Maternal Sensitivity And Responsiveness In The Transition To Toddlerhood

By

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ABSTRACT

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As infants become toddlers and become more mobile and independent, mothers are required to adapt their behaviors to accomodate their infants' growing autonomy. During this time mother-infant interactions can be described as more "control salient". This correlational study sought to describe maternal sensitivity and responsiveness during the transition to toddlerhood. Sixty-one mothers with healthy 12 month old infants were recruited from a family practice medical clinic. These were a subset of subjects and a secondary analysis of a larger study examining mother-child interactions and adaptations of toddlers. An additional questionnaire assessing maternal relationship history was added to the larger study protocol for the present study. Mothers brought their infants to an observational playroom and participated in a series of brief interactions with their infants, and filled out written questionnaires. Videotapes of the interactions were then coded for maternal sensitivity and responsiveness, and examined across the different mother-infant contexts that involved varying degrees of control-saliency. These interactions included an eating/feeding interaction, a mother-infant joint play episode, an interaction where the mother was asked to teach the infant a task, a toy clean-up episode, and an interaction where the infant was not allowed to touch a prohibited object. Analyses of these interactions indicated that mothers who were more sensitive in less control-salient situations tended to also be more sensitive in more control-salient interactions ($\underline{r}$ = .50 - .67). Mothers overall, however, were less sensitive in the more control-salient interactions ($\underline{t}$ = -3.8). Mothers' recollections of experiences with their own parents in control and care related situations were also examined in relation to their sensitivity and responsiveness in control-salient interactions. Analyses revealed maternal recollections of their experiences with their own parents to be significantly related to their sensitivity/responsiveness with their own infants in the toy clean-up situation ($\underline{r}$ = .30). Mothers' current sensitivity/responsiveness and recollections of their experiences with their own parents were also examined in relation to maternal prohibition (limit setting) style. Mothers with authoritative prohibition styles tended to be sensitive in other interactions ($\underline{r}$ = .28), and also tended to have more positive experiences with their own parents ($\underline{r}$ = .27). Mothers with authoritarian styles tended to be less sensitive in other interactions ($\underline{r}$ = -.49), and to have had more negative experiences with their own families ($\underline{r}$ = -.25). Mothers with a redirective prohibition style tended to have had more negative experiences with their own families ($\underline{R}^2\Delta$ =.25), but were also quite sensitive in interactions ($\underline{R}^2\Delta$ = .28; $\underline{R}^2$ = .53), perhaps compensating for their negative experience in their own families. Infant temperament, and knowledge of self and other, were also examined using correlational statistics in relation to maternal sensitivity and responsiveness. Infant temperament was not significantly related to any major study variables. Infants with more sensitive mothers tended to demonstrate less willingness to "act on" themselves in the testing situation ($\underline{r}$ = -.31). This was unanticipated and may represent a different pattern of self development than previously documented. Two measures of maternal sensitivity and responsiveness, the Nursing Child Assessment Teaching Scale (NCATS), and the Ainsworth Maternal Care Scales, were also compared and contrasted. Findings indicated that the two scales measure similar but different maternal interactional behaviors. Findings were discussed as both supporting and extending extant theory and as providing bases for further study as relevant to nursing practice. Immediate applications to practice were also discussed

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CHAPTER I

INTRODUCTION

This study examined maternal sensitivity and responsiveness in a normal healthy population of mothers and infants negotiating the transition to toddlerhood. Maternal sensitivity and responsiveness have been found to be very important to infant development. Most of the work on maternal sensitivity and responsiveness has focused on the first year of life, when these maternal behaviors are important to the development of an effective attachment relationship and effective infant biologic regulation. This investigation focused on how those dimensions of mother-infant interaction carry forth into the next period of infant development, the transition to toddlerhood.

Findings targeting the infant's first year of life stress the benefits of harmonious, soothing interactions between mother and infant. According to Ainsworth, when mothers initiate activities they must do so cooperatively. The mother meshes her initiations with the infant's actions and behaviors, capitalizing on the infant's sense of timing and interests to achieve such cooperative, harmonious interactions. However, the mother must also deny the infant his desires in certain situations to allow for his long term good, and to protect him from harm (Ainsworth, 1969). During the transition to toddlerhood, the infant becomes more mobile, begins to develop a sense of autonomy, and begins to negotiate the balance of self -vs- other controlled operations. Thus, mother-infant interactions become more "control-salient". For the mother of a toddler, the need arises for more limit-setting, especially in situations where safety is an issue. The process of autonomy negotiations with

the toddler and the needs for limit-setting on the part of the mother provide an arena for potential conflict between mother and child. How does the sensitive and responsive mother negotiate such situations to continue to meet the infant's attachment needs, as well as to facilitate the infant's development of self-control?

This study assumed that infants continue to have attachment needs through this developmental period. In optimal circumstances the mother and infant will negotiate this phase so that the infant remains securely attached to the mother. The attachment relationship is seen, then, as providing the context for the continued development of a healthy socio-emotional self in relation to others, as well as development of self-control and self-regulation. It is not known whether the mother's response to the infant's increasing ability for autonomy may jeopardize attachment security and the development of self, as well as self-control. The mother's response may also interact with the infant's attachment status to affect infant/toddler behavior in those domains.

Emerging autonomy in the infant will challenge the mother to develop new interactional skills. Her ability to do so in the transition to toddlerhood may be related to her previous ability to be sensitive and responsive during infancy, and may vary across interactions requiring differing amounts of control saliency as she develops interactional skill. Another factor which may influence mothers' ability to enhance their children's development of autonomy and self-control in this period may be their experiences with their own parents around control issues. Attachment theory suggests that "internal working models" are formed through experiences with significant others and later influence our perceptions and behaviors in close relationships. A mother's experiences with her own parents in similar situations may subsequently influence how she responds to her toddler during control negotiations. And, lastly, infant temperament may also be influential during this time, influencing the development of interactional processes which may facilitate or impede toddler autonomy, self control, and a sense of self.

The findings of this study are expected to assist pediatric, psychiatric, and public health nurses as they work with mothers of young children to optimize mother-child interactions, prevent child psychopathology and promote both maternal and child well-being. They are also expected to contribute to the existing body of literature serving as a basis for further refinement of our knowledge of these processes, through practice and research.

CHAPTER II

REVIEW OF THE LITERATURE

Mother-Infant Interaction

The transactional model of development provides a framework for the identification of potential influences on the infant's developing self and autonomy during the transition to toddlerhood. The transactional framework states that the development of the infant occurs within the context of environmental influences, taking into account inate as well as developed capacities of the infant, and that these variables transact over time to produce developmental outcomes (Sameroff & Chandler, 1975). Perhaps the most important and certainly the most studied environmental influence on the developing infant is that of the primary caregiver, usually the mother. Mother-infant interaction, in addition, takes both maternal and infant behaviors into account, and can be assessed for the evolution of patterns of interaction over time, in accordance with the transactional model.

Mother-infant interaction has been the focus of much study. An extensive body of research has established mother-child/infant interaction as important to infant development and later developmental outcome (Barnard, Hammond, Booth, Bee, Mitchell, & Speiker, 1989; Maccoby & Martin, 1983). More specifically, research has established that the quality of mother-infant interaction relates positively to later child cognitive and linguistic competence, to the quality of attachments to major caregivers (Ainsworth, Blehar & Wall, 1978; Barnard et.al., 1989; Pederson, Moran, Sitko, Campbell, Ghesquire, & Acton, 1990) and to the development of the infant's sense of self, self esteem, and later socio-emotional functioning (Brazelton & Cramer, 1990; Bretherton, 1985; Main, Kaplan, & Cassidy, 1985; Sroufe, 1989).

Sroufe and Rutter (1984) suggest that during early interactions between mothers and infants, infants form "patterns of adaptation" based on salient experiences for that

developmental stage. Less than optimal patterns of adaptations are thought to predispose the infant to difficulties as they face new demands and new stage salient issues, which must build upon the adaptations of earlier stages (Cicchetti 1987, 1990; Sroufe & Rutter 1984). Sroufe and Rutter (1984) also assert that early patterns of interaction in high risk groups may be used to predict later developmental problems, as well as the developing competence of the infant.

A mother's interactional behaviors toward her infant must change along with the infant's changing abilities and developmental needs. Theorists from a variety of perspectives identify opportunities and risks for the developing self resulting from the infant's interaction with the environment, especially primary caregivers, during toddlerhood. Erikson (1963), for example, discussed parents and toddlers' negotiation of issues which result in toddler outcomes of autonomy -vs.-shame and doubt. From Erikson's perspective, parental overcontrol contributes to the toddler's development of shame and doubt in place of a healthy sense of autonomy.

According to the transactional perspective, mother-infant interaction during the transition to toddlerhood must also be considered as evolving within the context of mother-infant interactions which have already developed over the first year of the infant's life. Thus, this section will discuss literature on mother-infant interaction during the first year as a context for infant development during the transition to toddlerhood. Following that is a review of the literature on mother-toddler interaction, incorporating the developing competencies and needs of the toddler which optimally need to be considered by the mother.

Quality of Mother-Infant Interaction During the First Year of Life: Interactive Harmony and Sensitivity and Responsiveness

Interactive Harmony

The components of high quality mother-infant interaction will vary with the age of the infant or child. Sroufe and Rutter (1984) describe the first developmental stage requiring adaptation by infants as one in which harmonious mother-infant interaction should occur, resulting in the development of an effective attachment relationship and effective biologic regulation. The establishment of harmonious, optimal interaction is key. According to Sander (1985), the interaction between infant and caregiver during the first six months of life provides the framework for the development of the infant's physical, behavioral and affective regulation, which becomes internalized over time into an organization of self. Subsequent interactions serve to modify or maintain this existing inner organization. In this way the infant's attachment to major caregivers, development of sense of self, and later socio-emotional functioning is thought to be established through interactions with caregivers, and, in fact, occur only through such interactions (Brazelton & Cramer, 1990; Bretherton, 1985; Main, Kaplan, & Cassidy, 1985). From this view, a competently developing infant can be found only within an early competent relationship characterized by harmonious, well organized, reciprocal interactions with primary caregivers (Sroufe, 1989).

In addition, Barnard et. al. (1989) described mother-infant interactions as dependent on characteristics of both the parent and the infant. Both must be able to send cues to the other, and both must be able to respond in a way that is meaningful to the other. Difficulties presented by either partner will result in a less optimal interaction.

Thus, the first developmental stage in the life of an infant involves the establishment of interactive harmony between mother and infant (Sroufe & Rutter, 1984). Harmonious mother-infant interaction has been described as a “dance”. This "dance" has also been termed synchrony, reciprocity, mutual modification of behavior, equilibrium, or

just being "in tune" with one another (Osofsky & Connors, 1979). All of these terms denote a mutual cyclic and rhythmic interdependency of maternal and infant behaviors on a more molecular level, and include a harmonious temporal phasing. These behaviors become organized and coordinated with relative stability across interactions (Osofsky & Connors, 1979). The term harmony also encompasses the component of positive affective experience.

Interactive harmony is defined, then, as the presence of synchronized mother and infant behaviors which together facilitate an interactive environment satisfying to both mother and infant and which also facilitate optimal infant development. It is specifically defined as consisting of a combination of maternal sensitivity and responsiveness and of infant clarity of cues and responsiveness to the mother. These maternal and infant interactive behaviors are described further in the following sections.

Maternal Interactive Behavior During the First Year of Life: Sensitivity and Responsiveness

Ainsworth, Blehar, Waters, and Wall (1978) noted that optimal synchronization requires mutual adaptation; both the mother and the baby must adapt to a certain extent. This requires that both must be able to send clear signals, to read the signals of the other, and to respond to those signals (Barnard et al., 1989). Although the infant needs to adapt to the caregiver to some extent, several authors agree that the mother has more control and more facility in adapting her behavior to that of the infant than vice-versa (Ainsworth, et al., 1978; Hayes, 1984, as cited in Maccoby & Martin, 1983; Sroufe, 1989; Sander, 1975). Different babies may have different kinds of signals and rhythms; in the early phases of their relationship the mother needs to learn how to read those signals and to respond to them appropriately (Brazelton & Cramer, 1990).

Sander (1975) described phases of dyadic organization which influence the infant's inner organization of self, and describes maternal role behaviors relative to each stage. Although referred to as phases or stages, they are meant to represent "ascending and

ongoing issues" so that the infant's self can be seen as emerging rather than emergent at any given age (Sroufe, 1989).

Sander labeled the first two phases in the infant's interactional life as "basic regulation" and "reciprocal exchange", respectively. The first phase occurs during the first three months and emphasizes the establishment of phase synchrony and coordination between infant and mother. Interaction centers on the mother adapting her behavior to the cues that the infant gives her regarding his state. The significance of this phase is the extent to which the infant is helped or hindered in beginning to learn how to regulate himself. The second phase, reciprocal exchange, occurs during months 4 through 6, and is marked by chained interaction sequences. The infant participates actively in social interaction. During these two phases, pleasurable reciprocal interactions become predominant, initiated and shaped by the mother. However, Sroufe (1989) emphasized that the appearance of reciprocity and coordination is due more to the mother's responsiveness and sensitivity than to the infant's interactive ability to participate in the relationship as an equal partner. Although interactive sequences exist between mother and infant, they are established through prior interactions, and the infant has little ability to follow new leads by the caregiver. The normative mother, however, can easily follow new leads by the infant. The mother, then, constructs and maintains an organized interactive environment around the infant which takes into account the infant's signals, cues, and responses to the caregiver. The infant cannot yet construct or maintain such an interactive environment, nor can he/she fill in missing parts of interactive sequences him or herself. The interactions experienced by the infant during this phase provide the beginnings of the infant's internalization of the relationship between him/herself and others, and for the development of taking more initiatory roles (Sroufe, 1989). In summary, while the infant's early ability to signal and respond to the mother is important for her to be able to construct an interactive environment which is consistent with her infant's needs, it is the mother who, through her sensitivity

and responsiveness, provides the organization necessary to provide and maintain such an environment for the developing infant.

Maternal sensitivity and responsiveness has referred to maternal behaviors which are contingent on the infant's prior behavior, are timely, and appropriate (Maccoby & Martin, 1983; Crockenberg, 1981; Skinner, 1986; Smith & Pederson, 1988). Contingency on the infant's prior behavior refers to maternal behavior which occurs after and in relation to specific infant behaviors (Maccoby & Martin, 1983). In addition, contingent maternal behavior must be timely; it must occur soon enough following the infant's behavior to make the relationship between infant and maternal behavior obvious. For example, Ainsworth et al., (1978) found mothers of securely attached infants responded sooner to their infants' signals than did mothers of insecure infants. Also, the content of the mother's behavior must be appropriate to the context in which the infant's signals and behaviors occur (Ainsworth et al., 1978). The appropriate response of a mother to her crying infant is different if the infant is tired, over-stimulated, or hungry. Appropriate maternal behaviors further depend on the age and developmental abilities of the infant (Ainsworth et al., 1978).

A number of studies have found maternal sensitivity to be related to infant developmental competency (Ainsworth et. al., 1978; Belsky, 1984; see Maccoby & Martin, 1983, and Skinner, 1986, for reviews). One of the roles of maternal sensitivity and responsiveness in relation to later infant competencies is described as follows:

"Maternal behavior initially tends to be under the control of the stimulus and reinforcing conditions provided by the young infant. As the infant gets older, the mother if she has behaved contingently toward his signals, gradually acquires reinforcement value which in turn increases her efficiency in regulating infant behavior. Concurrently, the earlier control asserted by the infant becomes less functional, and diminishes.... Thus, at first, the mother is shaped by the infant and this later facilitates her shaping the behavior of the infant." (Moss, 1967, pp. 29-30).

The end of the phase of reciprocal exchange is marked by the ability of the infant to actually initiate interactions and sequences of behaviors, representing a true reciprocity between infant and caregiver. Of note is that persons other than the mother may influence infant interactions during the age ranges discussed in this study. The role of the father, for example, is important in developing the infant's interactive capacity. This study, however, for the sake of simplicity and because mothers continue to most frequently be the primary interactive partner for most infants, examined only maternal characteristics in relation to interactive behavior.

Mother-Infant Interaction During the Transition to Toddlerhood

The transition to toddlerhood requires an expansion in maternal behaviors and interactional skills. With the onset of increasing autonomy, the role of regulation of the infant's behavior becomes increasingly important, especially in areas where safety and the rights of others are concerned. Thus interactions become more "control-salient", and the mother makes decisions about the nature and degree of control that is to be exercised by both she and the infant, in a variety of situations. During this phase of development, the emphasis on interactive harmony as the desired interactive outcome may need to give way to incorporate other aspects of interaction as well. As Moss (1967) suggested, the sensitive/responsive mother becomes more efficient in regulating infant behavior. What infant behaviors will a mother encounter during the onset of increased infant autonomy as she facilitates this next phase of infant development, including the development of infant self-control and self esteem, while maintaining a secure attachment? This next section will review relevant literature on the developmental transition into toddlerhood, focusing on aspects of toddler behavior which are salient to mother-infant interactions.

The development of autonomy during the transition to toddlerhood. Descriptions of this period of development can be summarized as centering on the potential for increased infant autonomy. There is an increase in cognitive ability, sense of intersubjectivity (Stern, 1985), and capacity for locomotion. These capacities provide the infant with tools for

greater independence in thought, communication, and action. In addition, goal-directed behavior toward the caregiver becomes more complex and specific (Sander, 1975). The infant is able to select from an increasing repertoire of behaviors to communicate his/her desires to the caregiver, including showing objects and wanting to be picked up. The infant is also able to persist in these goals and to change behaviors if his/her communication is not at first successful (Sroufe, 1989).

The onset of walking. The onset of toddlerhood coincides with the onset of "upright locomotion", or walking. Mahler (1975) observed that the increasing locomotive capacity of the child beginning to walk markedly expands his/her world and provides the child with greater ability to determine closeness to or distance from his/her mother. The plane of the infant's visual field changes and he/she can experience new and broader spatial locales for exploration, and can see and explore a variety of new objects, perspectives and sensations. Increased body awareness follows and "walking gives the toddler an enormous increase in reality discovery and testing of the world" (Mahler , p.72). This is thought to trigger toddlers' narcissistic investment in their own functions, body, and the objects and objectives of their expanding reality: hence the infant's perception of "the world as his/her oyster" (Mahler, 1975, p.72.), and/or the toddler's "love affair with the world" (Greenacre, 1957, as cited in Mahler, 1975, p. 70). This period coincides with the "practicing subphase" in separation-individuation, lasting from 10-12 months to approximately 16-18 months of age.

Stern (1985) identified the onset of mobility, including crawling and earlier forms of locomotion, as partly responsible for the onset of the development of intersubjectivity, where the infant develops a sense that others have different subjective experiences than he/she does. This in part takes place as the infant begins to see the environment and caretakers from different perspectives as he/she crawls and then walks around. Stern describes this aspect of infant development as occurring during 7 to 15 months of age.

Maher and her colleagues observed the importance of the early walking phase for the infant's identity formation. "In the very month following the attainment of active free locomotion, great strides were made toward asserting [the infant's] individuality" (1975, p.72). In cases where the child's walking was delayed, the infant's expansion in sense of self and exhilarated moods was delayed as well, but still occurred with the onset of walking. Awareness of self was a new characteristic observed in these infants.

Mahler wrote of the continuing importance of primary caregivers during this time. Others have also described the continuing centrality of caregivers for the infant. Sander (1975) describes ages 9 to 15 months as the infant's "focalization period". During this time, the infant displays more organized behavior, particularly in relation to the caregiver (Sroufe, 1989). As the infant increases his capacity for autonomy and separateness, he/she still structures activities with the caregiver as the central figure, as the "home base" for his/her exploratory behavior. When something arises in the environment of which the infant is unsure, if the appropriate emotional "attachment" signals arise in the infant, he/she retreats to the caregiver for assistance, comfort or reassurance (Ainsworth, 1973; Bowlby, 1973; Sander, 1975). Mahler et al.(1975) referred to this as "refueling". During this period, infants may behave as though their mothers alone can meet their needs (Sander, 1975). Their internal psychological and cognitive structures still require further development, requiring continued attention and imput from caregivers. In this context, the mother's response to the infant's increasing autonomy is very important.

According to Mahler and colleagues (Mahler et al., 1975) the transition to toddlerhood and the onset of upright locomotion seemed to be important to mothers as well. Mahler noted that mothers become very interested in, but sometimes critical of, their children's functioning at this time. Upright free locomotion, for some mothers, was an indication that their child would be able to "make it on their own" in a world where they have to eventually fend for themselves. The mother's positive reception of walking also was seen as providing confirmation to the infant about his/her safety in autonomy and to

encourage his/her autonomy and developing self-esteem. Problems arose in the mother-infant relationship during this period, according to Mahler and colleagues, when the mother did not support the child's developing autonomy. While mothers' positive affect and encouragement of exploration served to gently "push" infants toward autonomy, in other cases, mothers did not express pleasure or excitement in their children's first or subsequent steps away. These less facilitative mothers' expressions of ambivalence, fearfulness, or even unconscious hostility toward a child's stepping off on his own may serve to hinder the developing child's sense of autonomy and independence.

Mahler's perspective is rich in its descriptions of infants' behaviors, and emphasizes the need for a consistent maternal presence (Harter, 1983), but does not describe specific mothering behaviors. For example, maternal behaviors in terms of setting limits on exploration for reasons of safety or conflicting maternal demands were not addressed.

The development of sense of self during the transition to toddlerhood. Being autonomous also necessitates the presence of a "self" which is involved in directing the infant's own activities. The self has been described as having components of both "subject" and "object". These are thought to be important aspects of the self which begin developing in infancy. The self as subject involves the sense of the self as an active causal agent, as "a cause" of others' actions or conditions in one's environment (Harter, 1983; White, 1963). In infancy the sense of being "a cause" is developed in part through caregivers' responses to infants' cues and signals (Grunebaum & Solomon, 1980). The self as subject is also synonymous with James' (1890) description of the self as knower, or the "I" state, Dickstein's "dynamic self", and Wylie's "active observer" (Wylie, 1979, as cited in Harter, 1983). The self as object refers to the self as observed by oneself (Wylie, 1979, as cited in Harter, 1983) and is the "me" in James' terminology. This aspect of the self includes self-concept and self-esteem: that is, knowledge or perceptions of the self and the resulting self-evaluation.

Lewis and Brooks-Gunn (1979) discussed these aspects of the self from the perspective of the infant. They described the self as active agent, observer, or process component of the self as the "existential" self, and the observed aspect as the "categorical" self. Infants must determine that they exist separately from others, acquiring a sense of the "existential" self, as well as learn self definition in relation to others, or a "categorical" self. This self-knowledge is thought to occur in a categorical sense in infancy, for example, me-vs-not-me, boy-vs.-girl, or child-vs.-adult.

Less is known about the sense of self as agent, than the self as observer (Harter,1983). The self as agent, however, is an important aspect of the self, and is also part of that which is observed and evaluated. Grunebaum and Solomon (1980) summarized work which identifies self-esteem as based on one's sense of personal competence and effectiveness. Positive affective evaluations of self are thought to occur when the self is perceived as competent and effective, whereas negative self evaluations occur when the self is perceived as less effective or competent. During the transition to toddlerhood with expected increases in infant's capacity for autonomy, the development of a sense of self-agency is expected to be very salient to the infant's developing sense of self, self-esteem and self-concept.

Pipp, Easterbrook and Harmon (1992) have linked findings about the development of self as both self and object to attachment theory. Bowlby discussed the emergence of the self and internal working models as occurring around 12 months of age. From this perspective the infant's self is thought to be based on the quality of sensitive and responsive mothering during the first year of life, as described in the sections on maternal sensitivity and responsiveness above. The history of the caregiver's promptness, appropriateness, and consistency in response to the infant 's signals are reflected in the infant's organization of behavior, regulation of affect, and use of the caregiver as a secure base during this developmental period. In a study of 122 infants (aged 12, 24, and 36 months in a cross-sectional study), Pipp et al.(1992) applied a series of tasks to determine

the infants' development of their ability to demonstrate self-agency as well as self-knowledge. (See Methods section for further description of the assessment of self-agency and self-knowledge used by Pipp, et al.). Securely attached infants completed significantly more agency tasks than did insecurely attached infants, at all three ages. Age itself had no effect. They concluded that interactional properties of the dyad may lead to both secure attachment as well as more complex ways of acting on self and other. The contribution of the interactional properties of the dyad toward the level of tasks completed was not assessed. The current study will assist in examining these interactional contributions.

