now well documented that an addict's behavior in different realms of her life including the realm of parenting, is a function of specific psychological and environmental factors that co-occur with the substance abuse.

Perhaps one of the most important limitations of this study is the way in which factors outside of cocaine were measured. Some of the measurements used provided a range that was too restricted to correlate with outcome. For example, the categorical measure of depression may have failed to capture the variability in the levels of depression amongst this high risk sample of women. It is hard to imagine that comorbid psychopathology, such as depression, is not an important factor for the development of RF. Furthermore, research has shown that the nature and type of psychiatric impairments may have profound effects on both the individual's choice of drug and on their ability to stop the substance abuse. Cocaine is a stimulant which increases activity and contributes to a sense of euphoria. Some cocaine addicts may be using this drug with the intention to medicate underlying feelings of depression or other pre-existing conditions. The capacity for this drug-using individual to tolerate affect and her child's

aggression may be qualitatively different from that of another drug-using parent who does not have these genetic predispositions. Hence, a genetic component is also introduced as playing a role in the impact of the drug on parenting abilities, such as RF, and child outcome.

In addition, this study did not adequately measure levels of maternal education and verbal IQ, two maternal factors that likely play a significant role in the capacity to describe emotions using the type of reflective language that earn higher scores. This is the first time that RF has been used with a high-risk sample of women. Performance along this scale is dependent upon certain linguistic capabilities. The mother is asked to describe feeling states and the ways in which she impacts her child. The more detailed her descriptions of these interactions of feelings, the higher her RF score. Many of these women were not provided with the type of education both at home or at school that facilitates the development of the emotional awareness and verbal skills necessary for RF. This cultural bias should be accounted for in future studies of RF with high-risk samples, both by obtaining a measure of verbal IQ in all subjects and by finding a way to measure the parent's emotional response to her child which may be present even while she cannot verbally express that response. On several occasions, the mother was able to convey to the interviewer a genuine love for her child and joy at watching him grow and develop in her tone of voice, facial expression, and even brief descriptions of positive experiences. These mothers tried to describe their feelings of pride for both the healthy development of their child but also for their own parenting accomplishments. One could easily imagine these mothers behaving empathically with their child, suggesting a certain level of reflective awareness without being able to as fully express this verbally.

With this in mind, the model proposed by Mayes & Truman is applicable to this study. They propose a model that is constructed from multiple factors including genetic predispositions,

parental dispositional qualities, the effect of drug use on parental sensitivity and responsiveness to her child, the effects of the substance on fetal development and child temperament, and the parent's social context which includes levels of chaos, violence, parental absence due to incarceration, etc. This study highlights the importance of including additional measures of verbal IQ, intelligence, educational level, social support, and as much information as can be obtained on the types and frequency of substances used. This information is often difficult to obtain as it relies mostly on parental report, which is often inaccurate. The model must specify what types of deficits in parenting occur as a function of the substance abuse and what impairments in parenting are not directly related to substance abuse, but rather to some of the other factors associated with addiction.

In this study, the parenting measure is RF. RF is dependent upon the capacity to tolerate and modulate levels of arousal. This study has shown that deficits in RF are partly related to the presence of cocaine, which alters the parent's capacity to tolerate a range of affect in themselves and in their children. The child's exposure to cocaine similarly impairs their ability to self-soothe and modulate levels of arousal, making them more difficult to parent. For example, as the child becomes over-stimulated, the cocaine-using parent is unable to reflect upon her child's state, understand it, and respond by limiting further stimulation till the child's level of arousal is decreased. The child fails to learn and internalize modes of arousal regulation from his parent, making him prone to arousal problems later in life.

There are multiple other factors that contribute to this impairment in RF that are perhaps less well measured in this study but nonetheless critical to the construction of this model. The mother's genetic makeup, predisposition to psychopathology, presence of actual

psychopathology, and social context are all factors that determine her choice of cocaine as her drug and the way in which cocaine interacts with these factors to produce the impairment in RF. Hence, individuals at risk for significant problems in arousal regulation by virtue of their psychopathology are further compromised, in that they use cocaine to stimulate arousal and help them to regulate levels of anxiety. This overstimulation then elicits further drug use which causes environmental instability and increased stressors over time. Levels of arousal and anxiety become even more unmanageable alone. The more anxious and hyperaroused she feels, the less able she is to take a step back and reflect upon her own and her child's underlying emotions. This type of model does justice to the notion of RF as a complex, multi-layered construct that is influenced in multiple different ways. Future studies of RF and cocaine should include more detailed measurements of all these factors, as well as a larger number of subjects. This would allow for smaller groupings of women and therefore a more accurate exploration of the effects of these multiple pathways upon the impairment observed.

RF in a high-risk sample: Clinical implications

The study of RF in a cocaine-using, high-risk population has exposed several important clinical phenomena that require discussion. This section will address three different issues from a more clinical standpoint. First, it will discuss the cluster of low RF scores amongst this high-risk group of women through a more clinical lens. In other words, are there psychological/personal motivations behind this pattern of scores that can help us understand them? Second, it will examine the pattern of RF scores that emerged amongst women who entered drug treatment from a clinical viewpoint and discuss the implications of drug treatment

for RF. The third part of this section will raise questions regarding the importance of RF for the parenting of a child and therefore for positive child outcome. In other words, what is the relationship between RF and child outcome and what are the clinical implications of this relationship?

(a) Clusters of low RF scores: Psychological explanations

The differences in RF observed in this sample were in the average to low average range of reflectiveness. Many women tended to obtain scores in the lower end of the scale, indicating a below average capacity for RF. There are several clinical factors associated with this sample that can help explain this trend.