Pipp and colleagues (1992) also reported there was no difference between securely and insecurely attached infants on tasks of self-knowledge (the 'me' or categorical self) at 12 months. However, there were significant and increasingly large differences found at 24 months and 36 months, with securely attached infants again performing better. The authors hypothesized that no differences were found at 12 months because at that age infants do not yet have much ability for representation (verbal and representational play ability), making assessment difficult. Again, however, maternal interactive behaviors were not examined as contributors to the development of self-knowledge.

The findings that attachment status was related to better performance in self-agency tasks at all ages and in self-knowledge tasks at 24 and 36 months, suggests that higher levels of maternal sensitivity and responsiveness may also be found in mothers of infants with a more developed sense of self. In addition, knowledge of the contribution of maternal sensitivity and responsiveness to infant self-development during the context of increased infant autonomy and control negotiations would further clarify the interactive picture. Such information is expected to be useful in further assisting mothers and their infants during this developmental period.

Development of self-control during the transition to toddlerhood. Self-regulation refers to the capacity for the infant to modulate his/her own activities without assistance from the mother (Kopp, 1982). This is a necessary component of autonomy and is seen as

one of the primary developmental "works-in-progress" during toddlerhood. Kopp identified five stages in the development of self-regulation: two phases consisting of neurophysiological and sensorimotor "self-modulation" during the first year of life; "control", beginning at 9 to 12 months and lasting to 18 months; "self-control" during the second and third years; and "self-regulation" after the age of three.

The development of control, beginning at approximately 9 to 12 months was defined as "the emerging ability of children to show awareness of social or task demands that have been defined by caregivers, and to initiate, maintain, modulate, or cease physical acts, communication, and emotional signals accordingly. As such, control represents an important transition period along the path to self-regulation. Control is characterized at this age by compliance and self-initiated inhibition of previously prohibited behavior" (Kopp, 1982, p. 204). Self-inhibition implies a more active role than mere compliance. In self-inhibition, a child approaches an object, recognizes that the object was previously prohibited and inhibits the prohibited act. The child is also required to "sequentially organize an input code, a memory match, and then provide self-instruction" (Kopp, 1982 p. 205). Control is less flexible than later forms of self-control or self-regulation, and as the child's capacity to remember events and prohibitions is still limited, control is largely dependent on cueing by caregivers. The cognitive capacity for self-reflection also doesn't yet exist, and so the infant is not yet able to choose between sets of behaviors across situations. At this age, competing pleasurable input such as fascination with their own movement and locomotion further interferes with self-control, self-inhibition, and compliance (Kopp, 1982).

Kagan (1981) described three capacities of self awareness, also related to the development of self-regulation, which develop between the ages of 18 to 24 months: 1) an awareness of actions or events that violate standards; 2) an awareness of the toddler's own ability or lack of ability to meet standards imposed by the self and others; and 3) an awareness of the toddler's own actions. These awarenesses are accompanied by the child's

affective and verbal acknowledgments indicating an emotional investment in such competencies. Smiling at the mastery of a self-assigned task, such as stacking a tower of blocks, is an example of affective investment in their awareness of their own actions and ability to meet a self-imposed standard. Following through on prohibitions set by the mother by delaying or inhibiting their own wishes is an example of the toddler's awareness of violations of standards, and of his/her actions toward those standards.

Generally, self-regulation per se is found to begin during late toddlerhood (Kopp, 1982; Stipek, Gralinski, & Kopp, 1990). However, work by Bruner (1975), Vygotsky (1935/1978) and Trad (1992) point to the importance of earlier interactions with caregivers as being very influential for the development of later self-regulation/control. Bruner's (1977) metaphor of "scaffolding" indicates that caregivers form expectations and provide assistance for infant behaviors a little ahead of the infant's current competency levels. Vygotsky (1935/1978) wrote of the potential developmental area, or "zone of proximal development" which referred to the region between the infant's current level of competency and those tasks and activities that the infant is able to perform with assistance. Bruner's scaffolding, in Vygotsky's terms, refers to caregiver behaviors that may best lead the infant through his/her "proximal zone" of development. Trad (1992) describes a similar parental attribute referred to as "previewing" where the caregiver anticipates the infant's needs and is cued by the infant to provide assistance in a skill yet beyond the infant's ability. Thus caregiver sensitivity and responsiveness to early infant behaviors related to autonomy and self-control are expected to be very important to development of those same attributes over a longer period of time. The child's ability for self-control and self-inhibition early in toddlerhood is still limited by the child's limited capacity for memory and reflection, and his/her fascination with his/her own movement and autonomy.

Summary of relevant developmental processes during toddlerhood. The literature reviewed on development during the transition to toddlerhood reveals that maternal interactive competence during this time takes into account the infant's growing capacity for

autonomy, including locomotion, an increased sense of agency, early self-knowledge, and the ability for control and self-inhibition of behavior when cued by parents in relation to caregiver expectations and standards. Caregiver interactional behaviors during this time are expected to contribute to the continuing development of the sense of self and self-regulation as caregivers provide assistance and "scaffolding" in those areas. While there are other processes relevant to toddler development during this time, such as linguistic development, they will not be addressed specifically in this study. The mother's sensitivity to the infant's verbal abilities, however, must be inherent to an assessment of maternal sensitivity and responsiveness at this age. A mother's acknowledgement, interpretation, and response to infant verbalizations are inherently included in the assessment of her sensitivity and responsiveness in general. Specific maternal behaviors involved in sensitivity and responsiveness to the toddler's development of autonomy and self-regulation are explored in the next sections.

Maternal sensitivity and responsiveness during the transition to toddlerhood. Ainsworth stated that the infant at about 12 months displays "clear-cut attachment", with an established internal working model of the caregiver. While the infant has the beginning cognitive capacity to be able to anticipate some actions of the caregiver, he/she is limited in the ability to make sense of and control maternal behaviors not directed toward his/her own egocentric needs (Harter, 1983), and therefore much frustration, anger and distress results. One thing that is not clear, however, is the optimal maternal response toward these negative emotional states.

Ainsworth's work based on behavioral observations of maternal sensitivity during the first year yielded dimensions of acceptance-vs.-rejection, accessibility-vs.-ignoring, cooperation-vs.-interference, and sensitivity-vs.-insensitivity. The cooperation-interference dimension may be particulary applicable to control-salient interactions in toddlerhood. The interfering mother, as opposed to the cooperative mother, is one who "has no respect for her infant as a separate, active, and autonomous person whose wishes and activities have a

validity of their own". The interfering mother feels free to impose her will and controls on the infant whenever she wishes. The cooperative mother, on the other hand, tends to maintain a balance between instruction and eliciting behaviors from the infant, and responding and following the baby's own initiations. She tends to capitalize on spontaneity, incorporating mood setting, and considers the baby's interests. She times her requirements and demands of the baby so that such requirements seem "codetermined". Ainsworth found cooperation to be highly correlated with maternal sensitivity, and interference to be negatively correlated. Cooperation as well as sensitivity was associated with secure attachment. These scales, however, were developed for mother-infant interaction assessment during the first year of life, in particular months 9 to 12. It is not clear how the mother who was cooperative, sensitive and responsive during the first year of life interacts with her infant in control-salient interactions after the age of 12 months.

Over the course of the second year, Clarke-Stewart and Hevey (1981) found that securely attached children decreased their physical proximity with their mothers over the second year, replacing this with increased verbal, distal interaction. Insecurely attached children continued to make close physical contacts with their mothers. Seemingly, secure attachments allowed children to develop the prerequisites for more distal interaction and exploration. It may also be the case that, in addition, mothers of securely and insecurely attached infants differed in their behaviors during this time period, in their capacity to facilitate their infants' ability for exploration and individuation as well as emotional connection with the mother. It follows also that mothers who have been sensitive and responsive during the first year may possibly encounter some difficulty with increased infant autonomy and may not be able to meet their infant's needs optimally during this next time period, so that their infant becomes less securely attached. The specific maternal behaviors accompanying secure infant attachment during this transition are not yet clear.

Although the attachment perspective has elaborated on the maternal interactional behaviors conducive to the development of secure infant attachment during the first year, it

does not specifically address the interactional skills required in relation to control-salient interactions. However, some studies have looked at maternal sensitivity and responsiveness during the first year, in relation to infant and later toddler compliance. Stayton, Hogan and Ainsworth (1971) found a direct relationship between maternal sensitivity, acceptance and cooperation, and infant compliance at 12 months. Martin (1981) found a relationship between maternal responsiveness at 10 months, and childrens' compliance at 22 and 42 months of age in boys, but not in girls.

In regard to <u>how</u> maternal sensitivity and responsiveness impacts later compliance and autonomy, Kopp (1982) hypothesized that maternal sensitivity facilitates an infant's development of self control by allowing the mother to channel the infant's activity into forms of play acceptable and desirable to the infant as well as to the mother. Kopp (1987) also hypothesized that maternal sensitivity and responsiveness facilitates infants' internalization of external standards. Schaffer and Crook (1980) provided further insight into more specific components of maternal sensitivity in infant compliance. They examined children at 15 and 24 months of age and found that parents who oriented infants first to an object were more successful in gaining infant compliance with an object-related task than were parents who did not include orientation. Thus, parents who are sensitive to their child's state of orientation and involvement and take that into account in their requests are more likely to gain compliance than parents who give directives without consideration of their child's state (Maccoby & Martin, 1983).

<u>Maternal affective attunement</u>. A final aspect of maternal sensitivity and responsiveness during the transition to toddlerhood to be considered here is that of affective attunement, thought to impact the infant's self system at this age and often begins when the infant is approximately nine months of age (Stern, 1985). Stern defined affective attunement as "the [maternal] performance of behaviors that express the quality of the feeling of a shared affect state without imitating the exact behavioral expression of the inner state" (Stern, 1985, p. 142). Stern states that affective attunement is better than imitation or

mere repetition to accurately mirror the feeling state underlying the behavior. Such maternal communications generally occur in a different mode of communication than the infant communication to which the mother is responding, and are usually embedded within other behaviors as well. This type of communication may tend to assist the infant to gain a sense of separateness from the mother (the mode of communication is different), yet retain a feeling of connectedness (the emotional state expressed is the same). In addition, Stern describes attunement with "the vitality" affects, those human affective perceptions that have to do with feeling states and "rushes" that lie outside the so-called "categorical" traditional affects of anger, sadness, joy, shame, etc. Feelings and lived experiences of effort, intensity, forcefulness, feelings of aliveness, explosiveness, "fading" etc. are vitality affects and distinguish the animate from the inanimate. These affects often underlie affective attunement communications. An example of affective attunement to a vitality affect is when a mother says "ka-bam, ka-bam" in rhythm with her infant's hits on a soft toy with his hand (Stern, 1985). Affective attunement, then, is an important part of mother interactive behavior during the transition to toddlerhood.

Maternal control-salient interactional behaviors. Studies which have focused more specifically on maternal limit-setting and control techniques with toddlers will be presented in this section. Early studies tended to focus on outcomes of child compliance; more recent studies tend to include outcome assessment of child assertion and autonomy as well, reflecting an increased awareness of the importance of the development of infant individuality and autonomy for the development of self esteem, self-regulation and the later development of conscience. Some studies involving older children are included here as they discuss maternal dimensions which may be important during the transition to toddlerhood as well.

Hatfield, Ferguson and Alpert (1967) found that mothers who were with their children and who expressed positive emotions freely in task and laboratory situations were more likely to have cooperative children (using concurrent measures when children were

four to five and a half years of age). Lytton (1979) also studied parental affect, emotional bonding and trust in relation to child compliance, in two and a half year old boys. In home observations, parental use of consistent enforcement of rules, psychological rewards rather than material rewards, more frequent joint play and cooperative activities were related to high levels of cooperative behavior in the boys. These parental behaviors may be described as fostering trust and bonding (Maccoby and Martin, 1983). In contrast, parental activities thought of as fostering mistrust, such as withdrawal of love and other types of psychological punishment were associated with low compliance. Other studies have highlighted trust, cooperative play and cooperative interaction as associated with child compliance. Maccoby and Martin (1983) suggested that mutual responsiveness between parent and child, with the child initiating joint action as well, and with questions, demands or suggestions offered by both parent and child and responded to by both as well, was related to compliance in children. Cox (1974) found that children were more likely to be compliant with parental requests when an adult had earlier complied to their request. Bryant and Crockenberg (1980) found also that sisters were more likely to be helpful to one another when their mothers were helpful to them, when asked for help.

Minton, Kagan and Levine (1977) studied 90 two-year-olds and their mothers in home settings. Observers recorded children's violations, maternal interventions, and child responses to mothers' interventions. Children's violations included physical or verbal aggression, temper tantrums, actions that damaged or threatened damage to property, or other behaviors which resulted in maternal redirection or intervention. Most violations were in regard to damage or potential damage; violations took up to one-half of the interaction time between mother and child. Results included that the forcefulness of the mother's response to the child depended upon the recent behavior of the child. Mother's interventions usually started out mild and then increased in severity if the child did not comply. Interventions were initially more severe if the child had required more severe interventions during recent violations. Thus the interventions mothers used in part

depended upon the child's behaviors, suggesting an interplay between maternal and child behaviors consistent with a transactional perspective.

Silverman and Ragusa (1992), however, found that maternal negativity at 24 months of age correlated both negatively with child self-control and positively with child aggression at 4 years of age, even when controlling for child behavior at 24 months. Thus maternal behavior may be affected by other factors in addition to child behavior. Maternal negativity was defined as "negative feedback, corrections, and prohibitions". These characteristics may have been internalized in some way during toddlerhood and manifested later in the child's behavior.

Crockenberg and Litman (1990) studied maternal control techniques as related to child defiance, self assertion and compliance in 2-year-olds, in laboratory and home settings. Maternal control techniques were factored into four categories: negative control, control, guidance, and responsiveness to the toddler. Negative control included tactics conveying negative emotional tone such as criticism, undermining, punishment, annoyance, force or restriction, as well as intrusive actions. Control included either telling or prohibiting the infant (allowing no choice), and/or bribes with a reward contingent on compliance. Guidance included attempts to direct or control the child's behavior non-intrusively, and included asking or suggesting, persuading, explaining, standing or sitting next to, verbal assistance. Responsiveness included a response to the child's verbal or non-verbal cues.

Child behaviors studied included compliance, defiance, or self-assertion. Self-assertion consisted of the child merely communicating his/her wishes/needs, such as saying "no", including those wishes/needs which conflict with those of the parent. Self-assertion was conceptualized as a manifestation of a more competent, autonomous infant, an assumption supported by other research. Self-assertion in a healthy mother-infant dyad triggers negotation and accomodation--both maternal responses that validate the toddlers' developing self. Self-assertion or the ability to say "no" has been associated with more

secure infant attachment (Matas, Arend & Sroufe 1978), with more developmentally advanced children (Vaughn, Kopp & Krakow 1984), and with children's more frequent engagement with their mothers. Defiance included actions or strong verbalizations in direct opposition to the parent's wishes, throwing or hitting objects, and/or other forms of anger or aggression in response to requests from the parent. Defiant behavior has also been associated with abuse and insecure attachment (Londerville & Main, 1981; Matas, et al., 1978).

Results revealed that across both home and laboratory settings, child defiance was more frequent when mothers used more power-assertive methods of control, and child compliance and self-assertion were more frequent when mothers used less powerful approaches to controlling behavior. The most successful strategy for eliciting both compliance and self assertion and avoiding defiance in children was a combination of control (use of directives and "bribes") and guidance. This combination was more effective than the use of either control or guidance alone, or any other combination of control strategies. Self-assertion was also more likely when mothers used guidance or control rather than negative control, especially the use of guidance.

Reld, Leary, and Wolff (1994) studied the sequence of maternal interventions in prohibition situations, in 20 mothers and their 17 to 39 month old infants in laboratory settings. Each dyad was observed and video-taped in a small waiting room supplied with magazines for the mother, toys for the child, and several objects the child was prohibited to touch, such as a typewriter, candy, and a vase. Dyads were matched for child age and gender and randomly assigned to one of two "order" groups. Order one mothers were instructed to first use only distraction for eight minutes, and during the second eight minutes to use only reprimands. A brief rest occurred in between the eight-minute periods. Order two mothers were instructed to begin with reprimands and then to use only distraction for the last half of the session. "Transgressions" were child behaviors of

touching, attempting to touch, or pointing to a forbidden object. "Reprimands" were verbal maternal statements of disproval of the child's behavior, such as "no, no" or "don't touch".

Results included that reprimands were significantly more effective than distractions in controlling transgressions during the first half of sessions (transgressions occurred in 35% versus 55% of intervals respectively. Distractions were, however, effective in maintaining low rates of transgressions when preceded by reprimands (33% to 31%). While reprimands following a period of distraction decreased rates of transgressions in order one children (55% to 35%), negative affect increased significantly in these children, as compared with their affect in phase one (17% in stage one, 53% in stage two), and as compared with affect of order two children in either phase (order two children had 10% in phase one, 16% in phase two). In addition, transgressions occurred significantly less when distractions followed reprimands, than when distractions were used alone (30% of intervals versus 53% respectively). This research emphasizes the desirability of initial limit-setting in gaining compliance from toddlers and in decreasing their negative affect as well, making it no doubt easier for mothers in situations where compliance is desirable, such as safety situations, regarding destruction of property, and certain out of home situations. The authors do not elaborate on the role of distraction beyond its utility in maintaining short term compliance and relatively low levels of negative affect once clear limits are set. However, in addition to mere short term compliance, other authors note the importance of distractions and other "guidance" (Crockenberg & Litman, 1990) interventions in relation to longer term child outcomes such as self assertion (Crockenberg & Litman, 1992), long term receptivity to parental requests and instructions, and self-regulation and autonomy (Maccoby and Martin, 1983).

Maccoby and Martin (1983) distinguished between compliance related to immediate situational pressures (short term compliance), and compliance resulting from a general attitude of cooperation and willingness on the part of the child. Their review revealed that while direct parental pressure and coerciveness, sometimes including physical punishment

or physical intervention could be immediately effective in gaining compliance, long term compliance or cooperative behavior was negatively associated with this type of parenting and positively associated with the more positive parental behaviors such as those as described in studies above.

The desirability of distraction and other positive, "guidance" type techniques, in conjunction with limit-setting, has been further described in studies such as Baumrind's (1967 & 1971) work with pre-school children. Her work includes the dimension of parental control as well as affection and sensitivity, and her studies found positive outcomes to be associated with a moderate amount of parental control, along with affective warmth and receptivity to the child's communications. Such parenting styles were identified as "authoritative", and again, included control and demands placed on the child for compliance, including firm limits and negative reinforcement of transgressions. However, in authoritative parenting these demands were mixed with sensitivity and warmth, rational explanations and consideration of children's wants and needs. This pattern also includes expectations for mature behavior from children, encouragement of the child's independance and individuality , and recognition of rights of both parents and children. An authoritative pattern was linked with more independent preschool daughters who were as socially responsible as other girls, and more socially responsible preschool sons who were equal in independence to other boys. These findings were similar in children ages eight and nine. Other parental classifications from Baumrind's work include an"authoritarian" classification, characterized by detachment, more controlling interactions and less warmth, with an emphasis on order, and a "permissive" parental classification. Permissive parents were non-controlling, non-demanding, and relatively warm. Coopersmith (1967, as cited in Maccoby, 1983) also identified similar parental characteristics in association with self-esteem of fifth and sixth grade boys. Boys of authoritative-like parents had high self-esteem, and boys of authoritarian parents had low self-esteem.

Maternal interactions at different toddler ages have not been directly addressed in any known studies. Kopp (1982), however, suggested that during the development of toddler compliance and self-inhibition, from 9 to 18 months, that the more opportunities infants have to become aware of their own interactions and their social effects, the more they will attend to them when they are alone. This suggests that caregivers may facilitate their children's development of self-regulation by giving attention and feedback to their infants about their behaviors and interactions, and implies that infants may develop more mature self-inhibitory, control and regulatory capacities if they are at least occasionally offered prohibitions in regard to certain activities and/or objects. This may also be related to Baumrind's discussion of the maturity demands made of children by authoritative parents. These parents may provide more opportunites for their children to practice more mature behaviors, including self-inhibition and self-control in toddlerhood, resulting in higher capacities for these children in areas of later autonomy and self-regulation.

Recent authors have also addressed the role of maternal disciplinary methods and child compliance in the development of later conscience. Kochanska (1991) studied maternal discipline techniques in relation to toddler compliance at 18 to 42 months of age, and both of those in relation to measures of conscience in the same children eight to ten years later. Maternal control techniques were based on self-report and objective observations and assessed authoritative-democratic versus authoritarian techniques. Toddler compliance predicted internalized conscience at six years of age on all measures of conscience: affective-moral orientation, reparation, and intensity of discomfort scores. Conversely, toddler non-compliance, including ignoring, defiance, and intentional increase in forbidden actions, was associated with lower scores on all conscience measures at six years of age. These findings were tentatively stronger for children of mothers who used less power assertive tactics, in other words, authoritative-democratic styles were related to more strongly positive correlations between child compliance and the development of later conscience. The authors summarized the findings by noting the importance of early

compliance and self-regulatory pathways to the development of conscience, and suggested that early non-compliance as assessed in this study may be predictive for future antisocial pathways of development, including deficits of conscience. The authors also pointed out that early compliance may be related to the quality of the early mother-child relationship, such as maternal sensitivity and responsiveness (Stayton, Hogan, & Ainsworth, 1971), which may be "closely related to the child's internalization of maternal standards and the subsequent development of conscience". Additionally, the authors noted that power vs.less power assertive parenting techniques may influence the child's affective experience of adhering to a set of standards as well.

Summary of maternal interactive behaviors in the transition to toddlerhood. In summary, maternal behaviors during the transition to toddlerhood which have been associated with positive infant and toddler development have included maternal sensitivity and responsiveness, with positive affect, high levels of involvement and emotional accessibility, and elements of affective attunement. In addition, maternal cooperation with the infant, in the form of joint play and maternal responsiveness to infant initiations and requests during joint activities, have been identified as an important aspect of maternal sensitivity and responsiveness at this age. The most successful control tactics have included consistent expectations for behavior and enforcement of rules, including either telling or prohibiting the infant (allowing no choice), and/or using positive measures such as bribes with a reward contingent on compliance. One study preferred psychological rewards rather than material rewards (Lytton, 1977). These controls, while they included firm limits and negative reinforcement of transgressions, were applied along with warmth, rational explanations and consideration of children's wants and needs. Attempts to direct or control the child's behavior non-intrusively, including asking or suggesting, persuading, explaining, standing or sitting next to, and/or offering verbal assistance were also important methods used along with limits. In addition, parental relationships with more compliant children were characterized by more frequent joint play and cooperative activities, and were

more likely to be mutually responsive, where both mother and child initiated as well as complied with requests, suggestions and demands from the other. In addition, there are suggestions from the literature that parents who have relatively higher expectations and maturity demands of infants and toddlers, within reason, may also be associated with more optimal development, possibly by allowing opportunity for more practice and mastery of abilities and skills.

Negative outcomes, in contrast, tended to occur in the context of maternal insensitivity and unresponsiveness, negative control tactics conveying negative emotional tone such as criticism, undermining, punishment, annoyance, force or restriction, as well as intrusive actions. Low levels of involvement, low levels of receptivity to children's wants or concerns, and a lack of reinforcement of limits were also associated with less desirable outcomes.

Although both maternal sensitivity/responsiveness and maternal control-salient behaviors have been found to be important to the development of a toddler's sense of self, self-control and self-regulation, most studies have examined these maternal attributes separately, and often examine maternal sensitivity/responsiveness during the first year, and maternal control-salient behaviors after the first year. Kindermann and Skinner (1987) reported that mothers adjust their socializing interaction patterns based on their childrens' changing competence levels. No known studies have examined the transition to toddlerhood as a time of transition for the mother as well, when the sensitive and responsive mother is expected to develop an ability to optimally manage control-salient interactions. The study of these maternal behaviors together is expected to provide us with information that may assist mothers and their infants during this transitional phase. The next sections will review existing literature on infant interactive behavior, and other maternal and infant characteristics which may affect this transitional phase, namely, maternal internal working models of care and overprotection/control in relationships and infant temperament.

Infant Interactive Behavior During the Transition to Toddlerhood: Clarity of Cues, Responsiveness to Mother

The development of optimal interactive patterns with caregivers is both a task of infancy and an outcome of infancy (Sroufe & Rutter, 1984). The infant's behavior during interaction can provide information about the infant's ability to participate optimally in the mother-infant relationship, as well as about the quality of the interactive pattern from the perspective of the infant. For example, Ainsworth and Bell (1974) noted that infants who became especially clear signal givers to their mothers during the second year had mothers who were more sensitive and responsive, and allowed infant exploration during the first year.

Infant behaviors of importance are those which indicate their involvement in the interaction and an ability to communicate with and respond to the mother. Barnard et. al. (1989) identified the importance of the ability of each partner to send cues to the other, and to respond in a way that is meaningful to the other. The quality of infant interactive behavior, then, depends in part on the infant's clarity of cues and responsiveness to the mother (Barnard et al., 1979; Thoman, 1976). By the time the infant is 12 months of age, clarity of cues should be relatively well developed, in part depending on the quality of mother-infant interaction during the first year (Sander, 1975). In summary, then, infant responsiveness to the mother and clarity of cues were the infant interactive charactistics of interest in this study. These are expected to contribute to the quality of the relationship between infant and mother, and to the infant's consequent autonomy, self-control and sense of self.

Maternal Contributions to Maternal and Infant Interactive Behavior

Maternal Internal Working Models of Relationships

Several authors have attributed parental effectiveness to parents' experiences in their own family of origin (Wellish & Steinberg, 1980; Main & Goldwyn, 1984). Attachment

theory may provide a conceptual framework for our understanding of how maternal developmental history affects parenting and how patterns of parenting are transmitted from one generation to the next. Attachment theory, then, in addition to explaining infants' relationship needs and the importance of mother-infant interaction, may help explain the importance of maternal developmental history for the developing infant as well.

The quality of the infant attachment relationship that is formed through mother-infant interaction during infancy is thought to be central to later socio-emotional development including the development of the self and peer relationships, and to general psychological developmental competence or disorder (Erickson, Sroufe, & Egeland, 1985; Lewis, Feiring, McGuffog, & Jaskir, 1984; Maccoby & Martin, 1983; Main, Kaplan, & Cassidy, 1985; Pipp, Easterbrooks & Harmon, 1992; Ricks, 1985; Sroufe & Rutter, 1984). Attachment in infancy and toddlerhood is defined as the ability of the infant to experience comfort and security in the presence of a primary caretaker, especially during times of stress, as well as their ability to experience enough security to move away from the caretaker and explore the environment during non-stressful times (Ainsworth et.al., 1978). This balance of proximity seeking and exploratory behavior is thought to be the outcome of an optimal mother-infant relationship which will ideally continue to support infant growth in the areas of autonomy, development of the self, and later intimacy.

According to attachment theory, secure infant attachment is accomplished through experiences of emotional and physical comfort in the presence of the caretaker and through a sense that the caretaker is available when needed. A mother's ability to meet the attachment needs of the infant depends on her ability to be sensitive and responsive to her infant, which contributes to the quality of the infant's felt security and comfort in her presence (Ainsworth et. al., 1978). This sensitivity and responsivity is demonstrated in part by the mother's response to infant attachment behavior such as crying, following, smiling, sucking, and clinging (Bowlby, 1969) as well as to other behaviors or behavioral sequences exhibited by the infant in situations related to stress, comfort seeking, and

autonomy seeking (Bretherton, 1985). Richards (1971) found that almost any change in infant activity elicited maternal attention and involvement during the first two months of life. Infant state changes, general body or facial movements, and hiccupping are examples of infant behaviors which may induce maternal accomodation, involving sensitivity and responsiveness.

Maternal responses to infant behavior and their meaning to the infant are thought to be internalized as part of the infant's developing sense of self and "internal working model", which is thought to be an inner "representation" of the relationship and the self as experienced in that relationship. In mother-infant dyads which remain together, these models are believed to become increasingly stable. Bowlby (1973) indicated that internal working models show "some resistance to change" by the end of infancy. A formed internal working model is thought to remain relatively and qualitatively stable through-out life, although it is continually revised with development and can become amenable to change (Moberly, 1985; Kobak, Sudler, & Gamble, 1991).

Internal working models are thought to serve as links between early and later experiences of the self and behaviors in intimate and social relationships. Accordingly, attachment patterns and internal working models are thought to become part of what determines the quality of interaction when mothers later interact with their own infants (Main, Kaplan, & Cassidy, 1985). An infant's attachment or other behavior may activate negative memories, for example, partially or wholly unconscious, in mothers who have had negative experiences with their own parents and limit the mother's sensitivity to her own infant. In contrast, mothers who have had positive experiences with their own mothers will have positive empathic associations to their infant's attachment and other related behavior, and will be able to acknowledge their infant's needs and respond empathically and sensitively (Main, Kaplan, & Cassidy, 1985; Biringen, 1987). Biringen (1987) found mother's recollections of being accepted by their own parents, (as measured by the Mother-Father-Peer Scale; Epstein, 1983), were related to sensitive behavior with

their infants (as measured by Ainsworth' s Maternal Care Sensitivity Scale; Ainsworth, 1969; Ainsworth et al., 1978).

Mother's internal working models can be assessed in various ways. One of these measures is the Working Model of the Child Interview (WMCI) (Zeanah, Benoit, & Barton, 1992). A similar measure which serves as a prototype for the WMCI is the Adult Attachment Interview (AAI) (George, Kaplan & Main, 1985; Main & Goldwin, 1985). Using the AAI, maternal coherence and ease of recall of childhood relationships have been found to relate to infant attachment security (Eichberg, 1987), and assessed prenatally, AAI classifications have been found to relate to later infant attachment security as well (Fonagy, Steele, & Steele 1992). Other measures of maternal internal working models exist: the Parent Attachment Interview (Bretherton, Biringen, Ridgeway, Maslin, & Sherman 1989) and the Experiences of Mothering Interview (George & Solomon, 1989) are two of them. In addition, self-report ratio-level of measurement scales are available, which have advantages of ease of administration, although with some loss of ability to assess more subtle inconsistencies and qualitative aspects of maternal accounts of their experiences. The Mother-Father-Peer Scale (Epstein, 1983) is one such scale. The Parental Bonding Instrument (Parker, Tupling, & Brown, 1979) (PBI) is another such measure and was selected for this study because it assesses maternal dimensions of experience within mothers' families of origin which may be particularly salient for interactions with infants during the transition to toddlerhood: dimensions of care and overprotection/control. The PBI has been used extensively and has established psychometic properties.

Maternal internal working models and maternal sensitivity and responsiveness. The finding that maternal internal working models or relationship history has been related to infant attachment (Main, Kaplan, & Cassidy, 1985; Eichberg, 1987), in combination with Ainsworth's discovery that infant attachment is related to maternal sensitivity and responsiveness, leads to the expectation that maternal relationship history should be significantly related to maternal sensitivity and responsiveness. Few studies have examined

maternal sensitivity and responsiveness in relation to maternal internal working models. Haft and Slade, however (1989), found mothers who demonstrated secure internal working models of relationships as adults (as assessed by the Adult Attachment Interview; George, Kaplan & Main, 1985) also demonstrated higher levels of affective attunement with their infants at 10 to 13 months.

Oshio (1992) examined the relationship between a mothers' internal working model of her infant (assessed by the Working Model of the Child Interview developed by Zeanah, Benoit, & Barton 1992) and concurrent maternal interactive behavior in mothers of two week old infants, using the Nursing Child Assessment Feeding Scales (NCAFS) and Teaching Scales (NCATS) (Barnard et al., 1989) and found few interactional behaviors to be correlated with the mother's internal working models of relationships. It may be that the mothers had not yet had time to develop organized maternal behaviors in correspondance with their internal working models, or that the maternal concept tapped by the interview was not a stable trait. Alternately, perhaps more interaction with the infant was required for expression of the internal working model (personal communication, S. Oshio, 1992). It is also possible that the NCAFS and NCATS may not adequately attend to aspects of interaction that might actually vary with such internal working models.

Based on the literature, at least three points should be addressed in the study of maternal internal working models of relationships. First, validity of the measure of internal working models as representative of a stable trait should be addressed. Second, examination of the contribution of infant characteristics to the expression of the working model should occur. Third, the interactional behaviors which represent processes relevant to the particular working model of interest need to be carefully selected.

First, validity of the measure as representing the internal working model of interest is needed. Psychometric testing results reflecting adequate reliability (including test re-test reliability) and validity are required. Secondly, the contribution of infant characteristics to the expression of the internal working model should be addressed. If an internal working

model is a relatively stable trait of the mother, individual infant contributions may not be expected to impact maternal expression of that model significantly. However, variations from that expectation may occur. Internal working models are hypothesized to be hierarchically arranged networks, composed of more global "representations", representing more specific event schemas composed of memories of lived experiences (Stern, 1989). These global internal working models may be generalizations or averages of a variety of event and relationship experiences (Zeanah & Barton, 1989). It may be that a particular infant may evoke different combinations of more specific event or relationship schema components than would another infant with the same mother, due, in part, to differing characteristics of the infants (Zeanah & Barton, 1989). Bowlby (1973) also suggested that more than one internal working model of attachment may exist. These may be conflicting and/or complementary. Again, individual infants may trigger different aspects of those existing models. Therefore it is possible that when maternal internal working models are evaluated in relation to a particular infant, there may be some variation in the expression of those models because of particular infant contributions. Also, as the infant matures and grows, the same infant may tap into possibly more than one internal working model. Mothers often indicate that their infant was easy to care for at one age, but difficult at another. During the transition to toddlerhood, increased infant autonomy may trigger different aspects of maternal experience. Therefore mothers' internal working models as assessed using the PBI would optimally be examined in relation to maternal sensitivity and responsiveness during both the first year and during toddlerhood, or, in less control-salient interactions reflective of interactions developed during the infant's first year, as well as in more control-salient interactions which additionally incorporate the infant's developing autonomy, as occurring in toddlerhood. Temperament will also be discussed in a later section as to its possible interaction with the expression of maternal internal working models of relationships.

Lastly, selection of interactive behaviors of relevance to internal working models of relationships should receive attention. When a concept or construct is of central importance to a study, more than one measure of that concept should be used (Nunnally, 1978) in order to more fully address issues of validity and measurement error. Optimally, more than one measure of maternal sensitivity and responsiveness should be included in a study of maternal interaction and maternal internal working models. Findings in regard to these different measures would assist in furthering knowledge both of measurement issues related to the study of maternal sensitivity and responsiveness, and assist in further defining the concept of maternal sensitivity and responsiveness as related to maternal internal working models and other maternal attributes studied.

Maternal internal working models and infant interactive behavior. If maternal sensitivity and responsiveness are in part due to the quality of the mother's internal working models, then those mothers whose perceptions of their experiences in their own families indicate more secure internal working models were expected to have higher levels of maternal sensitivity and responsiveness. In turn, those mothers should have infants with higher quality interactive ability. In addition to providing information about the infant's ability to participate optimally in the mother-infant relationship, the infant's behavior during interaction can provide information about the quality of the interactive pattern from the perspective of the infant. Ainsworth noted that infants who becoming especially clear signal givers to their mothers during the second year had mothers who were both more sensitive and responsive, and allowed infant exploration, during the first year (Stayton, Hogan, & Ainsworth, 1971). Thus, those mothers whose perceptions of their experiences in their own families indicate more secure internal working models are expected to have infants with more clarity of cues and responsiveness to their mother, than infants of mothers who indicate less secure internal working models.

Infant Contributions to Maternal and Infant Interactive Behavior: Temperament

An infant characteristic believed to affect mother-infant interactions is temperament. Temperament is defined as a set of individual traits and styles of interacting with one's environment, in part endogenous and constitutional. The expression of temperamental traits also depends on experience and developmental level (McDevitt & Carey, 1978). Temperamental traits have been found to be present at birth and to be fairly stable through childhood and into adolescence (Guerin & Gottfried, 1994). Infant temperament has been found to influence security of attachment (Crockenberg, 1981), play behavior (Field, Adler, Vega-Lahr, Scafidi, & Goldstein, 1987), the development of conscience (Koshanska, 1991), as well as child psychopathology (Graham, Rutter, and George, 1973; Thomas, Chess & Birch, 1968).

Infant Temperament and Mother-Infant Interaction

Rutter (1978) purported that the quality of mother-infant attachment could be influenced by infant temperament through means of eliciting maladaptive mothering. Temperament may influence maternal interactive behaviors in a way which may enhance, or inhibit optimal maternal sensitivity and responsiveness. Crockenberg (1981) found a significant correlation between irritable infant temperament (based on temperament assessments at days five and ten following birth) and unresponsive mothering.

Rutter (1978) also suggested the quality of mother-infant attachment could be affected by temperament, by influencing the infant's response to mothering. Koshanska (1991) found that maternal non-power assertive (authoritative-democratic) behaviors with toddlers, were significantly related to the children's later internalized conscience at ages eight to nine, primarily in children who were rated as temperamentally prone to anxiety and fearful arousal at 18 to 42 months. The more fearful toddlers were hypothesized to more readily internalize and experience anxiety in the face of transgressions and parental prohibitions, and thereby require less power assertive techniques than other children. The

authors did not conclude that more power assertive techniques were necessary for non-fearful children, but pointed out the possibility of different "socialization pathways" according to temperamental needs. Alternatively, the "non-fearful" group may have included children with impulse control problems and hyperactivity, although these conditions may reflect temperamental variation as well. However, the importance of considering temperament as a contributor to mother-infant interaction and later developmental outcome is clear.

Infant temperament and maternal control-salient behavior. Bates (1980, as cited in Maccoby & Martin, 1983) in a longitudinal study of temperament, reported finding that mothers of 24 month olds classified as difficult infants engaged in more control and power assertive techniques than mothers of infants classified as easier children. The mothers used more prohibitions or warnings and removed objects more often than mothers of infants with easy temperaments. The difficult infants did not initiate more difficult behaviors but were more persistent when they did occur. They ignored maternal control attempts more often, and reacted with fussy behavior and protests more often than infants with easy temperaments. This is especially of interest in conjunction with findings by Minton, Kagan and Levine (1971), described earlier, that maternal forcefulness in limit-setting depended upon the recent behavior of the child. Temperament may be a contributing factor in predicting maternal control-salient behavior as well as influencing maternal sensitivity and responsiveness.

It is difficult to determine what aspects of expressed infant temperament and/or infant behavior are the result of previous or current mother-infant interaction, and what aspects are inherent to the child (Maccoby & Martin, 1983). While it may not be possible to make that distinction, and interpretations must be made cautiously, examination of infant temperament and mother-infant interaction in relation to maternal internal working models of relationships was expected to provide further information about the direction of effects.

Infant temperament and maternal internal working models of control and affection in relationships. The relationship perspective, which purports that security of attachment evolves from the history of interactions between infant and parent, takes the position that the parent orchestrates the quality of those interactions, based in part on the quality of the parent's internal working model of relationships. The concept of "internal working model" is believed to encompass internalized representations of primary relationships, particularly those from one's family of origin. These representations are thought to be averages of an individual's specific relationship experiences, and are thought to guide one's later behaviors in relationships, including at the interactional level. From this perspective it can be argued that a mother's ability to respond sensitively to her infant's expression of temperament depends in part on the security of her own internal working model. A mother with a secure internal working model may interact sensitively and responsively with her infant across a variety of situations, and would likely be responsive to a variety of infant temperaments. However, a mother with a more insecure internal working model of relationships may do well with easy infants and would likely relate less than optimally with more difficult infants. Sroufe (1985) identified the need to explore how caregivers adjust their behavior to accomodate to the particular needs and nature of a given child. In addition, as discussed earlier, an infant's temperament may even affect the expression of a mother's internal working model of relationships. No known studies have examined the relationship between maternal internal working models of relationships, infant temperament, and mother-infant interaction.

Conceptual Framework

This investigation examined mother-infant interaction in mothers and infants during the transition to toddlerhood. Mother-infant interaction included the dimensions of maternal sensitivity and responsiveness, and infant clarity of cues and responsiveness to the mother. Maternal interactive behavior is conceptualized as requiring adaptation to changing infant needs and abilities. Sroufe and Rutter (1984) stressed the importance of adaptive patterns of interaction for infant development, and Sameroff and Chandler (1975) refer to the evolution of adaptive patterns over time. While this study was not longitudinal and did not examine interactions over time, the data were assumed to be representative of patterned interactions that had both developed in the context of ongoing interactions during the first year of the infant's life, and were in the process of developing further during the transition to toddlerhood. New patterns of adaptation were being formed which the dyad would then carry forward into later developmental stages. In accordance with these assumptions, maternal sensitivity and responsiveness was assessed and compared across interactional contexts with varying amounts of control saliency. Less control-salient contexts were assumed to elicit interactive patterns which had developed over the first year; more control-salient interactions were assumed to elicit newly developing interactive patterns as toddler autonomy was currently developing during the transition to toddlerhood. Toddler developmental processes to which mothers were accomodating during the transition to toddlerhood included their increasing capacity for locomotion, a developing sense of self-agency and self-knowledge, and the beginning ability for self control and self inhibition. Maternal sensitivity and responsiveness was additionally examined in relation to the mother's developing limit-setting style, and the infant's response to limits. The infant's sense of self-agency and self-knowledge were also examined in relation to maternal sensitivity and responsiveness. This emergent sense of self was viewed as not only an

infant attribute to be attended to with maternal sensitivity and responsiveness, but also as a product of prior interactive quality, and thereby an outcome variable as well.

Attachment theory guided the selection of the variable of maternal internal working models of relationships, as assessed in relation to mothers' experiences with their own parents in areas of care and overprotection/control. Maternal internal working models of relationships were expected to be related to maternal sensitivity and responsiveness, and maternal limit-setting style, as well as infants' response to limits. The mother's working model of relationships was examined as a mediator for the mother's ability to be sensitive and responsive in relation to her infant's temperament, and in relation to the developing infant's sense of self-agency and self-knowledge.

Infant characteristics have been found to contribute to mother-infant interactions in previous studies. The contribution of infant temperament to maternal sensitivity and responsiveness and to dyadic maternal limit-setting style was analyzed. The relationship of temperament to infant interactive behaviors was to be examined both directly and indirectly as mediated by maternal sensitivity and responsiveness, and by maternal relationship history. Finally, the contribution of infant temperament was examined in relation to the infant's developing sense of self-agency and self-knowledge, directly and as mediated by those same variables.

Specific Aims

The goals of this study were as follows:

1). Compare maternal sensitivity/responsiveness across mother-infant interactions with varying control saliency, during the transition to toddlerhood at 12 months.

2). Examine maternal sensitivity/responsiveness in relation to maternal limit-setting style and infants' response to limits.

3). Examine the influences of maternal experiences with care and overprotection/control from their own parents in relation to: a) maternal sensitivity/responsiveness b) maternal limit-setting style and c) infants' response to limits.

4). Examine infant temperament in relation to a) maternal sensitivity/responsiveness b) maternal limit-setting style and c) infants' responses to limits.

5). Examine maternal sensitivity/responsiveness, maternal limit-setting style and infants' response to limits in relation to the infant's developing sense of agency and self-knowledge during the transition to toddlerhood.

6). Assess maternal sensitivity/responsiveness using two different measures of interactive behavior, each emphasizing somewhat different aspects of maternal sensitivity/responsiveness. Compare the two measures on the basis of their relationships to other study variables.

7). Examine infant interactive characteristics in relation to maternal experiences with care and overprotection/control from their own parents, and maternal sensitivity and responsiveness.

CHAPTER III

METHODS

The current investigation was a secondary analysis of data from a larger mother-child interaction study, Mother-Child Interaction and Adaptation of Toddlers. This five year project had three specific aims: 1) to describe the nature and quality of mother-child control-salient interactions during the transition to toddlerhood: 2) to examine the relationship of individual maternal and child characteristics to the quality of mother-child control-salient interactions; and 3) to examine the relationship between the quality of mother-child interactional behavior and the child's socio-behavioral competence and sense of control.

Mother-infant dyads for the larger study were recruited in the first 8 months of the infant's life. Individual characteristics of mother (depression, parenting control orientation, and conceptualization of child development) and child (temperament and developmental competencies) were assessed during intake into the study, at the child's age of 8 months. Subsequent assessments and laboratory observations of mother-child dyads occured at the child's age of 12, 24, and 36 months. Laboratory observations included assessments of control-salient interactions. The child's socio-behavioral competence, self-evaluative behavior, and knowledge of self as agent were taken as indicators of the child's developing self-esteem. The overall goal of the larger project was to address knowledge gaps experienced by pediatric and public health nurses as they attempt to foster optimal child development and to prevent child psychopathology, through the promotion of optimal parenting practices and intervention with maladaptive mother-child interaction, and to provide the basis for future study of the child's developing self-esteem and mental health.

Subjects

Sixty-one mother-child dyads constituted the sample of the current, secondary study. Mother-child dyads were recruited through the Oregon Health Sciences University Family Practice Clinic, a family-oriented, general medicine clinic that provided health promotion and health maintenance services to a middle and lower-socioeconomic population from a three-county area. Although every effort was made to obtain an even gender distribution, including oversampling of female infants, for the 160 dyads for the larger study, two-thirds of infants were male and one-third were female. This same gender distribution occurred in the present study of 61 dyads. The overrepresentation of males was accounted for by the clinic serving as the sole provider of circumcision at OHSU hospital and clinics. In addition, while minority figures for the state of Oregon are approximately 95% Caucasian, 1% African American, 2% Hispanic, 1% Native American, and 1% Asian/Pacific Islander (1990 U.S.Census), the recruitment site reported that during 1991-1992, 77% of the clients were Caucasian, 16% were African-American, and 7% were of other ethnic origins. Thus it was hoped that by oversampling, a relatively even ethnic distribution would be obtained for this sample. Unfortunately, however, this was not the case and the small sample size precluded analyzing cultural groups separately.

Exclusion Criteria

Mothers were excluded from the project if their infants had been diagnosed with a physical handicap or mental retardation. Although these exclusion criteria may limit generalizability of the results, these risk factors may overshadow or limit ability to detect behaviors indicating maternal sensitivity and responsiveness, and/or infant responsiveness. In addition, data would have to have been analyzed separately for handicapped and non-handicapped infants, with considerable loss of power. A second exclusion concerned cultural effects. Child-rearing and nonverbal behavior differ profoundly across cultures; it was anticipated that control development may similarly be a culture bound phenomena.

Therefore, primarily only Anglo and African American mothers were initially included. Due to the time limits for the study, two mothers were accepted into the sample who were of mixed African American/Caucasion ethnicity; another mother was African American/Native American, one was Asian/Native American, and yet another was Native American. Care was taken to examine the latter mothers for outlier status on any of the main study variables; no outliers were found. Unfortunately, again, the sample size precluded analyses for the effects of ethnicity on any of the major study variables.

Sample Size

A minimum of 50 mother-child pairs was initally planned in an effort to balance the feasibility of conducting this study with the need for adequate power to carry out the analyses and yield sufficient information on which to base future studies. All power estimates were based on N = 50, alpha =.05, and a medium effect size. A medium effect size was chosen because this effect size can seen with normal powers of observation (Cohen, 1988), indicating a level of effects readily visible to practicing nurses. Fifty subjects render a power of 0.81 to detect significant differences across 5 interactional situations using a repeated measures analysis of variance. Fifty subjects also provided a power level of 0.84 to analyze maternal sensitivity and responsiveness across control-salient interactions relative to mothers' experiences with their own parents in areas of care and overprotection. Significance could be detected in multiple regression analyses with three variables and a medium effect size at power levels of .66, with large effect sizes providing a power level of 0.99. The availability of sixty-one subjects allowed for slightly higher power estimates.