This sample was one of very high-risk mothers, many of whom are struggling to overcome the burdens of single parenthood and poverty. For many of these parents, the struggle to survive and feed their large families consumes much of their energy and leaves little space to engage in the kind of reflection that is encouraged by the PDI. In some cases, it is even adaptive to block out the affect. Many of these mothers cannot afford to focus on emotional states for fear that it will impede upon their struggle to provide for the basic needs of their families.

Additionally, for mothers who have suffered trauma, the notion of trying to discover the contents of the mind is extremely frightening and may therefore also be more adaptive to distance oneself from such discoveries. While this study did not obtain a measure of the incidence of trauma, it is well documented that women from these high-risk groups often experience physical or sexual abuse as well as the cumulative trauma that often comes with poverty and split family units. Many women spontaneously described or alluded to traumatic events in their lives during the interview prompting the assumption that this was a trauma-filled

group as well as a high-risk group. The idea that trauma victims develop the need to avoid discovering the contents of the mind was first proposed by Fonagy et al (1995). He observed the way in which borderline individuals who had been sexually abused coped by refusing to conceive of the contents of their caregiver's mind and thus successfully avoided having to think about their caregiver's wish to harm them. While this avoidance can be psychologically beneficial for the individual, it also causes a continued defensive disruption of his/her own reflective processes in all subsequent intimate relationships.

This cycle of inhibition of reflective functions can be applied to the victims of physical and emotional trauma in this sample. Their need to defend against the intensity of their negative emotional experiences continues to dominate their approach to affect when they become parents, leading to an emotional withdrawal from their child and general lack of understanding of their own and their child's emotional experience. In the language of RF, these mothers are unable to focus upon emotional experiences and reflect on them which consequently keeps them at the lower end of the RF scale. Indeed, their responses tended to be filled with descriptions of behavior and struggles of day-to-day life rather than emotion. These mothers tended to shut down any capacity for emotional understanding that they may have had so as to defend against the emotional chaos within them. For women who also used cocaine, this emotional disequilibrium was worsened by their impairment in affect regulation. The responses of these highly defended women were filled with short, simplistic answers in an effort to avoid the real content of the question and they appeared reticent and withdrawn.

This was in contrast to another group of women for whom the lack of reflective language

was simply due to an absent or very limited capacity to reflect on affect. Their responses tended to be more wordy and filled with descriptions of life struggles and even experiences of trauma, but were striking for their absence of a capacity to reflect on these experiences.

(b) Drug treatment and RF

While the numbers in this study were much too small to make any conclusive statement about drug treatment a small trend was observed that is worth noting. Scores in the 5-7 RF range were only reached by women who had successfully completed drug treatment programs. Seven women in the cocaine-exposed group chose to disclose their successful and recently completed drug treatment during the course of the interview. This disclosure occurred either at the start of the interview suggesting that the mother perceived her rehabilitation as the most influential aspect in her forming a relationship with her child, or in the middle of the interview in response to questions of guilt and anger, or near the end when asked about separations from her children. Descriptively, the timing of this disclosure was important in determining the levels of reflection the parent was likely to reach. The mother who immediately disclosed her drug and treatment status continually referred to her traumatic separation from her children and to her painful recovery throughout the interview, finding many opportunities to reflect at relatively high levels. This mother was also most likely to compare her parenting styles pre- and post-treatment. The mother who disclosed her drug status at the end of the interview was notable for her capacity to respond to many emotionally evocative questions before her disclosure without referring to this significant event. She was likely spending much of her energy repressing memories of her rehabilitation up until her disclosure.

At any rate, the fact that women who are able to disclose and freely discuss this trauma of separation and rehabilitation score in the higher reflective range, is consistent with Fonagy et al's (1995) theory of RF as a protective mechanism. According to this theory, RF becomes particularly important when the individual is exposed to trauma. The capacity to reflect on the trauma, which in these cases is drug-abuse and separations from their children, serves a protective, resilience-enhancing function. These mothers have developed the capacity to conceive of mental states and may have used this protective mechanism over the course of their difficult experiences to conceive of different motivations for their actions and a range of associated feelings. One could also argue that it is the presence of this resilience-enhancing RF that encourages these women to seek drug treatment in the first place. Their higher baseline RF removes some of the fear associated with the self-reflection that characterizes their months in drug treatment and is necessary for their capacity to remain clean.

The parents who had been in drug treatment were not surprised by the issues raised in the PDI. The questions asked closely parallel the many questions asked and issues covered by their therapists while in treatment. All parents who are separated from their children while in treatment must attend a mandatory parenting group and demonstrate the capacity to provide for the emotional and physical needs of their children. Both individual and maternal RF are an important focus of drug treatment and very much enhanced during these months. Descriptively, the fact that the higher RF scores were achieved by women who had completed drug treatment tentatively speaks to the beneficial effects of treatment and the fact that it may even overcome some of the negative consequences of cocaine-use on RF. This suggests that it may be important to include measures of maternal RF pre- and post-treatment to obtain a better understanding of the relationship between drug treatment and RF.

(c) Relationship between RF and child outcome – clinical implications

An important question related to the development of RF is, what are the implications of RF for ones capacity to parent a child and hence for child outcome. In other words, how predictive of child outcome is RF? This question is important in helping the clinician determine how much emphasis to place upon the enhancement of maternal RF in a parenting/family-focused treatment. From a theoretical standpoint, RF easily establishes itself as a critical mediator between parental behavior and child outcome. A parent who uses RF in her parenting of her child is emotionally self-aware, attuned to her child's behaviors and emotional needs, and uses her reflections to respond sensitively to her child. These capacities are reminiscent of several well-established concepts in the parenting literature such as the holding environment and primary maternal preoccupation (Winnicott, 1958), sensitive responsiveness (Bowlby, 1973), and emotional availability (Mahler, 1975). Fonagy et al (1995) elaborates upon the way in which RF is important for security of attachment and the development of RF in the child. If a mother is able to accurately picture her child's mental states and convey this to him, the child is, in turn, able to internalize this idea of himself as a mentalizing, believing person. In order to manage affect for her child and help him contain it, the mother must first be able to address and manage affect within herself. If the mother is defended against the presence of her own feelings, she will transmit this to her child who will adopt these defensive mechanisms to protect himself from a caregiver who cannot tolerate his emotional states.