Measures

Maternal Self Report Measures

Demographics

Standard demographic data was collected from each mother, including maternal age, partner status, partner/paternal age, education, employment status, occupation, and income.

Maternal Internal Working Models of Care and Overprotection: The Parental Bonding Instrument

The Parental Bonding Instrument (Parker, Tupling & Brown, 1979) (Appendix A) was used to assess mothers' experiences with their own parents, focusing on two bipolar dimensions of parenting behavior: 1) attitudes and behaviors of care, warmth, affection, and acceptance, versus coldness, neglect, indifference or rejection; and 2) a dimension of psychological control over the child, with polar characteristics of cooperation, accessibility and encouragement of autonomy and independence, versus strictness, punitiveness, interference and overprotection. Based on those dimensions, this 25 item measure contains 2 scales: Care (12 items) and Overprotection (13 items), rated separately for each parent. That is, each item was filled out twice, once for the respondent's mother, and once for her father. Subjects are asked to rate how much each item corresponded to their memories of their parent's behavior during their first sixteen years of life, using four-point response options (very like to very unlike). The scales scores may be used independently, and analyses have indicated they are also correlated negatively (-0.47 for mothers, -0.36 for fathers, Parker et. al., 1979). Items indicating less care and more overprotection/control were negatively coded for this sample, so that higher scores indicated more optimal parenting. Maternal and paternal scores were also summed for a total single score.

Initial test-retest reliability coefficients for the PBI have been 0.76 and 0.63 over three weeks for the Care and Overprotection scales respectively. Test-retest data have

indicated reliable coefficients over periods of up to ten years (Wilhelm & Parker, 1990, as cited in Lopez & Glover, 1993). Split-half reliabilities were adequate at .88 and .74 for the Care and Overprotection scales respectively. Cronbach's alpha internal consistency coefficients for subscale data obtained from the present sample were: Maternal overprotection scale, $\alpha = .82$ ($n = 58$); paternal overprotection scale, $\alpha = .83$ ($n = 42$); maternal care scale $\alpha = .95$ ($n = 61$); paternal care scale $\alpha = .94$ ($n = 46$). Other PBI scales and subscales were anticipated to have higher coefficients due to their increased number of items; these four scales were used in order to obtain the most conservative alpha values for this sample. Mothers who reported no father figures in their lives were deleted from this reliability analysis, resulting in an even smaller sample size for father alpha values.

As discussed earlier, validity of the measure as representative of a stable internal working model should be addressed. The Parental Bonding Index (PBI) has undergone considerable test re-test, reliability, and validity testing. Clearly, the PBI does tap into a relatively stable perspective of maternal experience.

In addition, concurrent validity findings substantiate the PBI as relevant to the internal working model of interest. Scores obtained from two raters' interviews with subjects correlated with the same subjects' own PBI scores, at $r = .78$ for the Care scale and $r = .48$ for the Overprotection scale. Interrater reliability coefficients of 0.85 and 0.69 were also obtained for the Care and Overprotection scales respectively. Other validity findings include significant relationships between the parental representation scores and current parent-child conflict (Mackinnon, Henderson, Scott, & Duncan-Jones, 1989), perceptions of social support (Sarason, Sarason, & Shearin, 1986), and counselor-rated working alliances (Mallinckrodt, 1991). Sibling scores have been found to covary, and female twins were found to score parents more similarly than did non-twin female siblings (Mackinnon, Henderson, & Andrews, 1991).

The Parental Bonding Instrument has some limitations in relation to assessment of maternal internal working models of relationships. One limitation of the PBI is that it may

not discriminate between low levels of parental intrusiveness, and parental neglect. Casual conversation with at least one mother at the time of data collection whose scores suggested less overprotective/controlling parents, revealed she had neglecting parents who did not interfere with her life because they were not interested. This would indicate a possible curvilinear relationship with the overprotection scores and optimal parenting. Psychometric data available for the PBI does not reveal such findings through its past use, however, such instances may at least increase the error variance in statistical analyses. Data analysis will also utilize combined profiles of PBI scores, such as low overprotection and high care, vs. low overprotection and low care, to in part address this issue.

Further limitations inherent to the instrument include that it may not account for mothers who have been able to work through negative experiences with their own parents in such a way that they become free to be more positive and sensitive to their own children. These mothers may report negative experiences on the PBI during their first sixteen years but be able to be relatively sensitive and responsive parents. Attachment research has shown that mothers with negative attachment histories who, through therapy or other life experiences, are able to grow beyond their negative experiences with their parents, and are able to accept their parents' own difficulties and forgive them, will be better able to respond to their children as they really are and not carry their past difficulties into their relationships (Eichberg, 1987). However, mothers (or fathers) who deny any difficulty with their own parents, or who are still embroiled in internal conflict with them, will be less able to interact with their children as they really are and will carry difficulties with their own parents into their relationships with their children and be less sensitive and responsive (Eichberg, 1987).

The PBI also does not capture mothers' denial of conflicts with their parents, or areas of inconsistency in mothers' recollections of their experiences. Inconsistencies may indicate areas of conflict still important to the mother which will affect her behavior in relationships. And, mothers who deny conflicts with their parents may report very positive,

even ideal, relationships with their own parents, and yet they may be relatively insensitive and unresponsive with their own children, carrying their real histories of parental neglect into their relationships with their children. Such inconsistencies and denial are difficult to capture, or if captured, difficult to analyze, on a self-report Likert-scale measure such as the PBI. While these mothers may have still have lower scores than mothers with more positive relationship histories, the PBI does not account for the presence of the inconsistency itself, which may be an important aspect of an internal working model.

Because of these limitations of the PBI, the instrument may better be said to assess maternal relationship histories rather than maternal internal working models of relationships. While some loss of ability to assess inconsistencies and qualitative aspects of maternal accounts of their experiences relevant to maternal working models of relationships was expected, maternal relationship histories as assessed by the PBI were still expected to assess a central aspect of maternal internal working models of relationships and were expected to be related to the study variables in the indicated ways. In addition, the self-report, ratio-level data format had advantages of ease of administration appropriate for use within the context of the larger ongoing study. And, the Parental Bonding Instrument also assessed maternal dimensions of experience within a mother's family of origin which may be particularly salient for interactions with her own infant during the transition to toddlerhood: dimensions of care and overprotection/control.

Maternal Report Measures

Infant Temperament

Infant temperament was assessed using the Toddler Temperament Scale (TTS; Fuller, McDevitt, & Carey, 1979) (Appendix B) at 12 months. This measure was selected because an infant version was also available for use in the larger study; the TTS was employed in the larger study at 24 and 36 months as well as 12 months. The 97-item questionnaire consists of nine temperament dimensions: a) activity - amount and rigor of

motor activity; b) rhythmicity - regularity of eating, sleeping, and toileting patterns; c) adaptability - adjustment to new routines and places; d) approach - responsivity to novel objects and friendliness to strangers; e) threshold - responses to intense stimulation and changes in stimulation; f) intensity - intensity of responses to stimulation; g) mood - affective reactions to people and to daily routines; h) distractibility - degree to which the child can be distracted from ongoing activities, such as crying; and i) persistence - the degree to which activities, such as play, are sustained. There are 97 items, each scored according to how often the infant demonstrates the phenomenon of interest, ranging on a six point scale from almost never to almost always. Moderate stability of temperament ratings for activity (r =.39), rhythmicity (r =.51), intensity (r = .39), mood, (r =.53) and persistence (r = .57) was found from 3 to 20 months (Fullard et al., 1979). Infants are then classified based on their scores on the different dimensions as having an easy, intermediate, slow to warm up, or difficult temperament. McDevitt and Carey (1978) reported a median of .38 for stability in temperament ratings.

Mother-Infant Interactional Observational Variables

Maternal Sensitivity and Responsiveness: Ainsworth Maternal Care Scales

Ainsworth and her colleagues (Ainsworth, Bell, & Stayton 1974) developed these scales from the reference point of attachment theory. Four rating scales (acceptance vs. rejection, accessibility vs. ignoring and neglecting, cooperation vs. interference, and sensitivity vs. insensitivity) were derived from observations of mothers and infants during the first year of life. Of 22 initial rating scales, these four were further developed for use during the last quarter of the first year (Ainsworth et al., 1978) (Appendix C). Scoring consists of rating maternal interactions for each scale along a single nine-point continuum. For example, anchor points for the acceptance-rejection scale are: Highly accepting, accepting, ambivalent, substantially rejecting, or highly rejecting. Higher scores indicate higher quality of maternal interactions. Midpoint ratings of five are still considered to be

more positive than negative in their effects on the infant. Fairly elaborate explanations are available for the anchor points of each scale, for clarification and training (See Appendix C).

Acceptance-vs-rejection assesses the balance between a mother's positive and negative feelings about her infant. The scale assumes that there are positive and negative feelings within all mother-infant relationships, and thus the overall balance is what is important. At the positive end of the continuum, negative emotions and experiences are subsumed within an overall positive, accepting tone. At the negative end of the continuum, the mother may still have some positive expressions toward her infant but her negative feelings and expressions are predominant, more extreme and they are seldom integrated with any positive elements. The midpoint score of five refers to a mother who seems ambivalent toward her infant, but who on the whole is still more positive than negative in her acceptance of her infant.

Accessibility-vs.-ignoring and neglecting refers to the mother's ability to perceive and read her infant's signals. A highly accessible mother has her infant in her perceptual awareness at all times, and can divide her attention between her infant and other activities, without losing her awareness of the infant. On the other end of the continuum, an ignoring and neglecting mother may tune out her infant's signals in order to maintain her own sense of focus and equilibrium, or may get lost in her own activities so that she is unaware of her infant's signals. Thus the infant may go unattended or unresponded to for fairly long periods of time. This scale does not address the quality of the mother's response to her infant's signals, but rather to whether or not she can perceive and respond to them at all.

Cooperation-vs.-interference refers to a mother's ability to gear her interventions and initiations in accordance with her infant's states, mood, interests and acitivities, rather than interrupting or interfering with them at her own whim. Mothers at the positive end of the continuum are able to acknowledge their infants as separate beings with their own valid interests and activities and seem to guide rather than direct their babies' behavior. These

dyads' activities seem codetermined. Mothers at the other end of the continuum tend to view their infants as subject solely to their own wishes and decisions. The interfering mother may appear to constantly attempt to control, shape or train the infant's behavior, or she may treat her infant as an extension of herself.

Sensitivity-vs.-insensitivity assesses four components of maternal sensitivity: awareness of the infant's cues, an accurate interpretation of them, a prompt response to the cues, and an appropriate response. Appropriateness also depends on the developmental level of the infant; Ainsworth writes that during the last quarter of the first year the mother's prompt response to the infant's social communication and gestures is quite important. Because by definition, one of the components of sensitivity is maternal accessibility, this scale rating should not be higher than the rating of accessibilty vs. ignoring and neglecting.

Test-retest reliability information was not available for the scales. The Maternal Care Scales do not directly measure infant characteristics, however they do take the infant's needs and characteristics into account as they measure the ability of the mother to be sensitive, accepting, cooperative, and accessible as determined by infants' needs. Thus a mother may still be judged sensitive with an infant who is able to sustain no eye contact and little physical contact, if she knows what the infant needs at those times, remains attentive, and does not insist upon what the infant cannot handle. During the transition to toddlerhood, assessment of maternal acceptance, accessibility, cooperation, and sensitivity must consider those dimensions in relation to infant autonomy, mobility, self-knowledge and self-agency, as the infant exhibits these characteristics formally and informally during laboratory sequences.

Previous use of these four scales has significantly distinguished insecure from securely attached infants at one year of age: sensitivity vs. insensitivity, $\underline{r} = .78$; acceptance vs. rejection, $\underline{r} = .75$; cooperation vs. interference, $\underline{r} = .80$; and accessibility vs. ignoring and neglecting, $\underline{r} = .77$ (Goldsmith & Alansky, 1987; Ainsworth et.al., 1978). At least five

studies have produced similar findings (Bates, Maslin, & Frankel, 1985; Egeland and Farber, 1984; Belsky & Isabella, 1988; Grossman, Grossman, Spangler, Seuss, & Unzner, 1985; Smith & Pederson, 1983).

Pederson, Moran, Sitko, Campbell, Ghesquire, & Acton (1990) suggested that maternal behaviors be assessed in a context that can reveal maternal attention to more subtle aspects of infant signals and needs. Such a context is similar to the intense scrutiny of maternal behavior conducted by Ainsworth et al. (1978) in their original study. Pederson et al. (1990) recommended distracting the mother or providing a mild degree of stress to better assess the mother's awareness of the infant while she has competing demands or is preoccupied. This type of context may also represent many situations of day to day life outside the laboratory or research situation, and were simulated in this study by the minor stress of the observational procedures.

The Maternal Care Scales have been used separately and together in a variety of investigations. In this study, they were averaged for a mean measure of maternal sensitivity and responsiveness. Rushton, Brainerd, and Pressky (1983) stated that data aggregation is appropriate when different measures of the same construct are combined, increasing their reliability by decreasing mesurement error across the multiple measures. Lamb, Thompson, Gardner, Charnoff and Estes (1984) reported these scales to be intercorrelated at values of 0.7 to 0.9, arguing that perhaps they were measures of the same maternal dimension. Lamb et al. (1984) noted that Ainsworth had also suggested that possibility. In addition, Ainsworth et al. (1978) summarized that the scales did not reflect maternal behavior in absolute terms but rather tapped into a mother's ability to be sensitive and responsiveness to her infant's states and needs, and later, wishes and plans. Thus the four scales may be assumed to represent the overarching construct of maternal sensitivity/responsiveness.

Since any significant moderate correlation between two scales indicates they have shared aspects, such a correlation would justify composite scores if aggregation is conceptually valid. For the purposes of this study, the scales' correlations were examined

before aggregation. An apriori decision was made that if inter-scale correlations were $\underline{r} = .5$ or above, the four scales would be averaged as a composite maternal sensitivity/responsiveness score. If they were below $\underline{r} = .6$, it was planned they would also be entered in analyses independently, in addition to using the composite score, to further clarify results.

As was predicted by previous research, in this sample the four scale scores were highly corrrelated (above $\underline{r} = .6$) within each interactional sequence. In the mother-infant play interaction, correlations between the four scales ranged from .74 (cooperation and acceptance), to .97 (accessibility and sensitivity). In the teaching interaction, correlations ranged from .63 (cooperation and acceptance), to .93 (accessibility and sensitivity). In clean-up, correlations ranged from .69 (acceptance and accessiblity), to .91 (accessibility and sensitivity). In the prohibition sequence, the range was from .73 (cooperation and acceptance), to .91 between (accessibility and sensitivity). And finally, in the snack interaction, the lowest correlation was between cooperation and acceptance at .75, and the highest was between sensitivity and accessibility, at .95. There was a pattern for lower correlations between maternal acceptance and cooperation, and higher correlations between sensitivity and accessibility. Because these scales were all correlated above the predetermined level of .6, however, they were averaged within each interactional context, yielding one mean score for each context.

Observer reliability. Inter-rater reliability for the Ainsworth Maternal Care Scales was established between ratings of the investigator and an undergraduate senior nursing student. The scales rate qualities which are not mutually exclusive or exhaustive but which represent continuums of more global qualities. In other words, the scales do not assign codes to specific behaviors, but assess differences in levels of maternal sensitivity/responsiveness which are assumed to be relatively stable across situations. Anchor points on the scales represent constellations of behaviors which may vary somewhat from situation to situation in terms of the actual behaviors required for each. The

rater is required to make a judgement about each subject, based on the multiple behaviors displayed and their quality. The positive aspect of ratings achieved in this manner is that they are expected to be more stable across situations because they should tap into more stable characteristics of the subject, not situationally specific behaviors (Cairns & Green, 1979). Pearson's product moment correlations were employed as indicators of inter-rater reliability. Adequate reliability was considered to be interrater correlations at .80 or above on 10% of the data, without conferencing of results. Kendall's tau coefficients were also used; Kendall's Tau may be used to assess interrater associations with ordinal data, while controlling for agreement that may have occurred by chance. Weighted kappa coefficients over .7 were to be considered acceptable.

Inter-rater reliability was established first on tapes from the prohibition interaction. Tapes from the larger study were coded in sets of ten until reliability was established. The first set of ten tapes was coded to consensus, and then subsequent sets of ten were coded independently. Conferencing occurred if interrater correlations were below 80% for any given set of tapes. Approximately four total sets of ten (40) were coded until non-conferenced reliability occurred with an entire set of 10 prohibition tapes. Approximately 20 of these tapes were of subjects included in the present sample. Then, for the actual data used in the study, the present sample of 61 tapes were recoded by the primary investigator. Following this recoding, six of these tapes (10%) were then coded as well by the graduate student to ensure continuing reliability. These six tapes for interrater reliability were randomly selected within a range of high, medium and low ratings in order to represent the variability present in the entire sample.

Similar procedures were conducted with the other interaction segments, although only approximately two sets of ten were required to establish initial reliability with the other segments, due to increased rater experience with the scales. For each segment, once initial reliability was established, the primary investigator coded the 61 tapes for the entire sample. Again, six of these tapes (10%) for each interaction were then coded by the student

for on-going reliability estimates. The six tapes for interrater reliability were randomly selected within a range of high, medium and low ratings in order to represent the variability present in the entire sample. The tapes were selected separately for each interaction. Reliability ratings are presented in Table 1.

Maternal Sensitivity and Responsiveness: Nursing Child Assessment Teaching Scales

As part of the Nursing Child Assessment Training program, Barnard et al. (1979, 1989) have developed two interactional scales, the Nursing Child Assessment Feeding Scale (NCAFS) and the Nursing Child Assessment Teaching Scale (NCATS) (Appendix C) with standardized norms and evidence of reliability and validity.

Six subscales were developed using factor analytic techniques: maternal sensitivity to cues, maternal response to distress, maternal socioemotional growth fostering, cognitive growth fostering, clarity of child cues, and child responsiveness to the parent. A contingency scale can also be extracted, consisting of items pertaining to parent and child responses that are contingent on the other's behavior. These scales measure both parent and infant contributions to interactions. Because many or all of the items assessing maternal interactive behavior may be important to a definition of maternal sensitivity and responsiveness (in particular, parental sensitivity to cues, response to distress, and socio-emotional growth fostering), all the maternal subscales were additionally summed as a total measure of maternal sensitivity and responsiveness in this study. The infant subscales of clarity of cues and responsiveness to mother were used to assess infant interactive behaviors.

The total teaching scale consists of 61 dichotomous yes/no items. Higher scores generally indicate a higher quality of interaction. Tasks generally last approximately five minutes or less. The same task was used for all subjects in order to provide information about a range of infant abilities in relation to one particular task. The rater asked the mother to teach her infant to perform this task, and to wave at the two way mirror or verbally indicate when the task was either completed, or she would like it to end. To provide a

Table 1.

Interrater Reliabilities for Maternal Care Scales: Pearson Correlation Coefficients (n = 6[a])[b]

Interaction	Scale	Interrater correlations		
		Initial	10%	Kendall's Tau 10%
Play:				
	acceptance	0.9654	0.9639	0.7722
	accessibility	0.9654	0.0000	1.0000
	cooperation	0.9609	0.9397	0.8895
	sensitivity	0.9654	0.9909	0.9660
Clean-up:				
	acceptance	0.8934	0.9354	0.9234
	accessibility	0.8715	0.9094	0.8095
	cooperation	0.9618	0.9705	0.9747
	sensitivity	0.9694	0.9094	0.8095
Snack :				
	acceptance	0.9002	0.8929	0.7830
	accessibility	0.9097	0.8562	0.8704
	cooperation	0.9080	0.9056	0.8362
	sensitivity	0.9469	0.8914	0.9199
Prohibition:				
	acceptance	0.8525	0.9848	0.9486
	accessibility	0.9251	0.9804	0.9500
	cooperation	0.8581	0.9881	0.9759
	sensitivity	0.9251	0.9804	0.9500
Teaching:				
	acceptance	0.9192	0.9725	0.9636
	accessibility	0.9120	0.9892	0.9661
	cooperation	0.9919	0.9859	0.9608
	sensitivity	0.9426	0.9657	0.9309

[a] Note: Six different tapes were selected for each interaction.
[b] Note: All coefficients in this table significant at least to level of $p \leq 0.05$.

minor stressor for the assessment of maternal sensitivity/responsiveness (as mentioned earlier), a task was provided which challenged the infant's developmental capacity. The NCATS manual includes a list of tasks which are somewhat developmentally challenging for given infant age ranges. Again, the same task was used for all subjects.

Cronbach's alpha internal consistency reliabilities (α) of the total NCATS scores have been .85 for one to twelve months; the total scale score has had higher reliabilities than the subscale scores (Barnard et al., 1989). Four maternal subscales make up the NCATS: maternal sensitivity to cues (α = .44), maternal response to distress (α = .73), maternal socio-emotional growth fostering (α = .73), and maternal cognitive growth fostering (α = .73). For the total parent scale, α = .83 for one to twelve months. The child clarity of cues subscale α = .51; the child responsveness to parent subscale α = .74. The NCATS also has 24 contingency items, items which assess the mother and infant's pacing of activities based on actions or states of the other. Twelve items measure maternal contingent behaviors, and 12 items measure child contingent behaviors.These have been found to have alpha internal consistency estimates of .77 (maternal) and .72 (child).

Test-retest correlations at 1, 4, 8, and 12 months across the first year have been 0.85 for the total parent teaching scale. This is quite high considering the amount of normative infant developmental change and change in corresponding normative maternal behaviors occuring during that time (Barnard et al., 1989). Short term test-retest data are not available.

Normative data are available for the scales based on a sample of approximately 750 mother-infant dyads (Barnard et al., 1989). The scales have shown consistent positive correlations with education level, with higher education related to higher scores. Marital status has also been related, with marriage related to higher scores.

Concurrent validity has been demonstrated in a variety of studies. Higher teaching scale scores were also associated with higher maternal mood on the Profile of Mood States ($\underline{r}$ = -.50, Thomas & Barnard, 1985). Moderate correlations were found with the total mother teaching scale and a measure of positive and negative maternal affect ($\underline{r}$ = .36 at four months and $\underline{r}$ = .41 at eight months; Crnic, Ragozin, Greenberg, Robinson, & Basham, 1983). Findings of concurrent relationships between the Bayley Mental Development Index and the NCATS and NCAFS have been mixed, but predictively, seven significant

correlations at ten months were found with the 24 month Bayley MDI (sensitivity to cues, socioemotional growth fostering, cognitive growth fostering, clarity of infant cues, parent total scores, and total scale score, and the multiple r for the six subscales) with r values of .24 to .37, with a multiple r for all six subscales of .48 (Newborn Nursing Models, Barnard et al., 1989). Sample sizes for all of those predictive correlations ranged from 42 to 58.

With respect to attachment, the teaching scale has demonstrated modest predictive ability, although findings are a bit mixed. The associations between the NCATS scales at three months and attachment security at 13 months have been relatively low at r = .27 for the combined parent and child total teaching scores, explaining approximately 10% of the variance in attachment security. Total parent scores were significantly correlated at r = .18. The child's behaviors were more predictive of attachment security at three months than maternal behaviors, with clarity of cues, responsiveness to parent, and child total scores all correlating significantly at r = .23, r = .25, and r = .26, respectively. There were no significant correlations at 12 months between any NCATS scores and attachment security.

The modest contribution of this scale toward prediction of attachment security and its ability to more strongly predict cognitive/linguistic development indicates its' potential usefulness in assessing maternal and infant interactive characteristics during the transition to toddlerhood, in less as well as more control-salient interactions. For example, interactional behaviors in relation to the development of self-control were expected to have cognitive as well as affective components. The use of this measure of maternal sensitivity and responsiveness in addition to Ainsworth's Maternal Care Scales was expected to assist in the description of relevant maternal interactive behaviors during the transition to toddlerhood.

Observer reliability. Two students, each certified in 1995 to score the NCATS based on a standardized training program, coded the data. Interrater agreement at 85% percent has been established as adequate interrater reliability of NCATS data, and both

raters had tested as reliable at that level for the program training tapes. Unfortunately, at the time of data analysis, the two student raters were only 82% reliable together, using 25% (15/60) of the tapes for the current study. The student who was more involved with the study coded most of the tapes. It was hoped that her familiarity with the interactional sequences provided more accurate assessments. Unfortunately, this is a limitation of the study, and will need to be addressed before further analysis is conducted.

Maternal Limit-Setting and Infants' Response to Limit-Setting: The Prohibition Coding Scheme

The quality of maternal control and child social responsiveness in the limit-setting interaction was coded using the Prohibition Coding Scheme developed by Medvin and Spieker (1985) and revised by Houck and LeCuyer (1995) (Appendix D). This system was designed to qualitatively assess the pattern of maternal control strategies and child compliance in a three minute limit-setting situation. An important feature was that there was nothing in the room of interest other than two chairs and a table, except a computer keyboard. The mother was instructed to do what she normally did to keep the child from touching the keyboard, and the experimenter left the room.

Although maternal and child behavior are interdependent, the Prohibition Coding Scheme rates each partner separately but on dimensions that consider the other's behavior. The mother was observed for frequency counts of four classes of directive behavior: a) use of verbal commands, b) physical directs c) use of distractors, d) use of reasoning strategies/information; and e) maternal responsiveness which included appropriate responses to infant negative affect; follow (encouragement) of infant initiation of alternate activities; and follow (encouragement) of infant processing of the prohibition. Using these frequency counts, proportions were calculated to classify the mother's behavior into one of four classifications that reflected the pattern of maternal control in the limit-setting interaction: Redirective, Authoritative, Authoritarian, or Inconsistent. These are based on the work of Baumrind (1971) as well as observations of maternal behavior in limit-setting

situations with infants at the age of 12 months. These maternal classifications are described in the following sections, adapted from the Prohibition Manual (Houck & LeCuyer, 1995):

Redirective. Redirective mothers tended to evade the issue of the prohibited object and generally avoided a potential control battle. Their primary strategies entailed distractors, and physical restraint was embedded in a distracting activity. For some, there may have been a lack of clarity about the prohibition. Maternal commands and directs were few in relation to distractors and/or reasoning. Some of these mothers may distract even in response to the child's negative affect. They may have made a game out of the child's testing of the prohibition. Overall, although they had firm control and behavioral contingent responsiveness, more time was spent in distracting or redirecting the child than in facilitating self control. The pattern involved a higher level of distracts, sometimes with a comparable level of responsiveness, and lower levels of directs and reasons.

Authoritative. The authoritative mother provided both firm control and sensitive support for the child's developing self-control. One way of providing sensitive support was through verbalizing or reflecting the child's feeling state ("you are mad") or goal in relation to the prohibition ("you really want that"). Usually, this mother was clear about the prohibition with verbal commands and may have supported her expectations with reasoning. These mothers' emphasis was more on facilitating internalization of the child's self control rather than power assertions. If the child had a lot of autonomy and initiated alternate activities or sought comfort, she followed the child's cues more often than not. If the child did not assert much autonomy, she appropriately distracted the child from the prohibited object after addressing the prohibition. Overall, this maternal behavior type did not avoid the potential for a control battle or persistence. She was empathic and responsive to child cues. Generally, this mother's behavior was evenly distributed across the frequency categories or may have been relatively low in directs.

Authoritarian. The authoritarian mother used primarily verbal commands and physical directs. This mother offered little empathic reasoning or sensitive support in terms of responding to the child's autonomous cues or references. This mother relied primarily on power assertion to influence her child's behavior, rather than trying to facilitate the child's learning to distract him/herself, or learning reasons why an object may be prohibited. Thus the authoritarian mother seemed to teach her child to follow directions at all costs in response to authority, rather than facilitating the child's internalization of self-control. She made relatively little use of distractors or, if she used distractors, they tended to be insensitive or inappropriate to the child's develomental level and/or current state, and/or intermingled with verbal commands. These mothers may have used a negative affective tone, but not necessarily. They also may have been frankly coercive and/or intrusive at times. Proportionately, this mother had a high level of power assertions/directs with relatively lower levels of distracts, reasoning, and responsiveness. Threats of punishment, hitting, slapping, or pretend hitting were always considered authoritarian.

Inconsistent. The inconsistent mother seemed inattentive and/or insensitive with a general lack of contingent responsiveness. Her behavioral actions were delayed or inconsistent, and were not necessarily predictable from or influenced by the child's behavior. She may have looked less organized, with a lack of clarity and poor timing. The observer may have seen a repetitive cycling pattern of maternal prohibition and child persistence so that maternal commands became meaningless. This may have been because maternal affect was incongruent to the commands, or commands which were not enforced.

Child behavioral frequency counts were made on dimensions of autonomy and engagement or follow, and included these autonomous behaviors: a) persistence, b) initiation of alternate activities, including confort seeking, and c) inhibits or processing of the prohibition. Child follow behavior included following maternal verbal comands and/or following maternal distractors, and/or following maternal physical directs. Proportions

were calculated and the child's responsiveness to limit-setting was subsequently categorized into one of four descriptive profiles: Autonomous-disengaged, Autonomous-compliant, Persistent-compliant, and Persistent. A description of these classifications follows.

Autonomous-disengaged. The child in this category will engage in no persistence, or in a low level of persistence. These infants also engage in little follow or engagement with the mother, whether due to her lack of support and input, or due to the child's avoidance of her as evidenced perhaps by physical distance, ignoring, or rejection. The disengaged-autonomous child will manifest a moderate to considerable level of autonomous behavior that usually excludes the mother. Inhibition behavior, rare for this classification, will generally occur independently of the mother's socialization or control efforts.

Autonomous-compliant. Although children in this classification may have an initial, perhaps extended, period of persistence, the level of persistence is low in relation to other child behavior. The hallmark of the autonomous-compliant child is the ability to inhibit their approach to the keyboard and/or to process the prohibition such that an internalization of control (however rudimentary) is evident. In addition, this child will engage in autonomous activity initiated toward the mother and will readily follow her distractions.

Persistent-compliant. Children in this classification are persistent toward the prohibited object and may respond to the prohibition with negative affect. They do comply with their mother's redirects and/or distractions intermittently and/or for extended bouts. Depending on how upset they are, and how much negative affect they express, they may engage in comfort seeking and/or limited autonomous activities that include the mother (or at least do not exclude her). Generally, the child is responsive to the mother but persistent. Some children in this category will display only mild and/or infrequent persistence but the persistence is observed throughout the observation.

Persistent. The child with this behavioral classification usually engages in a high level of persistence toward the prohibited object and may have a high level of negative affect. This child displays little, if any autonomy, does not inhibit his or her behavior in response to the mother's requests or commands, and rarely follows the mother's redirects. The child generally ignores the mother and rejects or rarely follows her distractors.

Using the original Medvin and Speiker (1985) coding system, limited construct validity (n = 81) was evident in significant correlations between child self-control (recoded as a dichotomous variable) and concurrent measures of child cooperation (r =.21) and child play behavior (r =.18). Construct validity for maternal behavior (n = 81) was evident in a significant correlation between maternal profile scored as a dichotomous variable (authoritarian vs.non-authoritarian) and concurrent maternal play behavior, (controlling vs. non-controlling) (r =.26).

Observational coder training and reliability. Coders were trained to code Prohibition sequences using the present coding system, with 20 videotapes at 12 months scored by the principle investigator for the larger study. Reliability ratings for the revised system were conducted via percent agreement on the frequency counts, and Cohen's kappa analysis for the classifications. Interobserver reliability of at least r = .85 was achieved with the training tapes for frequency codings and rating scales and was maintained through periodic reliability checks on 10% of the data. A kappa of at least .70 for classifications was planned, using training tapes and maintained through periodic reliability checks. The kappa statistic is a conservative estimate for which coefficients in the .60s are considered reasonable (Fleiss, 1981). Cohen's kappa coefficients were .79 for maternal classifications, and .86 for the infant classifications.

Child Outcome Measures

Infant's Sense of Self and Other: Self and Mother Recognition Tasks

Tasks testing self-knowledge, or self as object, were developed by Pipp, Fischer, and Jennings (1987) (Appendix F). A series of recognition tasks tested featural recognition, spatial location, verbal labelling, and possession of self and mother. Included was a rouge test. Rouge was applied to the infant's and mother's noses and the infant was required to both look at and either touch or verbalize about the presence of the rouge to pass the task. Sticker tasks were also used; stickers were applied to both mother and infant's nose, hand, and tummy, and the infant needed to remove two out of three from both self and mother to pass. In addition the infant was asked to locate and identify both self and other, identify their own and mother's body parts (nose, hand and tummy), and identify their own and mother's possession of shoes, and their own and mother's gender. These tasks have been found to fit a highly significant Guttman scale, when infants were tested at 1 month intervals from 6 to 41 months (Pipp et al, 1987). In addition, construct validity has been demonstrated by findings of significant differences in number of tasks between securely and insecurely attached infants at 24 months (n = 122, mean difference =.67 task) and 36 months (difference = 1.22 tasks), with securely attached infants performing better. No differences occurred at 12 months, as differences in self-knowledge are not thought to be detectable until infants have the ability for representation (verbal and representational play ability). By 24 months of age representation ability is more evenly distributed. Descriptive statistics for the infant's sense of self as object, measured using these recognition tasks in this study were examined to confirm this assumption.

Infant's sense of self and other: Infant knowledge of self and other was assessed using a set of action tasks derived from the literature on pretend play and developed by Pipp et al. (1987) (Appendix F). The assessment of an infant's agency or sense of self as "actor on self and other" is based on the complexity of an infant's actions on self and mother within the context of pretend play. A sequence of action tasks is administered, and

is scaled to reflect a broad age range. The infant is assessed for his ability to perform a series of increasingly complex tasks in relation to him/her self and mother. The more complex tasks included an ability to know both baby and mothering roles. The infant is asked by the examiner to feed himself a Cheerio, modeled by the examiner, and then to feed his mother, also modeled by the examiner. The infant then is asked to drink from a bottle, to give his mother a drink, and then to drink from a cup, and give his mother a drink from a cup. Following those tasks the infant is asked to pretend to eat from a plate with a spoon, and to feed his mother using the plate and spoon. Then he is asked to go and then take mother to eat in the corner, and lastly to go to the corner and then return and feed self and mother at the table. All tasks are modeled by the examiner.

The infant is scored based on his ability to perform these tasks at each level. The six tasks consist of sequences of increasing complexity, from the sensorimotor act of eating a cheerio to a representational understanding of a mother behavioral role of feeding and leading another. Pipp et al. (1987) reported that these tasks, in the order presented, also fit a highly significant Guttman scale. Interrater agreement among 4 raters and across 3 groups was 97% or above (kappa =.96). Construct validity ($\underline{n}$ = 122) has been demonstrated through significant differences by security of infant attachment and number of agency tasks successfully completed across infant ages of 12, 24, and 36 months. Securely attached infants completed more tasks than did insecurely attached infants (mean difference =.47 tasks). Age itself had no effect, although infants at 12 months passed significantly more self-oriented tasks than mother-oriented tasks, regardless of attachment status. The scores on the individual tasks were summed for a self and an other score total score.

Procedures

Recruitment

The procedures were identical to those of the larger study, Mother-Child Interaction and Adaptation of Toddlers, except for the addition of the Parental Bonding Instrument described below. For the larger study, the research assistant used Family Practice Clinic rosters to identify mothers with infants up to 8 months of age, and screened them using the exclusion criteria and clinic records. The examiner then contacted all eligible mothers by telephone using a script (see Appendix G) or mailed letters from the investigator. The script and letters both described the purpose of the study, the amount and nature of involvement required if the mother chose to participate, and the monetary incentives for participating. Mothers received thirty dollars for their participation in the videotaping session when their child was 12 months, and received copies of the videotapes at the completion of the study. If a mother expressed interest in the study, the research assistant arranged an intake session at 8 months. Questionnaires for the twelve month observation session were mailed to participants approximately two weeks before their visit so they could complete them at their leisure and return them at the time of the observation..

Subjects signed documents indicating informed consent for the original study at the time of the first intake session (see Appendix H). For the present study, subjects underwent the exact same procedure as in the original study with the addition of the Parental Bonding Instrument, a one page self report questionnaire. Because subjects' data from the present study could be linked to that of the larger study only by their signature on the consent form, this study did not obtain additional written consent, but obtained verbal consent at the time of scheduling the 12 month observational visit (Appendix H). To mothers who agreed, the extra questionnaire was mailed along with the other 12 month questionnaires. If mothers chose to participate in this study, the Parental Bonding Instrument was included in the packet. Subjects were informed their refusal to participate

would not jeopardize their participation in the original study or their relationship with the university.

Laboratory Assessments

At the child's age of 12 months, each mother-child dyad came to the OHSU School of Nursing for videotaped assessments (see Table 2). The dyad entered the observational laboratory for a sequence that included a child solitary play period (with mother in the room but unavailable for play), a mother-child play period, a mother-child teaching episode for the NCATS assessment, a limit-setting session, a mother-child snack period, and the self/other tasks administered by the investigator. The sequence lasted about an hour. Mothers were provided their reimbursement in cash at the conclusion of the visit. Reimbursement also was provided for parking or bus fare; subjects also received thank-you notes in the mail after their visit. Videotapes were mailed at the end of their three year particiption in the larger study.

The observational sequence of events, the variables obtained and the associated measures/coding schemes are in Table 2.

Data Analysis

Research Goal 1). The first objective was to assess maternal sensitivity/responsiveness (MSR) across different control-salient mother-infant interactions during the transition to toddlerhood at 12 months. A repeated measures analysis of variance was conducted. The dependent variable was maternal sensitivity/responsiveness, with the five different control-salient interactions as the within subjects factor. Research Goal 2). The second objective was to examine how maternal sensitivity/responsiveness (MSR) were related to maternal limit-setting style and infant responses to limits. An analysis of variance was conducted; the dependent variable was maternal sensitivity/responsiveness, and the grouping variables were a) maternal limit-setting style with four levels, and b) infant

Table 2.

Observational Sequence of Events, Variables Obtained and Associated Measures

Segment	Description	Coding Scheme	Variables
Beginning; Roll the ball 3 min	M&C enter playroom; mom instructed to play with infant with ball	(Larger study only)	none for present study
Child Solitary Free Play 3 min	Mother is available but no initiating while C plays with toys	(Larger study only)	none for present study
Mother-Child Play 6 min	M joins C on floor; they play together	Ainsworth Maternal Care Scales	Mat Sens/ Resp
Teaching Task 5 min	M teaches C a task (to stack blocks)	Ainsworth, NCATS (Barnard et al, 1979)	Mat Sens/ Resp; NCATS child scores
Clean—up 1 - 4 min	M&C put toys in basket	Ainsworth Maternal Care Scales	Mat Sens/ Resp
Prohibition 3 min	M told not to let C touch keyboard	Prohibition Coding Scheme	M Proh. rating; C Proh. rating
Snack 10 min	M feeds C a snack	Ainsworth Maternal Care Scales	Mat Sens/ Resp
Self/Other Tasks 20 min tasks	Experimenter administers	Knowledge of Self/ Other/Recognition Tasks	Self/Other scores

responses to limits with four levels, respectively, in two separate analyses of variance. Overall mean MSR scores were used as the dependent variable unless otherwise indicated based on simple correlational findings between MSR scores and the prohibition classifications.

Research Goal 3). The influence of maternal experiences with care and overprotection/control from their own parents was examined in relation to maternal sensitivity/responsiveness, maternal limit-setting style and the infant's response to limits. The first analysis was a correlational analysis between maternal experiences with care and overprotection/control, and maternal sensitivity/responsiveness. A repeated measures ANOVA was then conducted to determine if maternal relationship history could explain differences in maternal sensitivity/responsiveness scores across contexts. Maternal relationship history, coded into quartiles, became a between subjects factor, and the five different control-salient interactions were again the within subjects factor. Then, two separate analyses of variance were conducted with the dependent variable of maternal experiences with care and overprotection/control, and grouping variables of a) maternal prohibition style with four levels, and b) infant responses to limits with four levels.

Research Goal 3b). The next objective was to examine the combined influence of maternal sensitivity/responsiveness and maternal experiences with care and overprotection/control from their own parents on maternal limit-setting style and the infants' response to limits, with MCS as a contributing factor. Two multiple analyses of variance (MANOVA) procedures were to be conducted, using maternal sensitivity/responsiveness and maternal experiences of care and overprotection as dependent variables, and grouping variables of maternal and infant prohibition classifications. Regression analyses were also planned. Dependent variables were maternal limit-setting styles, in four separate analyses, with maternal sensitivity/responsiveness (MSR) and maternal experiences with care and overprotection/control as predictor variables

in each. Additional regression analyses using infant responses to prohibition as dependent variables were also conducted.

Research Goal 4). Infant temperament was then examined in relation to maternal sensitivity/responsiveness, maternal limit seting style, and infants' response to maternal limits. Correlational analyses examined relationships between temperament and those variables. Chi-square analyses examined associations between temperament classifications and the infant and maternal limit-setting styles.

Research Goal 5). Maternal sensitivity/responsiveness, maternal and infant prohibition styles, and maternal experiences with care and overprotection/control from their own parents were examined in relation to the infant's developing sense of self and other. Simple correlations were conducted to examine relationships between those variables.

Research Goal 6). The two measures of maternal sensitivity/responsiveness were then compared. Correlational analyses examined the relationships between the maternal scales from NCATS, and the Ainsworth Maternal Care Scales. Correlational analyses also examined the relationships between maternal NCATS scores and other study variables.

Research Goal 7). Infant interactive behavior was assessed in relation to maternal sensitivity/responsiveness, and in relation to maternal experiences with overprotection and care from their own parents. Correlational analyses examined the relationships between infant interactive behavior and maternal sensitivity/responsiveness and maternal NCATS scores, and between infant interactive behavior and other study variables.

CHAPTER IV

RESULTS

Demographics

The final sample consisted of 61 mothers and their infants. Demographic mother and infant data were collected on 60 dyads; one dyad had missing data on all demographic variables except infant gender, and date of birth. Demographic data included maternal age, parity, marital status, educational level, employment, gross annual income, and alcohol/drug use. Infant gender, term status, and infant difficulties during the first few months were recorded as well. All demographic data were maternal self-report, using a demographic questionnaire when infants were eight months old. The data were updated when infants were age 12 months.

Maternal Demographics

Maternal age ranged from 17 to 47 years of age (Table 3). The sample was generally comprised of women in their twenties and early thirties. The mean was 28.4 years, with a standard deviation of 8.3 years. Within the stated range, there were eight mothers aged 22 years, and 6 mothers aged 40 years. Twenty-six mothers (43%), or almost half of the sample were first-time mothers; 20 (33%) had second-born infants, 9 mothers (15%) had a total of three children, 3 (5%) had a total of 4 children, and 2 mothers (4%) had five. Over half, or thirty-three (54%) of the mothers were married. Fourteen (23%) had never married, four (6.6%) were divorced or separated. Another nine (15%) were living together or in common law marriages. No mothers were widowed at the time of the data collection. Thus 30%, or about a third of the sample, could be classified as single parents, and about two-thirds (69%) were living with an adult partner.

Table 3.

Maternal Demographic Characteristics [a]

Characteristic	N	%
Parity		
only child	26	(43 %)
two children	20	(33 %)
three children	9	(15 %)
four children	3	(5 %)
five children	2	(3 %)
missing data	1	(2 %)
Marital status		
never married	14	(23 %)
living together	9	(15 %)
married	33	(54 %)
divorced/separated	2	(3 %)
missing data	1	(2 %)
Highest educational level		
grade school	2	(3 %)
high school	27	(44 %)
college	25	(41 %)
post graduate	5	(8 %)
missing data	2	(3 %)
Maternal employment		
unemployed	20	(33 %)
work 1 day/week	4	(7 %)
work 2-2.5 days/wk	8	(13 %)
work >2.5, < 5 days	5	(8 %)
work full time	16	(26 %)
missing data	8	(28 %)
Gross annual income		
< 5,000	10	(17 %)
5,000-11,999	9	(15 %)
12,000-14,999	11	(18 %)
15,000-27,999	19	(31 %)
> 28,000	17	(28 %)
missing data	1	(2 %)

Table 3., continued

Ethnicity

African American	10	(17%)
AfricanAmerican/Cauc	2	(3%)
African American/ Native American	1	(2%)
Caucasian	43	(72%)
Caucasian/Native Amer.	1	(2%)
Native American	1	(2%)
Asian/Native Amer	1	(2%)

[a] N = 61

Examining education, eleven mothers (20%) did not finish high school. (One mother completed grade school; four mothers completed the ninth grade and six others attended high school but did not finish.) Seventeen mothers (28%) completed high school, and an additional 27 mothers (43%) attended at least some college. Ten mothers (16%) finished college. Five mothers (8.2%) also had some postgraduate education. Thus, while a fifth of the sample had not finished high school, almost half of the sample had attended at least some college, making this a reasonably well-educated sample.

Twenty mothers (33%) were unemployed (Table 3). Twelve mothers or 20% of the sample were employed half-time or less. Twenty mothers (33%) were employed more than half time. The sample was characterized by a fairly low income level with about half of the sample reporting an income of less than $15,000 per year (n = 30). Thirty-five mothers reported receiving public assistance during the past year.

Ethnicity

Of the sample of 61 mothers, 10 were African American, 43 were Caucasian, and one was Native American (see Table 3). Two mothers were of African American/Caucasian ethnicity; one mother was African American/Native American, another mother was Caucasian/Native American, and one was Asian/Native American. Ethnic data were missing for two mothers. Due to the small numbers of non-Caucasian mothers, ethnicity was not analyzed in relation to any study variables.

History of Psychosocial Problems

Ten percent of mothers (n = 6) reported they had a history of problems with alcohol (Table 4). Four reported drug problems, and four mothers reported having a history of mental illness. Eight mothers reported the baby's father had problems with alcohol, nine fathers had a history of problems with drugs. Two fathers had a history of mental illness. Since these are fairly low numbers, from the standpoint of psychosocial problems the overall sample could be considered fairly stable rather than at high social risk. From an economic standoint, however, this sample is still somewhat socially disadvantaged.

Table 4.

History of Psychosocial Problems [a]

Problem	n	%
mother alcohol abuse	6	(10 %)
mother drug abuse	4	(7 %)
mother mental illness	4	(7 %)
father alcohol abuse	8	(13 %)
father drug abuse	9	(15 %)
father mental illness	4	(7 %)

[a] N = 61

Infant Characteristics

There were proportionately more male than female infants in this sample, consistent with the larger study sample ratio of two males to one female (Table 5). In the present sample there were 41 boys and 20 girls. The Family Practice Clinic, from where most subjects were recruited, offered circumcision services. Therefore, more male infants were available for recruitment. All possible female infants were recruited, including by word of mouth outside the clinic population, but those efforts could not compensate for the number of male infants recruited. A longer subject recruitment period necessary to equalize the numbers of male and female infants was not feasible for this study, or the larger study. The inability to compensate for the over-representation of boys in the sample was unanticipated.

Table 5.

Infant Characteristics [a]

Characteristic		n	%
Gender			
	male	41	(67 %)
	female	20	(33%)
Term status			
	full term	53	(87 %)
	prremature	7	(12 %
	missing data	1	(2 %)
Difficulties during first few months			
	yes	49	(81 %)
	no	10	(16 %)
	missing data	2	(3 %)

[a] N =61

Infants in the sample were mostly all at term (n = 53) with only 7 preterm infants. Preterm infants were entered into the study based on gestational age rather than birth age. That is, an infant four weeks premature would be entered into the study at the birth age of nine months, rather than eight months. Most were considered to have "corrected" developmentally by the age of 12 months and were assessed at their birth age of 12 months. The small number of preterm infants precluded further analyses in relation to study variables.

The majority of the mothers reported some infant difficulties during the first few months after birth (n = 49; 81%). Only 10 mothers reported no difficulties. These difficulties included upper respiratory infection, difficulties breast feeding, urinary tract infection, jaundice, colic, and reactions to formula. Since recruitment required infants to have no birth defects or developmental difficulties, the high number of mothers reporting infant difficulties during the first few months most likely reflects the problem focused

nature of the recruitment site, a medical family practice clinic. Data were missing on this variable for two infants.