Attachment researchers have only just begun to provide empirical validation for the theoretical notion that RF is critical for parenting and positive child outcome. Slade et al (2001) have tested the idea that RF acts as a mediating variable between adult and child attachment and found that the mother's capacity to reflect on her child's internal affective experience predicts

strongly to the quality of her infant's attachment organization. In other words, RF will mediate the impact of the mother's attachment classification on the child's security of attachment providing an explanation for previous findings of insecure mothers who have secure children and vice-versa. Furthermore, Grienenberger (2001) found that maternal RF acted as a buffer against the emergence of negative feelings in times of infant distress. In other words, those mothers who were able to openly reflect on their child's affect and intentions, would be better equipped to handle infant vulnerability without becoming overwhelmed by their own unintegrated fear or hostility. The capacity for RF is therefore closely related to actual caregiving behavior which determines child outcome. In this high-risk sample, one can imagine RF as buffering the intense negative feelings that are ignited when parenting a child under extremely difficult circumstances, helping the mother to self-regulate and respond calmly to her child's distress. It would make sense to assume that the role of RF as a regulator of affect would potentially mediate the negative impact that cocaine has upon the parent's response to their own and their child's distress.

These findings are extremely important in clarifying the critical role RF plays in mediating the impact of maternal representations and behaviors upon child outcome. This has strong clinical implications. It suggests to clinicians to make the enhancement of maternal RF an important focus in parent work. Parents should be helped to reflect upon difficult experiences in emotional terms, and to develop an understanding of their child as equipped with a rich, emotional inner world. More importantly, emphasis should be placed on the affective exchanges that occur in the actual parent-child relationship so that the parent can develop an understanding of the ways in which she and her child impact each other.

RF has begun to show itself as a complex construct that may be extremely useful in quantifying the often more obscure emotional nuances that exist in the parent-child relationship and that are so critical for healthy emotional development in the child. This study further introduces the idea that the usefulness of RF extends itself to very high-risk samples and helps us explore the often ignored emotional aspect of parenting in this population that co-exists with their daily life struggles. In other words, even with all the chaos and trauma surrounding these women it is important on both a theoretical and clinical level to explore the quality of their emotional awareness that likely mediates the impact of their struggles on their relationship with their child. This study has begun this exploratory journey to both make some early conclusions about cocaine and RF but also to highlight the gaps that have yet to be filled and the challenges that lie ahead.

Table 1: Demographic Characteristics (N = 46)

Variable	N of Cocaine	N of Control	Total
Gender of Child			
Male	7	11	18
Female	16	12	28
Birth Order of Child			
Firstborn	1	5	6
Second/third	9	13	22
Fourth/fifth	9	5	14
Sixth/seventh/eighth	4	0	4
Total Number of Children			
One	0	4	4
Two/Three	9	9	18
Four/Five	6	10	16
Six/ Seven/Eight	8	0	8
Relationship Status			
Married/living with partner	12	15	27
Partner, but lives alone	0	1	1
Single	11	7	18
Race			
Caucasian	2	9	11
African-American	20	12	32
Other (i.e., Hispanic)	1	2	3
Maternal Education			
High school or less	19	17	36
Some college/vocational school	4	5	9
College degree	0	1	1
	PSI Score		
Above 90	10 (range:105-145)	13 (range: 92-168)	23
Below 90	2 (range: 79-83)	2 (range: 82-88)	4
	(n=12)	(n=15)	(n=27)
SCID Score			
Depressed	13	10	23
Non Depressed	5	12	17
	(n=18)	(n=22)	40

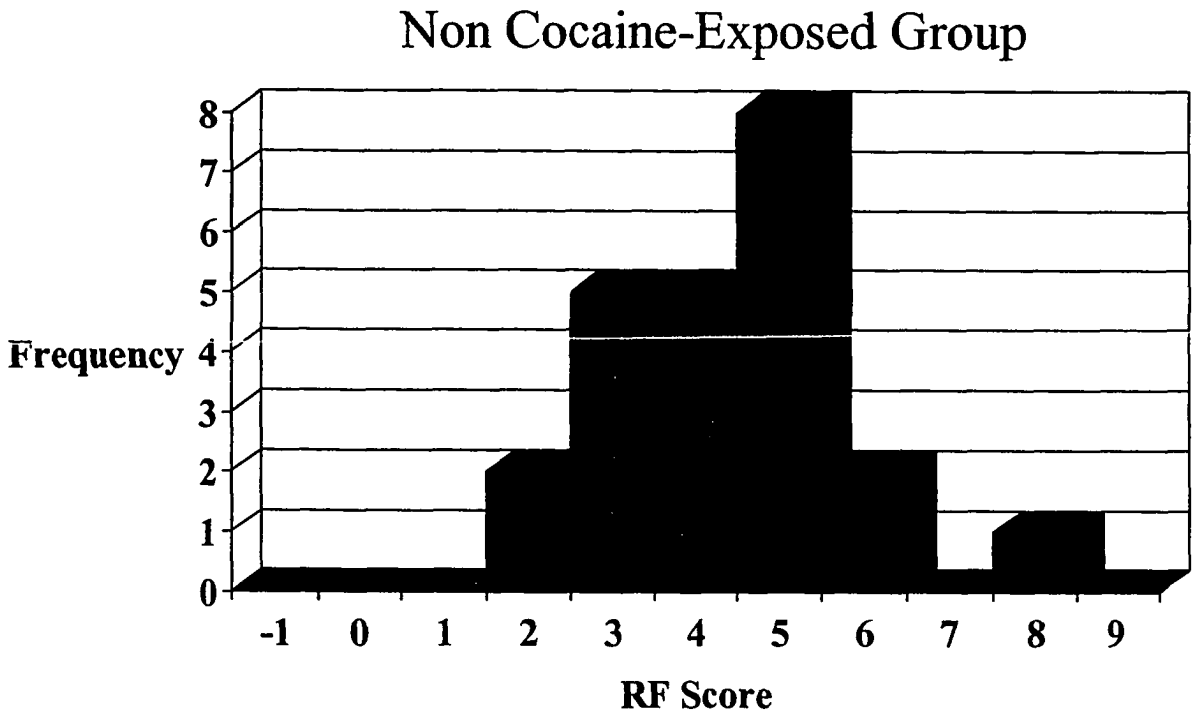
Table 1 (continued)