Study Variables: Descriptive Statistics

This section presents descriptive statistics for all major study variables. The major variables were: maternal sensitivity and responsiveness as measured by both the Ainsworth Maternal Care Scales and the Nursing Child Assessment Teaching Scales; maternal experiences of care and overprotection from their own parents as measured by the Parental Bonding Instrument; maternal prohibition style and infants' response to limits as measured by the Prohibition Coding Scheme; and infants' sense of self and other as measured by the Self and Other Featural Knowledge and Agency Tasks.

Maternal Sensitivity And Responsiveness: Ainsworth Maternal Care Scale Scores

Ainsworth's Maternal Care Scales were used to measure maternal sensitivity and responsiveness during five different interactional sequences. Four scales, sensitivity vs. insensitivity, acceptance vs. rejection, cooperation vs. interference, and accessibility vs. ignoring and neglecting, were utilized. Scoring consisted of rating maternal interactions for each scale along a single nine-point continuum. Higher scores indicated higher quality of maternal interactions. Although further descriptions of each scale and scoring methods were included in the methods section, recall that since the individual scales were all intercorrelated above $\underline{r} = .6$, a mean score was derived across the four scales and employed for data analysis in relation to the other study variables. Table 6 contains frequency data for the interactional contexts. Combined means were also obtained for the more control-salient interactions of clean-up, teaching, and prohibition, and for the less control-salient interactions of snack and play.

Table 6.

Mean Ainsworth Maternal Care Scores Within Interactional Contexts [a]

Interactional Contexts	low	hi	M	SD
mother-child play	2.50	8.50	5.80	1.46
teaching	2.25	7.75	5.40	1.38
clean-up	2.00	9.00	5.00	1.60
prohibition	1.00	9.00	5.07	1.78
snack	2.00	9.00	5.44	1.55
"less control-salient" mean	2.63	8.38	5.62	1.34
"more control-salient" mean	1.92	8.17	5.16	1.34
overall interaction mean	2.20	8.00	5.34	1.26

[a] N =61

Several demographic variables correlated meaningfully with maternal sensitivity and responsiveness as measured by the Ainsworth Maternal Care Scales (MCS). In summary, mothers were more sensitive when they were older, more educated, had full term infants, had a better income and had more children. Thus having some social advantage, healthier infants and experience with children seemed to be related to more sensitive maternal behavior. More specifically, maternal age was postively related to the overall mean MCS (r = .46, $p \leq .001$) as well as the less and more control-salient means, meaning that older mothers were more sensitive and responsive in all interactions. Mothers' highest grade completed correlated positively with the overall mean MCS (r = .30, $p \leq .05$) as well as the less control-salient mean (r = .36, $p \leq .01$). The more control-salient mean, however, was not significantly correlated (r = .22; p = .102) with maternal education. In addition, mothers of premature infants were significantly less sensitive than mothers of term infants in the play interaction (r = -.42; $p \leq .001$), and across the less control-salient mean (r = -.30; $p \leq .05$). Mothers of premature infants tended also to be less sensitive during the

clean-up, teaching and across the less control-salient interactions ($p \leq .10$). Although the numbers of premature infants were quite small ($n = 7$) in the present sample, this finding is consistent with research on other samples of mothers of premature infants (Barnard et al, 1991).

Annual income was also positively related to maternal sensitivity and responsiveness. The correlation between income and the Ainsworth Maternal Care Scales was $r = .40$, $p \leq .001$. Both the less control and more control-salient means were similarly correlated ($r = .39$, $p \leq .01$; $r = .37$, $p \leq .01$, respectively). Maternal parity, or number of children, correlated with all MCS means: the overall mean ($r = .34$, $p \leq .01$); the less control-salient mean ($r = .29$, $p \leq .05$); and the more control-salient mean ($r = .33$, $p \leq .01$). Thus the more children mothers had, the more sensitive they were.

Maternal Sensitivity and Responsiveness: Nursing Child Assessment Teaching Scales

The Nursing Child Assessment Teaching Scales (NCATS) were used to assess maternal sensitivity during the teaching interaction. Thus two measures of maternal sensitivity and responsiveness were used during this interaction. The scales consisted of both maternal and child scales. The maternal scales were: caregiver sensitivity to cues, response to distress, socio-emtional growth fostering, and cognitive growth fostering. The child or infant scales were clarity of cues and responsiveness to parent. Maternal, infant, and total contingency scores were also calculated. Table 7 contains NCATS descriptive data for this sample.

Normative data (Barnard et al., 1991) for the maternal and infant total scores from 257 mothers and infants aged 7-12 months are presented for comparison in the table in the far right column. Mean maternal scores from the present sample were somewhat lower than the norm, and the mean child scores were somewhat higher. Reasons for this discrepancy

Table 7.

Nursing Child Assessment Teaching Scales: Descriptive Data for Teaching Interaction [a]

Scale or subscale	possible range	low	hi	M	SD	Normative Mean[b]
Caregiver sensitivity to cues	0-11	7.00	10.00	9.39	0.71	9.30
Response to distress	0-11	5.00	11.00	9.12	1.42	10.00
Socio-emotional growth fostering	0-11	5.00	11.00	7.70	1.16	9.00
Cognitive growth fostering	0-17	6.00	15.00	10.69	2.72	12.40
Maternal total	0-50	25.00	47.00	**36.74**	4.54	**40.70**
Infant clarity of cues	0-10	6.00	10.00	8.56	0.99	8.00
Infant responsiveness to parent	0-13	5.00	13.00	10.10	2.04	7.30
Infant total	0-23	12.00	23.00	**18.66**	2.75	**15.30**
NCATS total	0-73	38.00	70.00	55.39	6.02	n/a
Maternal contingency	0-12	6.00	12.00	8.81	1.80	n/a
Infant contingency	0-12	5.00	12.00	9.33	1.77	n/a
Cargiver-infant contingency total	0-24	8.00	24.00	18.25	3.09	n/a

[a] N = 61

[b] N range for normative samples = 244-258, at infant age 7-12 months

may include the smaller sample size of the present sample, and their somewhat less socially advantaged status. More of the mothers who provided normative NCATS data were married, and more highly educated, as compared with the present sample (90% married, 67% some college; as compared with 54% and 43%, respectively, for the present sample). Both marital status and education have been found to be positively related to NCATS scores (Barnard et al., 1991). Age of the infants did not seem to play an additional role,

although all of the infants in the present sample, at 12 months, were at the high end of the normative age range of 7-12 months. Both parent and child normative scores increase as infants get older. Normative scores at age 13-18 months, for example, are 41.8 for parents, and 16.9 for infants. This suggests that if infant age had produced differences between this sample and previously researched samples, mothers in this sample should have scored a little higher rather than below the norms, and infants still should not have scored as high as they did. Sample size and social advantage seem more feasible explanations for the observed differences between the two sets of scores.

Maternal Experiences with Care and Overprotection: The Parental Bonding Instrument

Mothers filled out the Parental Bonding Instrument, a measure of their experiences of care and overprotection/control with their own parents. This measure served as an assessment of mothers' internal working models of care and overprotection/control in close relationships. There were two subscales, care and overprotection. Mothers marked their responses twice, once in relation to their mother, and once in relation to their father. Four subscales were thus obtained: maternal care, paternal care, maternal overprotection, and paternal overprotection. In addition, total care, total overprotection, total maternal, total paternal and total PBI scores were calculated (Table 8).

Normative information is not available for the PBI. However, Mackinnon, Henderson, Scott, and Duncan-Jones (1989) determined demographics for the PBI on 369 persons from a non-clinical community sample. Their ages ranged from 17-87 years with an average age of 40. For the 214 females in the sample, the maternal care mean was 27.3 (s.d. 7.0) and the paternal care mean was 22.7 (s.d. 8.4). These values were somewhat higher than those of the present sample. The authors recoded and totaled overprotection items differently than the present study, so that lower scores were positive, thereby making the two samples' mean overprotection scores incomparable (maternal overprotection M =

Table 8.

Parental Bonding Instrument: Descriptive Data [a]

Scale or subscale	possible range	low	hi	M	SD
maternal care	0-36	4.00	36.00	24.26	9.78
paternal care	0-36	1.00	36.00	20.02	8.81
total care	0-72	13.00	71.00	44.27	13.34
maternal overprotection	0-39	6.00	38.00	24.73	7.20
paternal overprotection	0-39	6.50	38.00	24.46	6.73
total overprotection	0-78	17.00	76.00	49.18	11.52
maternal total	0-75	19.00	73.00	48.98	13.80
paternal total	0-75	12.00	70.00	44.48	13.72
PBI total	0-150	53.00	141.00	93.46	20.67

[a] N =61

14.4, SD = 7.9; paternal overprotection M = 13.3, SD = 7.9, Mackinnon et al., 1989). The difference between the two samples' care scores may be due to the smaller sample size in the present group, or perhaps again, may be explained by their somewhat socially disavantaged status as a group.

Infants' Sense of Self and Other:

Self and Other Featural Knowledge and Agency Tasks

Mothers and infants participated in the assessment of these variables by undertaking a series of tasks testing featural recognition, spatial location, verbal labelling, and possession of self and mother, administered by the experimenter. To assess agency

development, a sequence of action tasks was also administered. All of these tasks are described more fully in the methods section. The tasks were scored based on the infant's ability to pass the various tasks. Infants were given a point for passing each task, and also were sometimes given fractions of points if they displayed the ability to perform tasks to a partial degree.

Four task scores were coded and summed: infants' ability to perform tasks indicating their knowledge of their mother's features and their own features; and their ability to act on self and on "other" (in this case the mother). Total featural knowledge, and total agency ability scores were calculated, as well as an overall total score. Table 9 presents frequency and descriptive data for these scores. Normative data are not available.

Table 9.

Self and Other Featural Knowledge and Agency Tasks: Descriptive Data [a]

Scale or subscale	possible range	low	hi	M	SD
Featural other knowledge	0- 9	1.00	4.00	2.10	0.71
Featural self-knowledge	0- 9	0.00	2.50	1.35	0.62
Total featural knowledge	0-18	1.50	6.00	3.45	1.15
"Acting on" other	0-12	0.00	4.00	2.21	1.35
"Acting on" self	0- 6	0.00	4.75	3.46	0.85
"Acting on" total	0- 6	1.00	8.25	5.68	1.66
Overall total	0-30	4.00	13.50	9.13	2.29

[a] N =61

Maternal Limit-Setting and Infant Responses to Limit-Setting

The Prohibition Coding Scheme was used to code maternal and infant behavior during the prohibition interaction. The coding scheme yielded four maternal and four infant

categories: Redirective, Authoritative Authoritarian and Inconsistent maternal categories; and Autonomous-disengaged, Autonomous-compliant, Persistent-compliant, and Persistent infant categories. See the Methods section for a description of each of these categories. Frequency data for these categories is presented in Table 10. Normative data are not available for these classifications.

Table 10.

Prohibition Coding Scheme, Maternal Prohibition Classifications and Infants' Response to Prohibition Classifications: Frequency Data.

Maternal Classifications	n	%
Redirective	8	13%
Authoritative	17	28%
Authoritarian	25	41%
Inconsistent	11	18%
Infant Responses to Limits	**n**	**%**
Autonomous-disengaged	10	16%
Autonomous-compliant	13	21%
Persistent-compliant	30	49%
Persistent	8	13%

[a] N = 61

Maternal Sensitivity And Responsiveness Across Differing Control-Salient Mother-Infant Interactions

The first research objective was to assess whether or not maternal sensitivity and responsiveness scores varied across different control-salient mother-infant interactions during the transition to toddlerhood at 12 months. The Ainsworth Maternal Care Scales (MCS) were used to measure maternal sensitivity and responsiveness in the different interaction contexts of mother-infant play, toy clean-up, a teaching task, a prohibition

context, and a snack. Four maternal scales, sensitivity vs. insensitivity, acceptance vs. rejection, cooperation vs. interference, and accessibility vs. ignoring and neglecting, were utilized. As discussed in the Methods section, a mean score was derived across the four scales in each context so that individual MCS values refer to mean maternal scores in each context. That is, the MCS mother-infant play score refers to the mean across the sensitivity vs. insensitivity, acceptance vs. rejection, cooperation vs. interference, and accessibility vs. ignoring and neglecting scores, within the play interaction. (See Table 6 for the means and ranges for each interactive context.)

Correlational analyses were first used to determine the similarity of mothers' MCS scores across the different contexts (Table 11). MCS scores across all contexts were significantly correlated at the $p \leq .001$ level, ranging from $r = .50$ to $r = .67$. In other words, mothers' sensitivity ratings were significantly correlated across interactional contexts, so that 25% to 45% of the variance in their scores were related to how they scored in the other contexts. Thus mothers who were more sensitive in one setting tended to be more sensitive in other settings as well.

A repeated measures analysis of variance (ANOVA) was then conducted to assess for differences in maternal sensitivity/responsiveness between interactional contexts. Repeated measures ANOVA was selected as the analysis of choice because mothers were repeatedly assessed on the same measure across different interactional contexts. The scores and means being compared were thus obtained from the same subjects rather than from independent groups. This type of analysis accounts for correlations between mothers' scores across contexts, appropriately reducing the error term, to more accurately describe mean differences across contexts. Repeated measures analysis (Table 12) revealed significant differences in MCS score means across the five interactional sequences, $F(4, 228) = 6.35$; $p \leq .0001$. The interactional means for each segment were plotted to clarify the findings (Table 13).

Table 11.

Mean Ainsworth Maternal Care Scores by Interactive Contexts: Pearson Product-Moment Correlation Coefficients [a],***

Interactional contexts	play	teach	clean	prohib	snack
mother-child play	1.00				
teaching	.50	1.00			
clean-up	.51	.51	1.00		
prohibition	.62	.65	.54	1.00	
snack	.59	.54	.49	.67	1.00

[a] N = 61
*** All coefficients significant at p ≤ .001

Table 12.

Maternal Experiences With Overprotection by Interaction: Repeated Measures Manova

Source	DF	Sum Squares	Mean Square	F	P
Between Subjects	60	474.32			
PBI overprotection	3	32.29	10.76	1.38	.255
Error	57	442.03	7.75		
Within Subjects	244	284.80			
Interactional means	4	25.43	6.39	6.35	**.0001**
PBI x Means	12	30.66	2.55	2.55	**.0035**
Error	228	228.34	1.001		

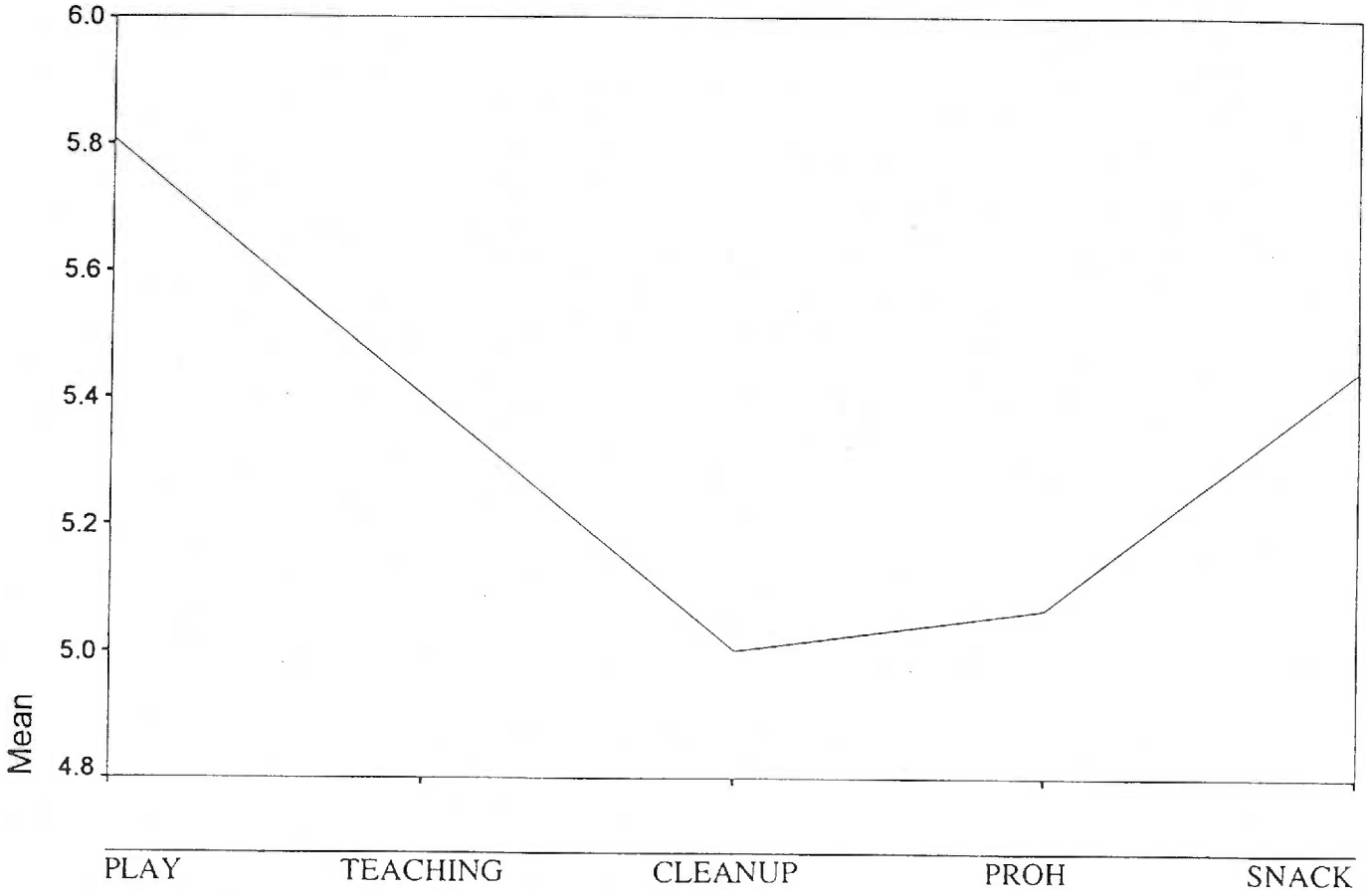
[a] N = 61

Table 13.

Line Graph of Mean MCS Scores by Interactional Contexts

Maternal Care Score

Interactive Contexts



Given that there were significant differences in maternal sensitivity across the interactive contexts, analyzing the location of the differences was conducted first by a planned, paired T-test. A "less control-salient" mean was derived by averaging scores across the play and snack interactions, and means from the teaching, prohibition, and toy clean-up interactions were combined for a "more control-salient" mean. This investigation assumed that feeding and play interactions occur more regularly between mother and infant across the first year of the infant's life, compared with interactions of teaching the infant a task, cleaning up toys, and/or prohibiting the child from playing with a desired object. Feeding and play interactions were thus assumed to represent more highly practiced, patterns of interaction, as compared with teaching, clean-up and prohibition interactions. The latter situations were conceptualized as representing interactions which become more frequent only as the infant gains mobility and increased cognitive and interactive ability, during the transition to toddlerhood. Mothers were expected to have less skill in the latter situations than the former, more familiar, contexts. In addition, snack and play contexts were seen as tasks in which infants' autonomous actions may be more readily in accord with the goals and tasks of the interactional context; that is, they may be more easily engaged in playing with toys and eating snack food. From this perspective, encouraging the infant to eat food and play with toys may require less interactive skill on the part of the mother than teaching her infant to stack blocks, to put away toys, and to stay away from a desirable object. Last, in the snack context, the child was placed by the mother in a high chair, controlling the infant's behavior already to a certain degree and thereby making the coded portion of snack interactions potentially less control-salient. For these reasons, the snack and play interactions were conceptualized as "less control-salient", and the teaching, toy clean-up and prohibition contexts were considered "more control-salient".

A paired, same-sample T-test showed the difference between these means to be significant, $T = -3.80$, $p \leq .001$ (see Table 14). The mothers, as a group, were significantly more sensitive across the snack and play interactions (mean = 5.63), than

Table 14.

Planned Comparison: Paired T-Test of "Less Control-Salient" Mean with "More Control-Salient" Mean.[a]

Source	M	S.D.	t Value	DF	P
Less Control-Salient	5.62	1.34			
More Control-Salient	5.16	1.34			
Difference in means	-.47	0.96	-3.80	60	.000

[a] N = 61

across teaching, prohibition, and clean-up interactions (mean = 5.16). This was expected, as mothers were hypothesized to be developing new interactional skills in more control-salient contexts, as the infant transitions into toddlerhood at age 12 months. These findings supported the conceptualization of the less and more control-salient contexts for the study, as well.

Individual pairwise, unplanned post-hoc comparisons were also conducted among the uncombined individual interaction means (Table 15). Both Scheffe and Bonferroni methods of alpha level adjustment indicated that mother-infant play scores were significantly higher than clean-up and prohibition scores (mother-child play, 5.81; teaching, 5.40; clean-up, 5.00; prohibition, 5.07; snack, 5.44; see Table 6 for ranges and standard deviations). This indicates that the context of mother-infant play facilitated mothers' higher sensitivity ratings, while clean-up and prohibition contexts resulted in significantly lower ratings.

Table 15.

Analysis of Variance Pairwise Scheffe Comparisons: Post Hoc Comparisons of Interactional MCS Means[a]

Interactive context	M	S.D.	1	2	3	4
1 mother-child play	5.81	1.46				
2 teaching	5.40	1.38				
3 clean-up	5.00	1.66	***			
4 prohibition	5.07	1.79	**			
5 snack	5.44	1.55				

[a] N =61
Groups differ significantly at ** $p \leq .01$, *** $p \leq .001$

Maternal Sensitivity And Responsiveness (MCS) as Related To Maternal Limit-SettingStyle And Infants' Response to Limits

Maternal Limit-Setting Style

Mother-infant interactions during the prohibition context were coded to classify the mothers' limit-setting style. Four categorical variables were computed, each representing the presence or absence of one of the four maternal limit-setting styles: redirective, authoritative, authoritarian and inconsistent. (See Methods, Chapter 3, for a description of these maternal limit-setting styles.) Categorical variables representing these maternal styles were then correlated with MCS means of each of the interactive contexts, as well as with the more and less control-salient computed means, and the overall MCS interactive mean (Table 16). To clarify for the reader, maternal limit-setting styles and the MCS means from The second objective was to examine how maternal sensitivity and responsiveness as measured by the Ainsworth Maternal Care Scale scores (MCS) were related to maternal limit-setting style and infant style of response to limits. MCS scores were analyzed first in relation to maternal limit-setting style, and then infant response to limits.

the limit-setting context were both obtained from the same prohibition context. Tapes from the prohibition setting were coded twice: once to obtain MCS scores and again to obtain the maternal limit-setting classification. Tape segments from the other segments were coded only to obtain MCS scores, and then correlated with the maternal limit-setting classification from the prohibition context.

Analyses revealed significant zero-order correlations between maternal limit-setting styles and maternal sensitivity and responsiveness. As can be seen in Table 16, a redirective maternal prohibition style was significantly positively correlated with maternal sensitivity and responsiveness across all interactive contexts (r's = .36 to .54, $p < .01$); the highest correlation was with the overall interactive mean ($r = .54$). An authoritative style was associated positively with sensitivity and responsiveness in the snack segment ($r = .26$, $p < .05$) as well as with both the more and less control-salient means and the overall MCS mean. An authoritarian style was significantly negatively correlated with all interactive contexts and combined means (teaching interaction $r = .29$, $p \leq .05$, all others $r \geq .35$, $p \leq .01$). An inconsistent style was not significantly associated with any of the maternal sensitivity and responsiveness scores or computed means. The higher standard deviation and variability of sensitivity and responsiveness in relation to this style indicates that these mothers demonstrated a wider range of sensitivity than mothers in the other three groups (see Table 17). Some mothers rated as inconsistent were more sensitive, others were quite insensitive.

These findings indicate that the most sensitive mothers used either a redirective or an authoritative prohibition style with their infants at 12 months, and less sensitive mothers tended to use an authoritarian style. This finding indicates that more sensitive mothers were able to respond to their infants in accordance with infant abilities for self-control as described in the literature for the age of 12 months, by using either a redirective or authorative style. Less sensitive mothers, on the other hand, were also less able to be sensitive to their infants needs and abilities during limit-setting, and used a less appropriate

Table 16.

Maternal Prohibition Classifications by Ainsworth Maternal Care Scale (MCS) Scores: Pearson Correlation Coefficients.[a]

	MCS Mean Scores in Interaction Contexts				
Maternal Limit Setting Style	Play	Teaching	Clean-up	Prohibition	Snack
Redirective	**.47****	**.37****	**.41****	**.42****	**.36****
Authoritative	.19	.14	.21	**.31***	**.26***
Authoritarian	**-.36****	**-.29***	**-.48****	**-.48****	**-.35****
Inconsistent	-.17	-.12	.01	-.13	**-.18****

	overall mean	less control-salient mean	more control-salient mean
Redirective	**.50****	**.47****	**.48****
Authoritative	**.28***	**.25***	**.27***
Authoritarian	**-.49****	**-.40****	**-.50****
Inconsistent	-.15	-.20	-.09

[a] $N = 61$
° $p \leq .10$ * $p \leq .05$ ** $p \leq 0.01$ *** $p \leq .001$

prohibition technique. In addition, these findings indicate that authoritative, redirective, and authoritarian mothers' prohibition styles were related to maternal sensitivity and responsiveness scores in contexts outside of the prohibition situation. This again supports the finding that mothers who are more sensitive in one context are apt to be more sensitive in other contexts as well.

Analyses of variance were also conducted to determine if, in addition to being correlated with limit-setting styles, maternal sensitivity and responsiveness could differentiate between the different limit-setting styles. In separate analyses of variance, the dependent variables were the overall MCS mean, and the means of less and more control-

Table 17.

Mean Maternal Care Scale Scores (MCS) by Maternal Limit-setting Style

Maternal Prohibition Style	Overall Mean	Overall Sd	Less control-salient Mean	Less control-salient Sd	More control-salient Mean	More control-salient Sd
Redirective	6.96	.69	7.22	.83	6.79	.92
Authoritative	5.91	.71	6.17	.74	5.74	.79
Authoritarian	4.60	.98	4.99	1.16	4.35	1.04
Inconsistent	4.96	1.38	5.07	1.52	4.88	1.49

Table 18.

Multiple Pairwise Scheffe Comparisons of Maternal Prohibition Classifications by Mean Ainsworth Maternal Care Scale Scores: Oneway ANOVA [a].

Classification	n	mean	1 2 3 4
1 Redirective	8	6.96	
2 Authoritative	17	5.91	
3 Authoritarian	25	4.60	* *
4 Inconsistent	11	4.95	*

* Groups differ at $p \leq 0.05$ and $p \leq 0.10$ levels, using Scheffe multiple range procedure.
[a] Overall $F = 14.8336$ with d.f. 3, 57; $p = .000$, $n = 61$ total.

salient interactive contexts. These were examined in relation to maternal limit-setting styles as a grouping variable. Significant differences were found in overall MCS mean scores across limit-setting styles (Table 18). Post-hoc Scheffe contrasts resulted in significant differences between redirective mothers and both authoritative and authoritarian mothers, and between authoritative and authoritarian mothers, at both $p \leq .05$ and $p \leq .10$ levels of significance. (Scheffe,1959, as cited in Ferguson, 1981) suggested post-hoc analyses at both levels of significance because of the stringency of Scheffe procedures). Post-hoc

contrasts using the less and more control-salient means of maternal sensitivity and responsiveness also resulted in that same pattern of differences between different maternal prohibition styles, using Scheffe contrasts at both $p \leq .05$ and $p < .10$. Thus, mothers with redirective and authoritative styles are significantly more sensitive than authoritarian mothers.

Several demographic variables were also related to to maternal prohibition styles. Maternal age correlated positively with a redirective prohibition style ($r = .28$, $p \leq .05$) and negatively with an authoritarian style ($r = .-38$, $p \leq .01$). Maternal age approached significance with an authoritative style ($r = .25$, $p = .06$), and was unrelated to an inconsistent style. Highest maternal grade completed correlated with an authoritative style ($r = .29$; $p \leq .05$). Annual income negatively correlated with an authoritarian style ($r = -.39$; $p \leq .01$) and approached positive significance with redirective and authoritative styles ($r = .22$, $p = .09$; $r = .24$, $p = .07$ respectively). Number of children was also postively correlated with a redirective style ($r = .28$; $p \leq .05$). No demographic variables correlated with an inconsistent style. Thus, a redirective maternal style was associated with older mothers who had more children, and trended toward mothers being better off financially. Authoritative mothers tended to have more education, trending toward also being older and more well off financially.

Infants' Response to Limits

Infant responses to maternal prohibition were analyzed similarly in relation to maternal sensitivity and responsiveness. Four dichotomous variables were computed representing classifications of infants' responses to maternal prohibitions. Those infant classifications were: disengaged-autonomous, autonomous-compliant, persistent-compliant, and persistent. Please see Methods, Chapter 3, for descriptions of these classifications. Several significant correlations were found between these classifications and maternal sensitivity and responsiveness (Table 19). Significant negative correlations were found between all MCS scores and the infant autonomous-disengaged category

Table 19.

Infant Prohibition Classifications by Ainsworth Maternal Care Scale Scores: Pearson Correlation Coefficients.[a]

Infant Classifications	Interaction Contexts				
	Play	Teaching	Clean-Up	Prohibition	Snack
Autonomous-disengaged	**-.28***	**-.26***	**-.26***	**-.47****	**-.36****
Autonomous-compliant	**.24°**	**.23°**	.14	**.33****	.18
Persistent-compliant	.16	.12	.15	.20	**.26***
Persistent	**-.23°**	-.18	-.12	-.19	-.21

	MCS Mean	Less Control-salient Mean	More Control-salient Mean
Autonomous-disengaged	**-.41****	**-.36****	**-.40****
Autonomous-compliant	**.28***	**.23°**	**.28***
Persistent-compliant	**.23°**	**.24°**	.19
Persistent	**-.23°**	**-.24°**	-.19

[a] N = 61
* $p \leq .05$ ** $p \leq 0.01$

(r = -.26 to -.47; $p \leq .01$). Of the individual contexts, the autonomous-disengaged classification was most strongly negatively correlated with MCS scores in the prohibition interaction (r = - 0.47; $p \leq .01$), followed by the mean snack scores (r = - 0.41; $p \leq .01$). These findings indicate that autonomous-disengaged infant responses to limits were not only negatively and significantly related to maternal sensitivity/responsiveness in the

prohibition context from which the infant classifications were derived, but to less maternal sensitivity/responsiveness in the other interactional contexts as well.

Autonomous-compliant infant behavior was positively associated with the overall MCS mean (r =.28, p < .05), and the more control-salient mean (teaching, clean-up, and prohibition; r =.28, p < .05). Correlations approached significance for the teaching and play interactions and the mean for the less control-salient interactions. Since MCS means not containing the prohibition context were not significantly correlated with this category of infant behavior, it may be that autonomous-compliant infant behavior at this age develops more specifically in the context of maternal limit-setting/prohibition. However, in general and across most contexts, mothers of autonomous-compliant infants tended to be more sensitive and responsive.

Infant persistent-compliant behavior was associated with MCS scores only in the snack interaction. This finding will be further discussed in the discussion section. Persistent infant behavior was negatively associated with all Maternal Care Scale (MCS) variables, but approached significance only in the play interaction, the less control-salient interaction mean and the overall mean. Perhaps other factors also influence persistant infant behavior; the lesser effects for maternal sensitivity and responsiveness in relation to this classification may require a larger sample size to reach significance. Infant temperament was thought to be a possible contributing factor to this classification.

Analyses of variance were conducted to determine whether the infant classifications differed significantly on the basis of maternal MCS scores (Table 20). Overall effects and post hoc comparisons revealed that both autonomous-compliant and persistant-compliant infants had mothers with higher MCS scores across all interactions (using overall mean MCS scores) than did disengaged autonomous infants, based on both Scheffe post hoc significance levels of $p \leq .10$ and $\leq .05$. At the .10 level, mean MCS scores were also significantly higher for autonomous-compliant infants than for persistent infants. The same pattern of differences was found for the less and more control-salient means. These

Table 20.

Multiple Pairwise Scheffe Comparisons of Infant Prohibition Classifications by Mean Ainsworth Maternal Care Scale Scores.[a,b]

Classification	n	M	1	2	3	4
1 Autonomous-disengaged	8	4.19				
2 Autonomous-compliant	17	6.01	*			
3 Persistent-compliant	25	5.63	*			
4 Persistent	11	4.62		°		

[a] N = 61
[b] ANOVA: overall F (3,57) = 7.09; p = .000.
* differ significantly at p ≤ .05 level, using Scheffe multiple range procedure.
° differ significantly at p ≤ .10 level, using Scheffe multiple range procedure.

findings indicate that infants of more sensitive mothers tend to display autonomous-compliant or persistent-compliant behavior patterns in the prohibition setting. Thus mothers who were more sensitive had infants displaying developmentally appropriate levels of self control, consistent with existing literature on infant abilities for self-regulation at 12 months, along with appropriate engagement with their mothers. Autonomous-disengaged infants, who had significantly less sensitive mothers than did other infants, displayed some autonomy in self-inhibition and control but also displayed disengagment from their mothers.

Maternal Experiences with Care and Overprotection as Related to Maternal Sensitivitiy and Responsivness, Maternal Limit-Setting Style and Infants' Response to Limits

The third research goal was to examine the influence of maternal experiences with care and overprotection from their own parents in relation to maternal sensitivity and responsiveness (MCS), maternal limit-setting styles and infant styles of response to limits.

Scores indicating maternal experiences with care and overprotection/control from their own parents were obtained from the Parental Bonding Instrument (PBI) and were calculated in the form of subscales assessing care from mother, care from father, overprotection/control from mother and overprotection/control from father. In addition, total care, total overprotection, total mother and total father scores were computed. These scores represent mothers' experiences with their own parents during their first sixteen years of life. Higher scores represent more optimal parenting -- that is, less overprotection/control, and more care.

Maternal Experiences With Overprotection And Care as Related to Maternal Sensitivity and Responsiveness

The calculated PBI scores were examined in simple correlations with the maternal sensitivity/responsiveness (MCS) variables (Table 21). Significant correlations were found only between clean-up MCS and the combined total of both maternal and paternal overprotection scales ($r = .31$; $p \leq .05$), as well as with paternal overprotection scores alone ($r = .30$; $p \leq .05$). Why the maternal scores added slightly to the significant relationship with paternal scores is unclear, but suggests some additive effects of maternal overprotection/control in conjunction with paternal behaviors.

No other significant correlations were found with other PBI variables. In addition, maternal PBI scores did not assist to explain mean MCS score differences between the less and control-salient interactive contexts (F (1, 59) = 1.22, ns). While it was anticipated that significant correlations would also be found with the care variables, and across interactive contexts, the significant findings in relation to parental overprotection scores during clean-up are of interest during this time of developing infant autonomy, when control and overprotection are of increased salience.

Given the significant correlations between clean-up MCS and parental overprotection scores, the total overprotection subscale score was selected for a between subjects factor in a repeated measures MANOVA of the MCS means. The goal of this

Table 21.

Ainsworth Maternal Care Scales and Parental Bonding Instrument Scales: Pearson Correlation Coefficients.[a]

	Parental Bonding Instrument Subscales: Care and Overprotection						
Interaction contexts	Care mother	Care father	Care total	Overpro mother	Overpro father	Overpro total	Total PBI
Mo-Child Play	-.04	.07	.01	.06	.20	.16	.10
Teaching	.10	-.06	.03	.05	.06	.07	.06
Clean-up	.05	.07	.08	.21	**.29***	**.30***	**.22°**
Prohibition	.09	.02	.08	.07	.09	.10	.11
Snack	.13	-.12	.02	-.01	-.04	-.03	-.01
more control	.09	.01	.08	.13	.18	.19	.16
less control	.05	-.03	.02	.02	.09	.07	.05
overall mean	.08	-.01	.06	.10	.15	.15	.12

[a] $N = 61$
° $p \leq .10$ * $p \leq .05$ ** $p \leq 0.01$ *** $p \leq .001$

analysis was to determine if MCS scores would differ across interactive contexts based on mothers' experiences with overprotection from their own parents. This analysis was conducted in response to the hypothesis that maternal experiences with care and overprotection/control may help predict maternal sensitivity in control-salient interactions during the transition to toddlerhood.

Total overprotection scores were ranked by percentiles to yield four groups of parental overprotection: high overprotection, moderately high overprotection, moderately

low overprotection, and low overprotection. Higher mean scores indicate more optimal, lower levels of overprotection. Table 22 contains the n's and mean overprotection levels for each group.

Table 22.

Frequencies Based on 4 Percentile Groupings of PBI Overprotection Total Scores.

PBI Overprotection Groups	N	% of N	Cum %	Mean	SD
Group 1 High overprotection	15	24.6	24.6	35.37	7.13
Group 2 Mod high overprotect	15	24.6	49.2	45.47	1.43
Group 3 Mod low overprotect	17	27.9	77.0	52.03	3.13
Group 4 Low overprotection	14	23.0	100.0	64.52	6.56

A repeated measures analysis was conducted using the five interactional MCS mean scores as the repeated dependent measures, and the ranked total overprotection scores as a between subjects factor with four levels (Table 23). The between subjects effect was not significant, indicating there were no significant differences between mothers' overall mean MCS scores when grouped by the four levels of overprotection. That is, mothers with very overprotective parents had MCS means scores that were not significantly different from mothers who had more optimal parental experiences. However, the interaction effect between overprotection groups and MCS means was significant, indicating that at certain levels of overprotection/control in some interactional contexts, MCS scores were higher or lower than expected. The within subjects repeated measures factor was also significant, reflecting again that the MCS means significantly differed from one another, using all subjects and combined over all PBI levels.

Assessing the interaction effects, MANOVA procedures revealed that within each level of parental overprotection, significant differences were found across the interactional contexts. Looking also within each interaction context, further analyses using MANOVA deviation contrasts allowed mothers' mean MCS scores at each level of parental

Table 23.

Ainsworth Maternal Care Scale Means Across Mother-Infant Contexts by High, Moderately High, Moderately Low and Low PBI Overprotection Scores: Repeated Measures MANOVA.[a]

Between subjects			
Source	DF	F	P
PBI overprotection	3	1.388	ns
Error	57	(7.76)	

Within subjects			
Source	DF	F	P
MCS scores (repeated)	4	6.35	≤ .0001****
Overprot x MCS means	12	2.55	≤ .01 **
Error	228	(1.00)	

Note: values enclosed in parentheses represent mean square errors.
[a] N = 61
° p ≤ .10 * p ≤ .05 ** p ≤ 0.01 *** p ≤ .001 **** p ≤ .0001

overprotection to be compared with the overall MCS mean. Due to the number of contrasts conducted, very conservative Bonferroni procedures were utilized to calculate the error rate (Table 24). Using these procedures, mothers who reported the highest levels of parental overprotection had significantly lower levels of sensitivity in the teaching task (t = -2.8; p < .01), as well as during the clean-up episode (t = -2.07; p < .05), in relation to overall mean MCS scores. Mothers who reported moderately high overprotection and control from parents however, had unexpectedly higher levels of sensitivity in the teaching context (t = 2.44; p < .05) relative to the overall MCS mean. Table 25 displays a graph of maternal MCS scores in the interactive contexts, by level of PBI overprotection scores.

Table 24.

Interaction Effects: Post Hoc Contrasts Examining MCS Scores Across Contexts Within Levels of Parental Overprotection

Interactive Context	F	Error	P
Mother-infant play	.93	(2.14)	ns
Teaching	4.14	(1.65)	**.01****
Clean-up	2.56	(2.40)	**.06°**
Prohibition	1.15	(3.17)	ns
Snack	.98	(2.41)	ns

Within the Teaching Interaction (parameter estimate deviation contrasts)

	M	T-value
Group 1 High overprotection	4.583	-2.80**
Group 2 Mod high overprotect	6.083	2.44*
Group 3 Mod low overprotect	5.765	1.38
Group 4 Low overprotection	5.107	...

Within the Clean-up Interaction (parameter estimate deviation contrasts)

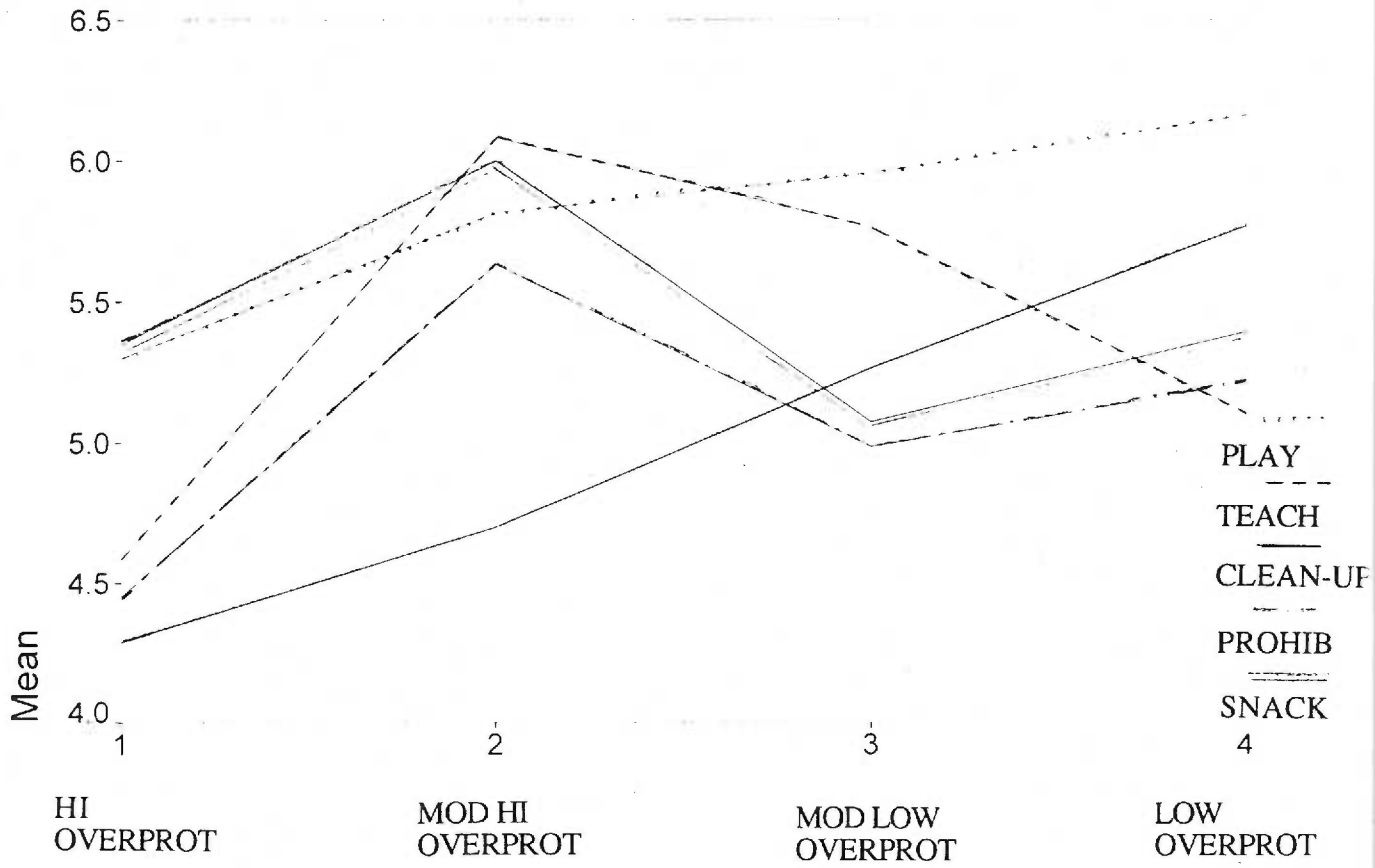
	M	T-value
Group 1 High overprotection	4.287	-2.08*
Group 2 Mod high overprotect	4.700	-.88
Group 3 Mod low overprotect	5.265	.78
Group 4 Low overprotection	5.768	...

Note: Values in parentheses represent MS errors.
[a] N = 61
° $p \leq .10$ * $p \leq .05$ ** $p \leq 0.01$ *** $p \leq .001$

The overall patterns of variation in MCS scores across the different levels of overprotection, however, are perhaps the most meaningful (Table 25). Mothers with moderately high levels of parental overprotection (Group 2) also had unexpectedly higher MCS scores in teaching, snack and prohibition. Those mothers who experienced less (more optimal) overprotection from their own parents (Group 4) were unexpectedly less sensitive (although not significantly so) than were mothers who experienced more

Table 25.

Mean Maternal Care Scale Scores for Each Interactive Segment by High, Moderately High, Moderately Low and Low Overprotection Scores. [a]



[a] N = 61
* p ≤ .05 ** p ≤ 0.01

overprotection from their own parents, in the teaching, prohibition, and snack interactions. Those mothers who experienced less (more optimal), overprotection (Group 4) were still more positive than negative, however, in their impact upon the infant. MCS scores at or above a mean level of 5 are considered more positive than negative (Ainsworth, 1978). In

addition, mothers who experienced very high, negative levels of parental overprotection (Group 1), were below that critical level of 5 on teaching, clean-up and prohibition, and their mean overall MCS scores. These mothers thus appeared to have increased difficulty with the more control-salient interactions.

Examining the overall patterns, only MCS scores in the mother-infant play and clean-up contexts followed the expected linear pattern with parental overprotection. That is, only in play and clean-up were less optimal levels of parental overprotection associated with less maternal sensitivity and responsiveness and more optimal parental overprotection associated with higher levels of maternal sensitivity and responsiveness. And of those two contexts, only in clean-up was the linear relationship significant ($r = .31$, $p \leq .05$). These findings may suggest some intriguing measurement and methodological issues and will be discussed further in the discussion section.

Maternal Experiences with Care and Overprotection as Related to Maternal Prohibition Styles

Analyses were conducted with maternal prohibition styles and subjects' scores on the Parental Bonding Instrument, to assess relationships between maternal experiences with care and overprotection with their parents, and their limit-setting styles with their own infants. Variables representing maternal experiences with care and overprotection from their own parents were, again, obtained from the Parental Bonding Instrument (PBI) and were calculated in the form of subscales assessing care from mother, care from father, overprotection from mother and overprotection from father. In addition, total care, total overprotection, total mother and total father scores were computed. Please see Methods, Chapter 3, for a discussion of the maternal limit-setting classifications. Table 26 contains correlations between PBI scores and the maternal classifications, as individual dichotomous variables.

Less maternal overprotection ($r = .28$; $p < .05$), as well as higher total PBI scores ($r = .27$; $p < .05$), were correlated with an authoritative style. Correlations also approached

Table 26.

PBI Scores by Maternal Prohibition Classifications: Pearson's Product Moment Correlation Coefficients.[a]

	PBI Scale Scores						
Maternal Classification	Care mother	Care father	Care total	Overpro mother	Overpro father	Overpro total	Total PBI
Redirective	-.21	-.03	-.17	.06	.07	.08	-.07
Authoritative	.14	.16	**.22°**	**.27***	.09	**.22 °**	**.26***
Authoritarian	.002	-.17	-.12	**-.28***	**-.23°**	**-.32****	**-.25***
Inconsistent	.01	.07	.05	.003	.13	.08	.07

[a] $N = 61$
° $p \leq .10$ * $p \leq .05$ ** $p \leq 0.01$ *** $p \leq .001$

significance between an authoritative style and total mother scores, total care scores and total overprotection scores ($p < .10$). Thus mothers who were authoritative tended to have experienced optimal levels of care and protection, having parents who were more caring and less overprotective. Significant negative correlations were found between an authoritarian style and optimal maternal overprotection ($r = -.28$; $p \leq .05$), total (maternal and paternal) overprotection scores ($r = -.32$; $p \leq .05$) and the total scores (overprotection and care) ($r = -.25$; $p \leq .05$). A negative correlation between an authoritarian style and paternal overprotection also approached significance ($r = -.23$; $p < .10$). Thus, mothers who used an authoritarian style tended to have experienced more overprotective, less caring parents. The direction of these correlations with both the authoritative and authoritarian styles were in the expected directions. No significant correlations, however, were found with either maternal redirective or inconsistent prohibition styles.