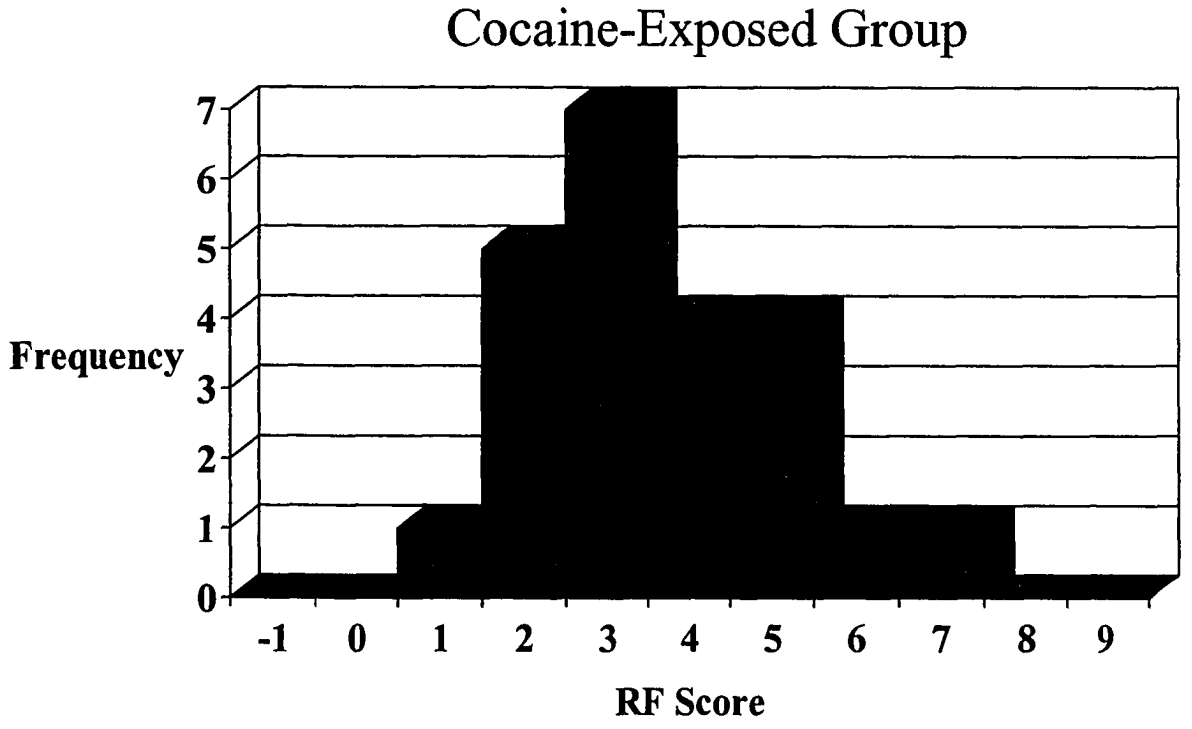
	N	Range	Mean	SD
Maternal Age at Visit (years)	46	23-47	33.8	5.94
Child Age at Visit (months)	46	47-102	63.67	17.28

Table 2: Analysis of demographic differences

	Cocaine: Mean/SD	Control: Mean/SD	Value	Significance
Maternal Age (years)	36.17/5.24	31.43/5.75	t(44)=-2.922	P=.005
No. of Children	4.3/1.87	2.96/1.22	t(44)=-2.893	P=.006
Married **Single**	12 11	15 8	x(1)=.807	P=.275
Depressed **Not Depressed**	13 5	10 12	x(1)=2.903	P=.083

Graph 1: Distribution of Overall RF Scores





Appendix A: Consent Form

CONSENT FOR PARTICIPATION IN ADDITIONAL PARENT INTERVIEW AS PART OF ONGOING "INFANT FOLLOW-UP PROJECT"

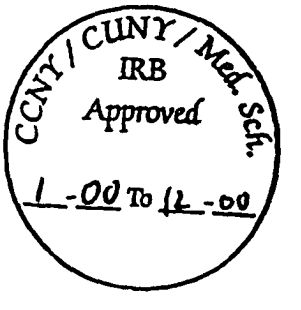
INVITATION TO PARTICIPATE AND DESCRIPTION OF INTERVIEW

For the past few years, you and your child have participated in the infant follow-up project, a follow-up study of infant and young child development. You have brought your child to the Child Study Center for ongoing evaluations so that we could study the general developmental patterns of all children. We would now like to invite you to participate in a parent interview as part of our ongoing research here. We are interested in learning about the joys and the difficulties of parenting a young child, and how your own parents have influenced the way in which you raise your child. We recognize that all parents experience difficulties as well as joys in the raising of their child. While some parents may feel worried or anxious about discussing the difficulties they have experienced, other parents may feel glad at this opportunity to openly discuss their experiences. Importantly, you have the right to reject questions that you do not wish to answer at that moment.

Your participation in this part of the project involves one extra visit to the Child Study Center. Unlike your other visits here, this visit does not require you to bring your child. You will meet with one of the staff of the infant follow-up project for about two hours. During this time, you will be asked to describe your child in several different ways, to talk about your experience of being a parent, and to discuss what may have influenced your parenting experience. We will be audio-taping the interview. The tapes will be marked only with code numbers and, when transcribed, all names and other identifying information will be removed. The tapes and any other information collected during this visit are completely confidential and will be available only to investigators working in the study.

As always, we will pay for your transportation to and from the Center, or pay for your parking. Furthermore, you will be paid $25 for your time. In keeping with your other visits here, you will be seen promptly for your appointment with us and will not have to wait more than a few minutes. Finally, you may at any time during or after this visit decide not to participate simply by letting us know. You may also ask us to erase any of the audio tapes we have collected from the interviewing.

We greatly appreciate your ongoing help with our study. If you have any further questions about your involvement in this part of the study you may contact Dahlia Levy, M.A. at 203-737-4117 or Linda C. Mayes, M.D. (principal investigator) at 203-785-7211.



Authorization: I have read this form and decided that I will participate in the project described above. Its general purposes, the particulars of involvement and possible hazards and inconveniences have been explained to my satisfaction.

Signature: _____

Date: _____

Signature of person obtaining consent: _____

Appendix B: The Parent Development Interview

J. Lawrence Aber
Arietta Slade
Brenda Bresgi
Ivan Bresgi
Merryle Kaplan

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Background information

I know that you have (names of other children). Is (child) older/younger?
When I ask you questions about your child and experience of parenting, I want you to focus on this child, even though you have other children. You may want to refer to your other children, but only do so if it relates to your description of this child.

View of the Child

Could you describe James to me?

In an average day, what would you describe as his most favorite moments?

What would you say are his least favorite moments?

What do you like most about James?

What do you like least about him?

Parents often notice similarities and differences between themselves and their children. So how do you think that James is both like and unlike you?

How is he like and unlike his father?

View of the Relationship

I'd like you to choose five adjectives that you feel describe the ways in which you and James get along. And I'm going to write them down.

Now I'm going to through these and ask you to tell me why you chose those adjectives. So starting with ___ why did you choose that? (etc)

Can you describe to me a time in the last week when you and James really clicked?
Anything specific come to mind?
How did you feel while this was happening?
What do you think he was feeling while this was happening?

Can you describe a time in the last week when you and James were not really clicking?
How did you feel during this?
How do you think James was feeling during this?

How do you think James' relationship with you is affecting his development or personality?

Affective experience of Parenting

Can you describe yourself as a parent?

What gives you the most joy in being a parent?

What gives you the most pain or difficulty in being a parent?

When you worry about James, what do you find yourself worrying about most?

How has having a child changed you?

Do you ever feel needy as a parent?
(If yes) what kind of needy feelings?
How do you think these feelings affect James?

Do you ever feel guilty as a parent?
(If yes) what kind of guilty feelings?
How do you think these feelings affect James?

Do you ever feel really angry?
(If yes) How do you handle those angry feelings?
What kind of effect do you think those angry feelings have James?

When he's upset, what does he do?
How does it make you feel?
What do you do when he gets upset?

What is it like for you when James refuses to do what you ask him to do or when he deliberately provokes you?

Can you describe a time in the last week when James was being especially aggressive either toward you or a toy, or to himself?
How did that make you feel?
How did you handle it?

Do you think James ever feels rejected?

Now I'm going to shift gears a little, and ask you about your own parent.
How do you want to be like and unlike your mother as a parent?

What about your father?

How are you like and unlike your mother as a parent?

How do you feel like and unlike your father as a parent?

Separations

Now I'm going to ask you about routine separations, when James is left with someone familiar for a usual amount of time.

Can you describe a routine separation.

What is this routine separations like for him?
What do you think he feels when you leave and when you return?

What is this routine separation like for you?

Can you think back and try and recall the first time you left him?
What was this like for him?
What was this like for you?

Was there a time in your child's life when separations were most difficult for you and for him?
What was this like for him?
What was this like for you?

What's the longest time you ever left him for?
How did he feel about this separation?
How did you feel about the separation?
When you returned, what was he like?

Has there ever been a time in James' life when you felt you were losing him just a little bit?
What did that feel like for you?

Conclusion

Is there anyone important to you who James doesn't know but who you wish he was close to?

Finally let's talk a little bit about your overall experience of parenting your child. Your child is already (age). He/she is no longer a baby and, by now you're an experienced parent. If

you had the experience to do all over again, would you do it about the same or somewhat differently.

When you look back on the past four years, are there any important events that you can think of that may have influenced the way you think about being a parent.

Additional Questions

Is the child's father present?
If yes: How present is he? Has he always been present? Does he live with them/does he live outside of the home but visits regularly.
If no: Has he always been absent? What is the nature of his absence?

Are there other people who help you take care of (child)? On average, how much time are you taking care of him and how much time do your (other caretakers) take care of him?

Appendix C: Description of Reflective Functioning Codes

reproduced from
Addendum to Reflective Functioning Scoring Manual
(Fonagy, Steele, Steele, & Target, 1998)

For use with the Parent Development Interview
(Aber, Slade, Berger, Bresgi, & Kaplan

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May 2001

We are most grateful to Mary Target and Peter Fonagy for the many ways in which they helped in the process of preparing this manual

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-1 Negative RF

A response that receives a score of '–1' must have the following features:

1. It must be distinctively anti-reflective (i.e., hostile or actively evasive, usually because the question is perceived as an assault or attack).
2. It must be bizarre (impossible to understand without making the assumption of irrationality on the part of the subject).
3. It must be inappropriate in the context of the interview (i.e., complete non-sequiturs, over-familiarity, or gross assumptions about the interviewer).

The following responses would score a '–1':

"He's just a baby so how could we possibly be alike? You've met him. I don't see how you could possibly ask me that question."

"When she gets like that it's like the devil's in her. She gets that glint in her eye and tries to control me. She's just out to get me so I must do everything I can to squash away this evil in her."

1 Absent but not repudiated RF

A response that receives a score of '1' must have the following features:

1. It must be passively rather than actively evasive.
2. It must be accompanied by little or no hostility.
3. It must contain no evidence of an awareness of mental states; an explicit effort to tease out mental states underlying behavior; a recognition of the developmental aspects of mental states; or an awareness of the interviewer's mental states.
4. The interviewer must be no better off in terms of the knowledge of the mental state of the subject after having read the response, than he or she was before reading it.

A '1' response may also include concrete explanations of behavior which serve to avoid references to mental states (i.e. explanations may be sociological, excessively general, or framed in terms of external, physical circumstances). Responses may contain self-serving distortions (recollections which are highly egocentric, self-aggrandizing or extraordinarily arrogant claims to insight).

The following responses are examples of a '1':

"(What do you like most about your child?) It's nice being around him and to watch him do things and see him learn."

"I never feel guilty as a parent."

2 Rating

"For her, when the stroller comes out, it means we're going outside."

"(How is your relationship affecting his personality?) He's taking on a lot of qualities and adjusting to a lot of things that he is forced to adjust to because of our lifestyles. He's a well traveled baby. I think it's making him a very outgoing person."

The above examples are not considered 'negative RF' since they do contain a vague reference to mental state, but these references are too limited and inexplicit to be considered 'questionable or low RF'. A score of '2' is therefore assigned.

3 Questionable or low RF

For a response to receive a score a '3' it must:

1. Contain some suggestion of mentalizing efforts on the part of the subject.
2. Be devoid of any element that makes reflective functioning explicit (e.g., it never reflects mixed emotions, conflict or uncertainty about beliefs and feelings of others).

The response may frequently make use of mental state language such as "happy", "sad", "loved", or "secure" without making clear or explicit that the subject genuinely understands the implication of their statement (e.g., the parent fails to elaborate upon these statements), may appear somewhat cliched, banal, superficial, or 'canned', or may be excessively deep and detailed yet unconvincing and/or irrelevant to the task.

The following responses are examples of a '3':

"Well, I think our relationship is helping her develop in the way she's supposed to be, because of the stimulation and the way I interact with her. So far her personality is pretty even, a pretty good personality so far I'd say for a baby....well just that it's good that I'm able to be home with her and not have to work right now...I'm good for her, I should say, I guess".

"When I'm around he wants me and not her and it's a crying situation".

"Well, I must be doing something right because he's a great child".

4 Rating

"I'm a calm parent, which is I think where she gets her disposition, and so is my husband, we're very calm, and I think that's why she is."

"She's very expressive in nonverbal ways. You can tell the difference between happy sounds and angry sounds. There are a lot of things she does physically to communicate what she needs. She can point to things or if she's tired, she'll rub her eyes."

In the above examples, mental state language is used in a slightly more sophisticated manner than in a response that would be considered 'questionable or low RF' but they are not elaborated or convincing enough to be 'definite or ordinary RF'. A score of '4' is therefore assigned.

5 Definite or ordinary RF

For a response to receive a score of '5', it must:

1. Contain some element which makes reflection explicit (e.g., explicit reference to the nature or properties of mental states - how mental states relate to behavior, or mental states in relation to the interviewer.)
2. Not be a cliché. This does not imply that the response need be sophisticated.

The following responses would be given a score of '5':

"I think she gets bored sometimes when she is confined, and when she decides she wants out, she gets really unhappy."

"He was very upset, and I could tell he didn't understand why I wouldn't take him back from the babysitter."

"A couple of times in the middle of the night when he's had a bad bout with teething and he wants to nurse a lot, he puts his little fingers in my mouth and he, I feel so guilty because all I want to do is just snap those little fingers up with my teeth, takes every ounce of control I have not to bite those little annoying fingers." While this answer is quite disturbing, it still qualifies for a score of '5'.

6 Rating

" I can sense that he wants to get up, and then I will pull him up by his hands, and then he laughs, he thinks that's great fun. I think he feels very trusting for one thing, that I'm not going to let him go."

"She's going through a phase where she wants me to hold her, but I don't want to hold her when she is whining. So we weren't clicking because she wasn't responding to me and wasn't calming down, and she was probably getting more frustrated because she was wondering why mommy wasn't holding her."

The above responses contain reflective statements that are more explicit and elaborated than responses considered 'definite or ordinary RF', but they do not meet criteria for 'marked RF'. A score of '6' is therefore assigned.

7 Marked RF

In order to be given a score of '7' a response must contain some feature which makes reflection explicit (i.e. explicit reference to the nature or properties of mental states, how mental states relate to behavior, or mental states in relation to the interviewer.) In addition, a response must meet at least one of the following six criteria:

1. The passage is sophisticated (it must contain at least two indices of mentalization as listed in Section II, pages 3-8).
2. It is unusual or surprising, casting an original perspective (which is nonetheless readily understandable).
3. It is complex or elaborate, described in unusual detail with indication that multiple mental states attributed to a person are considered in relation to one another.
4. The response places mental states within a causal sequence. The respondent considers how the mental states arose, how they influenced behavior and what impact they have on subsequent perceptions, beliefs, and desires.
5. The response provides evidence of an interactional perspective (outlining interactions of mental states between two people , usually parent and child, or within one person's mind).
6. When the response contains an acknowledgment of a particularly painful situation, appropriate thoughts and feelings are described.

The following responses would merit a '7':

"Sometimes when she does something that she knows I'll think is funny, she'll look at me and really smile or laugh. Then I laugh with her and I know that she knows she's done something to get us playing and that makes me feel good."

"I feel really happy when she smiles and laughs. Oh! And when she runs to greet me when I walk in the door after work. I pick her up and she gets all excited, which makes me melt, and she waves her arms around. I think moments like that make her feel loved and secure.

8 Rating

"It's amazing to me how much this new genetic combination creates a completely third person. Her feelings of being loved and cared about and feeling secure give her a foundation to do the kind of exploring that she does; she knows that she has a sort of comfort place in the world. So I think my role is to help her feel that way."

"Well, there are sometimes when...no, actually a better example would be last weekend. She began teething and nothing seemed to make her feel comfortable or happy. She didn't' want to be held, and she didn't want to play, and she really didn't want to do much

of anything. I couldn't figure out what to do to make her feel better. It really affected all of us, and we were exhausted and depressed by the end of the day."

The above responses meet all the criteria for 'marked RF' and just one of the two criteria for 'full or exceptional RF'. A score of '8' is therefore assigned.

9 Full or Exceptional RF

In order to be given a score a '9' a response must:

1. Show the above features of a '7' to an unusually high degree (this response would be in the top 10% or less) *or* the response must be given for a particularly charged and emotionally difficult subject in which maintaining even ordinary levels of reflective functioning could be considered exceptional.
2. Have a strikingly personal character, enabling the rater to feel confident that it is experienced as personally significant and meaningful. Responses that are given a '9' frequently demonstrate full awareness of important aspects of all protagonists within an interaction. The protagonists are placed in relation to one another in terms of their feelings and beliefs and these are sufficiently complex and elaborate to convince the rater of their accuracy.

Examples of a '9' response are given below:

"Oh, I feel guilty all the time, and my ways of handling it are not always so productive. I feel really guilty for leaving her and going to work and I think about it a lot during the day when I'm gone. It makes me feel terrible, and I think my guilt has a big impact on her. In a vague way, I think it makes her uncomfortable. I think sometimes I need her more than she needs me. I need her to be attentive when we're together, and I think sometimes I force her to do things in this concentrated time we have, and she may feel that she's getting sort of pushed,"

"Sometimes she gets frustrated and angry in ways that I'm not sure I understand. She points to one thing and I hand it to her, but it turns out that's not really what she wanted. It feels very confusing to me when I'm not sure how she's feeling, especially when she's upset. Sometimes she'll want to do something and I won't let her because it's dangerous so she'll get angry. I may try to pick her up and she obviously didn't want to be picked up because she's in the middle of being angry and I interrupted her. In those moments it's me who has the need to pick her up and make her feel better, so I'll put her back down."

"When he was sick, he was waking up at night so in order to get him to stop waking up we had to let him cry. I can't stand it. I mean I'm sure that he'll never love me again and that he hates me and that I'm the meanest person in the world and that he can't believe I can't hear him. I mean we don't let him cry ordinarily. During the day we would always try and pick him up, try to figure out what's wrong, or soothe him. So it's definitely the only time of betrayal. I know that he always likes me in the morning so he's not holding this against me. But my feeling is that he must be so angry and so upset and not understanding because it's so unlike us."

Summary: Rating Passages

In order to clarify scoring criteria, a single response will be traced from a '3' to a '9':

Score of 3: He's happy.

Score of 4: He's happy because I'm happy.

Score of 5: He's happy because he pulled himself up in his crib for the first time.

Score of 6: He's happy because he pulled himself up in his crib for the first time, which made me feel very happy and proud.

Score of 7: He's happy because he pulled himself up in his crib for the first time, and I was watching, and I think he could see my face and sense how proud and happy he made me which made him feel even happier. Knowing that he felt so good about what he accomplished made me feel overjoyed.

Score of 8: Sometimes I feel like we're really connected, like he can tell what I'm feeling and that affects how he's feeling. Oh, I know! The other day he pulled himself up in his crib for the first time, and he looked so proud and happy which made me feel proud and happy. And I think watching my reaction really intensified his experience and made him feel even happier.

Score of 9: Sometimes I feel like we're really connected, like he can tell what I'm feeling and that affects how he's feeling. Oh, I know! The other day he pulled himself up in his crib for the first time, and he looked so proud and happy which made me feel proud and happy. And I think watching my reaction really intensified his experience and made him feel even happier. Even though I know I can't really tell what he's thinking, I just have this sense that my feelings have a real impact on him, which can be both wonderful and scary because I realize how important I am to him.

Appendix D: Parenting Stress Index/Short Form

PARENTING STRESS INDEX

(Short Form)

Richard R. Abidin
University of Virginia

Directions:

In answering the following questions, please think about the child you are most concerned about.

The questions on the following pages ask you to mark an answer which best describes your feelings. While you may not find an answer which exactly states your feelings, please mark the answer which comes closest to describing how you feel.

YOUR FIRST REACTION TO EACH QUESTION SHOULD BE YOUR ANSWER.

Please mark the degree to which you agree or disagree with the following statements by circling the number which best matches how you feel. If you are not sure, please circle #3.

1	2	3	4	5
Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree

Example:

I enjoy going to the movies. (If you sometimes enjoy going to the movies, you would circle #2.)

1 (2) 3 4 5

---

1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree

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

1	2	3	4	5
Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree

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

    1 2 3 4 5

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

    1 2 3 4 5

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

    1 2 3 4 5

P-CDI

25. My child seems to cry or fuss more often than most children.

    1 2 3 4 5

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

    1 2 3 4 5

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

    1 2 3 4 5

28. My child does a few things which bother me a great deal.

    1 2 3 4 5

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

    1 2 3 4 5

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

    1 2 3 4 5

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

    1 2 3 4 5

32. I have found that getting my child to do something or stop doing something is:
    1. much harder than I expected,
    2. somewhat harder than I expected,
    3. about as hard as I expected,
    4. somewhat easier than I expected,
    5. much easier than I expected.

    1 2 3 4 5

33. Think carefully and count the number of things which your child does that bother you. For example: dawdles, refuses to listen, overactive, cries, interrupts, fights, whines, etc. Please circle the number which includes the number of things you counted.

    1. 10+ 2. 8-9 3. 6-7 4. 4-5 5. 1-3

    1 2 3 4 5

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

    1 2 3 4 5

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

    1 2 3 4 5

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

    1 2 3 4 5

D.C.

Total Score

I.D.#:___ ___ ___ ___ ___ ___ Today's Date: ___/___/___

P.S.C.S.

Listed below are a number of statements. Please respond to each item, indicating your agreement or disagreement with each statement using the scale provided.

1. The problems of taking care of a baby are easy to solve once you know how your actions affect your baby, an understanding I have acquired.

Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
6	5	4	3	2	1

2. Even though being a parent could be rewarding, I am frustrated now while my child is only an infant.

Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
6	5	4	3	2	1

3. I go to bed the same way I wake up in the morning - feeling I have not accomplished a whole lot.

Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
6	5	4	3	2	1

4. I do not know why it is, but sometimes when I'm supposed to be in control, I feel more like the one being manipulated.

Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
6	5	4	3	2	1

5. My mother was better prepared to be a good mother than I am.

Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
6	5	4	3	2	1

6. I would make a fine model for a new mother to follow in order to learn what she would need to know in order to be a good parent.

Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
6	5	4	3	2	1

7. Being a parent is manageable, and any problems are easily solved.

Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
6	5	4	3	2	1

8. A difficult problem in being a parent is not knowing whether you're doing a good job or bad one.

Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
6	5	4	3	2	1

9. Sometimes I feel like I'm not getting anything done.

Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
6	5	4	3	2	1

10. I meet my own personal expectations for expertise in caring for my baby.

Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
6	5	4	3	2	1

11. If anyone can find the answer to what is troubling my baby, I am the one.

Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
6	5	4	3	2	1

12. My talents and interests are in other areas, not in being a parent.

Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
6	5	4	3	2	1

13. Considering how long I've been a mother, I feel thoroughly familiar with the role.

Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
6	5	4	3	2	1

14. If being a mother of an infant were only more interesting, I would be motivated to do a better job as a parent.

Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
6	5	4	3	2	1

15. I honestly believe I have all the skills necessary to be a good mother to my baby.

Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
6	5	4	3	2	1

16. Being a parent makes me tense and anxious.

Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
6	5	4	3	2	1

17. Being a good mother is a reward in itself.

Strongly Agree	Agree	Mildly Agree	Mildly Disagree	Disagree	Strongly Disagree
6	5	4	3	2	1

Appendix E: Structured Clinical Interview for DSM

(1) Has there been a period of time in the last year when you were feeling down?

YES **NO**

(2) Was there a particular event that caused you to feel this way?

YES **NO**

if yes please describe:_____

_____

(3) How long ago did you feel this way?

Over 6 months ago	❑
Within the last 6 months	❑
Within the last month	❑
Throughout the whole year	❑

(4) How long did this feeling last?

Less than 2 weeks	❑
At least 2 weeks - 1 month	❑
1 month or more	❑
Small ups and downs	❑

For the following questions, please focus on the period/s of time during the past year when you were feeling down.

(5) Were you a lot less interested in pleasures and activities that you were once able to enjoy?

YES **NO**

(6) During the time period of feeling down indicated in Question 2, did you lose or gain any weight?

YES **NO** → go to Question 8

(7) If YES to Question 6, how long did this change in appetite last?

All day for less than 7 days ❑
All day between 8-12 days ❑
All day for 2 weeks or more ❑
Other _____ ❑

(8) How was you appetite during this time period compared to your usual appetite?

Ate more all of this time ❑
Ate less all of this time ❑
Ate the same all of this time ❑
Other _____ ❑

(9) During the time period indicated in Question 3, how were you sleeping compared to the way you usually sleep?

(you may check more than one of the following)

More trouble falling asleep all of this time ❑
More trouble staying asleep all of this time ❑
Waking more frequently all of this time ❑
Waking too early all of this time ❑
Sleeping much more all of this time ❑
Other _____ ❑

(10) During the time period indicated in question 3, were you so fidgety or restless that you were unable to sit still, in a way that other people noticed it too?

Yes, all of the time ❑
No, none of the time ❑
Yes, some of the time ❑

If 'NO' go to Question 11. If 'YES' go to Question 12.

(11) During the time period indicated in question 3, were you talking or moving more slowly than is normal for you, in a way that other people noticed it too?

- Yes, all of the time ❑
- No, none of the time ❑
- Yes, some of the time ❑

(12) During this time, did you have less energy than usual?

- Yes, all of the time ❑
- No, none of the time ❑
- Yes, some of the time ❑

(13) During this time, did you have feelings of excessive guilt about thing that you had done or not done, or feelings of worthlessness?

- Yes, all of the time ❑
- No, none of the time ❑
- Yes, some of the time ❑

(14) During this time, were things so bad that you found yourself thinking about death or about hurting yourself?

- Yes, all of the time ❑
- No, none of the time ❑
- Yes, some of the time ❑

(15) During this time, did you have more trouble thinking or concentrating than usual, so that it interfered with things that you normally have no trouble with (eg, forgetting what you just watched on T.V.)?

- Yes, all of the time ❑
- No, none of the time ❑
- Yes, some of the time ❑

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