Analyses of variance were also conducted to determine if the maternal prohibition styles could be differentiated on the basis of PBI scores. Using all PBI scale scores as dependent variables in separate analyses, none of the overall effects were significant. Nor were any two maternal prohibition styles significantly different on any PBI scale score using Scheffe post-hoc comparisons at either .05 or .10 levels of significance. Although associations were found between PBI scores and maternal prohibition styles, these associations were not different enough across maternal classifications to discriminate between them.

In light of research findings by Baumrind (1971) indicating that dimensions of care and control can be combined to produce different outcomes, PBI subscales were computed to form four new variables based on varying combinations of care and overprotection. Care and overprotection scores (using combined maternal and paternal scores) were both divided into dichotomous high and low variables based on 50 percentile rankings. These were combined and computed as another four variables to yield parental profiles of: low care/high overprotection; high care/high overprotection; low care/low overprotection; and high care/low overprotection (Table 27).

These variables were examined in correlations with the maternal and infant prohibition classifications. No significant correlations were found with any of the maternal classifications; however, there were trends toward significance (Table 28). The parental profile of low care/high overprotection approached significance in a positive correlation with an authoritarian maternal style of prohibition ($r = .23$; $p = .07$). The parental profile of low care/low overprotection, which seems to represent a neglectful parental profile, also approached significance in a negative correlation with an authoritarian style ($r = -.22$; $p = .09$). According to these findings, the experience of low care/high overprotection from mothers' own parents may be particularly salient for maternal development of an authoritarian pattern with their own children. If so, these combined care/overprotection

Table 27.

Groups as Defined by Combined High/Low Care/Overprotection PBI Scores.

PBI Groups	n	% of N	Cum %
Group 1 Low care/high overprotection	19	31 %	31 %
Group 2 High care/high overprotection	11	18 %	49
Group 3 Low care/low overprotection	11	18 %	67
Group 4 High care/low overprotection	20	32 %	100

variables may be somewhat useful in further informing questions related to parental care and protection/control, beyond simple univariate linear analyses.

Maternal Experiences with Care and Overprotection as Related to Infants' Response to Limits

Parental Bonding Instrument scores were also analyzed in simple correlations with infants' styles of response to maternal prohibition (Table 29). Infant autonomous-disengaged patterns were significantly negatively correlated with maternal and total overprotection scores (r = -.28, $p < .05$ and r = -.27, $p < .05$, respectively), indicating the autonomous-disengaged pattern tended to occur in infants whose mothers had experienced higher levels of overprotection from their own parents. Autonomous-compliant behavior was significantly positively related to paternal total PBI scores (r = .25; $p \leq .05$). (Significance was approached between autonomous-compliant behavior and just the paternal care scales (r = .22; $p \leq .10$) as well.) Thus, autonomous-compliant infant behavior tended to occur with mothers who had positive experiences with their own fathers, both in terms of care and less overprotection. Persistant-compliant infant behavior was positively correlated with several PBI scores: maternal total scores (r = .38; $p < .01$); total overprotection scores (r = .25; $p \leq .05$); paternal overprotection scores (r = .31; $p \leq .05$); maternal care scores (r = .31; $p \leq .05$) and approached significance for total PBI scores (r = .22; $p \leq .10$). These findings indicate that infants with persistent-compliant

Table 28.

High/Low Care/Overprotection Combined Total PBI Scores by Maternal Prohibition Classifications: Pearson's r Correlation Coefficients.[a]

Maternal classification	Low care/ High overprot	High care/ High overprot	Low care/ Low overprot	High care/ Low overprot
Redirective	.05	-.06	.20	-.17
Authoritative	-.18	-.01	-.01	-.19
Authoritarian	**.23**°	.13	**-.21**°	-.16
Inconsistent	-.13	-.11	.11	-.13

[a] $N = 61$
° $p \leq .10$ * $p \leq .05$ ** $p \leq 0.01$ *** $p \leq .001$

Table 29.

PBI Scores by Infant Response to Prohibition Classifications: Pearson's Product Moment Correlation Coefficients.[a]

Infant classification	Care mother	Care father	Care total	Overpro mother	Overpro father	Overpro total	Mother total	Father total	Total PBI
Autonomous-disengaged	-.17	-.01	-.11	**-.28***	-.15	**-.26***	**-.26***	-.10	**-.22°**
Autonomous-compliant	-.06	**.21°**	.10	-.09	-.05	-.03	-.09	**.25***	-.04
Persistent-compliant	**.31***	-.15	.13	**.31***	-.09	**.25***	**.38****	-.07	**.22°**
Persistent	-.20	-.05	-.18	-.03	-.03	-.04	-.15	-.08	-.14

[a] N =61
° p ≤ .10 * p ≤ .05 ** p ≤ 0.01 *** p ≤ .001

styles also tended to have mothers who had positive experiences with their own parents, on both the care and overprotection dimensions.

These findings were expected in accordance with the model of multigenerational influence and transmission of internal working models of relationships. Again, autonomous-compliant and persistent-compliant infant responses to maternal limits appear to be positive adaptations at 12 months of age, and are associated with mothers' positive experiences with their own parents. This constitutes a three generation pattern of influence and response. Autonomous-disengaged infant behavior, consisting of a maladaptive level of involvement with their mother, was associated with mother's negative parental experiences. Persistant infant behavior was negatively correlated with all PBI scale scores, and, although these correlations were not significant, the pattern suggests this infant behavior may be less adaptive as well. Lastly, there were no significant correlations between any of the combined care/overprotection variables and infant classifications,

suggesting that these combined variables may have limited utility in further informing these findings in relation to infant behavior, at least at the age of 12 months.

Analyses of variance were also conducted using the infant classifications and Parental Bonding Instrument scores. Again, overall effects were not significant, although significance was approached with maternal overprotection scores ($F = 2.21$, $p \leq .10$; Table 30). Although there were no significant differences between groups using post-hoc Scheffe comparisons at 0.05 levels of significance, maternal overprotection scores were differentiated between persistant-compliant and autonomous-disengaged infant classifications at the Scheffe level of $p \leq .10$ (Table 30).

Combined Effects of Both MCS and Maternal Experiences with Care and Overprotection, on Maternal Limit-Setting Style and Infants' Response to Limits.

Maternal Limit Setting Style

The next research goal was to examine the combined influence of maternal sensitivity and responsiveness (MCS) and maternal experiences with care and overprotection from their own parents (PBI), on maternal limit-setting style and the infant's style of response to limits. These analyses were first conducted with two separate multivariate analyses of variance (MANOVA's). MCS and PBI scores were the multiple dependent variables, and were regressed first on the maternal classifications, and then on the infant classifications, in two separate analyses. Whereas Maternal Care Scale (MSC) scores were significantly differentiated by both maternal limit-setting styles and infant responses to limits, none of the PBI scores were significantly differentiated by those styles. The findings from this analysis, then, were very similar to the findings from the previous oneway ANOVA's with MCS and PBI scores separately. While the oneway ANOVA's demonstrated the ability of MCS scores to differentiate between some of the maternal limit-setting styles and infants' styles of response to limits (Tables 18 and 20), PBI scores did not differentiate between those styles (Table 30).

Table 30.

Infant Prohibition Classifications by PBI Maternal Overprotection Scores: Analysis of Variance[a]

Source	DF	Sum Squares	Mean Square	F	P	
Between subjects (PBI overprotection)	3	826.50	275.50	2.20	**.098**	°
Within subjects	57	7129.90	125.09			
Total	60	7956.40				

Scheffe post-hoc comparisons: Infant prohibition classifications by maternal overprotection scores

Classification	n	M	1 2 3 4	
1 Autonomous-disengaged	8	20.21		
2 Autonomous-compliant	17	23.36		
3 Persistent-compliant	25	26.99		°
4 Persistent	11	24.13		

[a] N = 61
* p ≤ .05 level, using Scheffe multiple range procedure.
° p ≤ .10 level, using Scheffe multiple range procedure.

Although PBI scores did not differ significantly between the classifications of maternal limit-setting styles or infants' response to limits, regression analyses were also conducted to determine if certain PBI characteristics in combination with MCS scores might still be related to certain maternal and or infant prohibition classifications. MCS and PBI scores were entered as predictor variables in four separate regression equations, using the individual maternal classifications, dichotomously scored, as four separate dependent variables. Demographic variables were also entered as predictor variables where relevant, based on significant zero-order correlations with the maternal classifications. Stepwise entry and analysis procedures were used for the entry of independent variables into the equation. These regression analyses did reveal several significant relationships between MCS scores, PBI scores and the maternal classifications. A redirective classification was associated with both more maternal sensitivity and responsiveness and less maternal care

experienced (R^2 = .53, adjusted R^2 = .28; F (2, 57) = 11.58; $p \leq .001$), predicting about one half of the variance in redirective mothers' scores on those variables. The relationship between a redirective style and less maternal care was not expected. In addition, maternal care was not associated with this classification in zero-order correlations; it was not signficant until the variance relative to MCS scores was controlled ($R^2\Delta$ maternal care =.25; $R^2\Delta$ MCS scores = .28). This may suggest that some mothers with less caring, negative parental role models develop a redirective style in an effort to maintain positive interactions with their children. Perhaps they are more reluctant to introduce limit-setting and increase the potential for negative infant responses and affect, due to their desire to not recreate their own childhood experiences. While maternal age also correlated with a redirective maternal style in simple correlations, it was not a significant contributor to the redirective classification once MCS and PBI scores were considered.

An authoritative style was predicted by MCS scores in the prohibition interaction and by optimal maternal overprotection scores. Thus, authoritative mothers tended to be more sensitive around limit-setting, and to have had less overprotective/controlling mothers themselves (R^2 = .42; adjusted R^2 = .17; F (2, 57) = 5.97; $p \leq .01$). This style was not predicted further by MCS scores in other interactions.

Authoritarian classifications were associated with lower MCS scores and overprotective parenting from mothers' own mothers (R^2 = .29; adjusted R^2 = .27; F (2,57) = 11.81; $p \leq .001$). Although overprotection from both parents had been significantly correlated with an authoritarian style in zero order correlations, once overprotection from mother was also entered into the regression equation, overprotection from both parents was no longer significant. These findings in regard to authoritarian mothers suggest that high control tactics are salient aspects of parenting in families whose offspring then use an authoritarian discipline style with their own children. The low expression of support and caring in conjunction with high control tactics are central features of an authoritarian discipline style. Adding maternal income also increased the variance

explained to 34%, an increase of 5% (R^2 = .34; adjusted R^2 = .31; F (3,56) = 9.65; $p \leq$ 001). With less maternal sensitivity and responsiveness, more overprotection from mothers' own mothers, and less maternal income predicting authoritarian classifications, maternal age was no longer a significant contributor.

The inconsistent maternal prohibition classification, again, was not associated with any PBI or MCS variables, either singly or in combination. In summary, although MCS and PBI scores did not significantly differ across the maternal styles beyond the results of the previous oneway ANOVA's, combined PBI and MCS scores further assisted to define characteristics of mothers with redirective, authoritative and authoritarian styles, using regression analyses.

Infants' Response to Limits

Infants' response to limits classifications were analyzed similarly. Infant classifications were differentiated only by maternal MCS scores; PBI scores did not further contribute to differences between classifications. Again, these findings are similar to the previous zero-order correlations and oneway ANOVA results. Dichotomous categories of infants' response to limits were also analyzed as dependent variables in separate regression analyses using PBI and MCS scores as predictors, to assess for relationships between combinations of MCS and PBI scores and the individual infant classifications. The specific MCS and PBI variables chosen were based on their zero-order correlations in relation to the infant classifications (Tables 19 and 29).

Finally, maternal limit-setting styles were considered as predictors to the individual infant classifications as well. The dichotomous autonomous-disengaged infant classification was regressed on the MCS overall mean and PBI overprotection scores. Both the MCS mean and overprotection from mother scores were significant predictors (R^2 = .23; adjusted R^2 = .20; F (2, 58) = 8.46; $p \leq .001$), together explaining approximately one quarter of the tendency for an infant to be autonomous-disengaged vs. the other infant categories. Total PBI mother scores did not add to the variance associated with the

autonomous-disengaged classification. Infants classified as autonomous-disengaged, then, tended to have mothers who were less sensitive and who had experienced more overprotection/control from their own mothers. When the authoritarian maternal limit-setting classification was added as a predictor, however, neither MCS nor PBI scores were significant predictors ($\underline{R}^2$ due to authoritarian style = .19, adjusted $\underline{R}^2$ =.18; $\underline{F}$ (3,57) = 14.27, $\underline{p} \leq$ = .001; significance of contribution from MCS scores, $\underline{p}$ = .06; significance of contribution from care from mother scores, $\underline{p}$ = .17). This indicates that although PBI scores are related to both maternal sensitivity and responsiveness and an authoritarian limit-setting style, a mother's experience with her own parents tends to have indirect rather than direct effects on her infant's behavior in the limit-setting context. When mothers' relationship histories and their sensitivity and responsiveness are held constant, an authoritarian limit-setting style tends to be the best predictor of infant disengaged-autonomous behavior.

Infant persistent-compliant behavior, however, was best predicted by the PBI total mother scores. Other PBI scores were no longer significant when the total mother scores were tested as predictors. This infant classification was initially related to MCS scores in the snack context; however, once PBI mother scores were entered, MSC snack scores did not remain significant contributors to this infant classification. PBI total mother scores remained the best predictor of infant persistent-compliant behavior, although a maternal redirective prohibition classification significantly contributed as well (overall $\underline{R}^2$ = .17, adjusted $\underline{R}^2$ = .14, due to mother PBI scores $\underline{R}^2$ = .10; $\underline{p} \leq$.001; due to redirective classification $\underline{R}^2$ = .07 $\underline{p} \leq$ .05). Thus a mother's relationship history with her own mother appears to have been directly associated with her infant's persistent-compliant behavior, in addition to maternal redirective limit-setting behavior. There were also more persistent-compliant infants in the sample, providing more variance in relation to the variables of interest, which may have contributed to the presence of more meaningful findings with this category. Fifty percent of the infants were persistent compliant.

Autonomous-compliant infant behavior was predicted only by MCS scores in prohibition, in spite of significant zero order correlations with PBI father totals. MCS scores in the prohibition context remained the only significant predictor even when a maternal authoritative style was considered as a predictor, in spite of a significant zero order correlation between an authoritative style and infant autonomous-compliant behavior. Again this indicates that maternal behavior associated with infant autonomous-compliant responses to limits may be specific to the limit-setting situation, and that the maternal dimensions of accessibility, acceptance, cooperation and overall sensitivity in the context of limit-setting may be especially conducive to the development of autonomous-compliant behavior.

Persistent infant responses to limits were unrelated to either PBI or MCS variables, either alone or in combination. This is again consistent with the zero order correlations among these variables. Nor was any maternal style of limit-setting significantly related to this infant classification. This infant style seems to be associated with less adaptive maternal behavior but not significantly so.

Infant Temperament

The next research goal addressed infant temperament in relation to infants' response to limits, both directly and indirectly as mediated by maternal sensitivity and responsiveness (MCS scores), and maternal experiences with care and overprotection (PBI scores). Please see Methods, Chapter 3, for a description of the infant response to limits classifications and MCS scores, and previous descriptions of scoring and calculation of PBI scores in the present chapter.

The 95-item Toddler Temperament Questionnaire (TTQ; Fuller, McDevitt, & Carey, 1979) was scored to yield nine temperament dimensions: a) activity - amount and rigor of motor activity; b) rhythmicity - regularity of eating, sleeping, and toileting patterns; c) adaptability - adjustment to new routines and places; d) approach - responsivity to novel

objects and friendliness to strangers; e) threshold - responses to intense stimulation and changes in stimulation; f) intensity - intensity of responses to stimulation; g) mood - affective reactions to people and to daily routines; h) distractibility - degree to which the child can be distracted from ongoing activities, such as crying; and i) persistence - the degree to which activities, such as play, are sustained. Scores on these dimensions were totaled, using reverse coding as appropriate, for a total temperament score. Higher scores were associated with a more difficult, challenging temperament. The dimensions were also further combined to yield temperament classifications of easy, intermediate, slow-to-warm-up, and difficult temperament (Fuller, McDevitt, & Carey, 1979). Analyses for this study were conducted using the total temperament score, as well as a ranked linear variable representing the temperament classifications of easy, intermediate, slow-to-warm-up and difficult temperament, ranked low to high.

Correlational analyses using the single temperament total score as well as the ranked linear temperament classification score revealed no significant correlations with any of the maternal or infant prohibition categories (Table 31). An inconsistent maternal style, however, approached significance in a negative correlation with total temperament scores; that is, inconsistent mothers tended to have infants with easier temperaments. This finding makes little clear conceptual sense and is questionable given the lack of other significant correlations. Chi-square analysis using the categorical infant temperament styles and infants' response to limits classifications also revealed that none of the infant prohibition classifications were associated with any of the temperament classifications. Thus infant temperament did not seem to be a factor in how infants responded to maternal limits, or to mother's choice of maternal limit-setting styles.

To explore the possibility that mothers' relationship history may guide their interpretation of their infants' behavior, correlations between Toddler Temperament Questionnaire scores and mothers' scores on the Parental Bonding Instrument were examined. Again, lower temperament scores indicate an easier temperament. There were no

Table 31.

Categorical And Total Temperament Scores by Maternal and Infant Prohibition Classifications: Pearson Correlation Coefficients [a]

Infant classification	Temp/classification	Temp/total score
Autonomous-disengaged	.08	.06
Autonomous-compliant	.12	-.08
Persistent-compliant	-.15	.09
Persistent	.11	.16
Maternal classification		
Redirective	.05	.11
Authoritative	.10	.09
Authoritarian	-.21	.11
Inconsistent	.10	**-.22°**

[a] $N = 59$
° $p \leq .10$

significant correlations between either the categorical temperament scores or the continuous total scores, and simple PBI scale scores. However, there was one significant finding using the high/low combined categorical care/overprotection PBI variables. The combined variable representing both high parental care and high parental control from mothers' own parents was associated with easier toddler temperament ($r = -.29$; $p = .03$). It makes conceptual sense that mothers with more caring parents may tend to interpret their own infants' cues more positively; however the contribution of higher parental overprotection/control as well is unclear. However, this finding may be spurious. It is

possible that there may be more significant and meaningful correlations if a larger sample size was employed. Neither were temperament scores correlated with any of the maternal sensitivity and responsiveness variables.

Some demographic data did reveal evidence of possible bias in mothers' report of infant temperament (Table 32). Mothers who reported abusing alcohol themselves, who had experienced spouse abuse, or who reported that fathers of the infant abused alcohol or drugs, rated their infants as less difficult than other mothers. Because of the lack of correlation with the main study variables, however, no further analyses in regard to temperament were conducted.

Table 32.

Demographic Variables by Temperament Total Scores: Pearson Correlation Coefficients.[a]

Demographic variables	Temperament total score
Alcohol abuse by mother	-.40 **
Alcohol abuse by father	-.42 **
Drug abuse by father	-.42 **
Spouse abuse	-.35 **

[a] N =61
** p ≤ 0.01

The Infant's Developing Sense of Self and Other

Maternal Sensitivity and Responsiveness, Maternal Limit-Setting Style, and Maternal Experiences with Care and Overprotection From Parents in Relation to the Infant's Developing Sense of Self and Other

The fifth research goal focused on the infant's developing sense of self and other. Two aspects of the infant's sense of self and other were assessed: the infant's knowledge of self and other as objects; and the infant's sense of self as agent or actor, on self and

other (Pipp et al.1987; Pipp, 1992). Infant knowledge of self and other as objects was assessed using a series of recognition tasks. The infant was asked to identify self and mother by name, to locate each other spatially, and to identify certain body parts. In the rouge task, rouge was applied to the infant's and mother's noses and the infant was required to both look at and either touch or verbalize about the presence of the rouge to pass the task. Sticker tasks were also used; stickers were applied to mother and infant's nose, hand, and tummy, and the infant needed to remove two out of three from both self and mother to pass. In addition the infant was asked to identify their own and mother's possession of shoes, and their own and mother's gender. It should be noted that these tasks were developed for use with infants up through three years of age; 12 month old infants were not expected to pass the more advanced tasks.

Infant sense of self and other agency, or ability to "act on self and other", was assessed using a set of action tasks derived from the literature on pretend play (Pipp et al., 1987). Infants were assessed for their ability to perform a series of increasingly complex tasks in relation to self and other. "Other" tasks were conducted in relation to the mother. Thus the more complex tasks included an ability to know both baby and mothering roles, from the sensorimotor act of eating a Cheerio to a representational understanding of a maternal behavioral role of feeding and leading another. The infant was asked by the examiner to feed self a Cheerio, modeled by the examiner, and then to feed mother. The infant then was modeled to drink from a bottle, then to give mother a drink, and then to drink from a cup, and to give mother a drink from a cup. The infant was then asked to pretend to eat from a plate with a spoon, and to feed mother using the plate and spoon. Next in the sequence the infant was asked to go and then take mother to eat in the corner using the plate and spoon, and lastly to go to the corner and then return and feed self and mother at the table. All tasks were modeled by the examiner.

For both self as <u>object</u> and self as <u>agent</u> tasks, infants were scored based on their ability to perform each task. Points were given if a task was accomplished fully. Partial

points were given if infants performed part of a task at a level beyond the complexity of the preceeding task but did not complete the task fully; for example, if an infant walked to the corner with the plate and spoon but did not pretend to eat there, partial credit was obtained. The scores on the individual tasks were summed to yield total self-agency and total other agency scores, total self-knowledge and total other knowledge scores, total self scores, total other scores, and grand total scores. Maternal sensitivity and responsiveness (MCS scores), maternal limit-setting style, and maternal experiences with care and overprotection from their own parents (PBI scores) were then examined in relation to infants' scores in relation to those aspects of their developing sense of self and other.

Initial examination of simple correlational analyses (Table 33) revealed several significant correlations between MCS variables and the infant's developing sense of self-agency, the "acting on self" tasks. The MCS variables related to infant "acting on self" scores were: the mother-infant play, clean-up, and snack contexts, as well as the more and less control-salient means and the overall MCS mean. All of these correlations, however, including those that were not significant, were unexpectedly in the negative direction. Thus, infants with mothers rated as more sensitive performed significantly fewer of the agency "acting on self" tasks, and those with less sensitive mothers performed more self-related tasks, in the context of the agency testing situation. These correlations were unexpectedly in the opposite direction than expected, which was that higher levels of maternal sensitivity would be associated with higher levels of self-agency. In addition, while none of the maternal prohibition classifications (or infants' response to limits classifications; see Table 34) were correlated with the number of agency "acting on self" tasks performed, significance was approached in a positive correlation with a maternal authoritarian style. Again, a less optimal maternal interactional style was associated with higher infant self-agency totals.

Table 33.

"Acting on Self" and "Acting on Other" Agency Tasks with Maternal Care Scale Scores: Pearson Correlation Coefficients.[a]

MCS Mean Scores: Interactive Contexts	Acting on Self	Acting on Other
Mother-Child Play	**-.23°**	**-.23°**
Teaching	-.17	.11
Clean-Up	**-.39 ****	.02
Prohibition	-.13	.01
Snack	**-.32 ****	.05
Overall Mean	**-.31 ***	.09
More Control Salient Mean	**-.27 ***	.05
Less Control Salient Mean	**-.31***	.15
Acting on Other	.08	1.000

Note: Values in parentheses are p values.
[a] N = 61
° p ≤ .10 * p ≤ .05 ** p ≤ 0.01 *** p ≤ .001

None of the PBI variables were correlated with "acting on self" tasks (Table 35) . The variance in agency self tasks related to the combined contributions of maternal limit-setting styles, maternal experiences with care and overprotection (PBI scores), and maternal sensitivity and responsiveness (MCS), was equal to the simple correlations between agency self-tasks and MCS scores alone. In other words, those other study variables did not contribute further to the number of agency self tasks performed by the

infant, beyond the contribution of MCS scores.

Table 34.

"Acting on Self" and "Acting on Other" Agency Tasks with Maternal Prohibition Classifications: Pearson Correlation Coefficients.[a]

Maternal Classifications	Acting on Self	Acting on Other
Redirective	-.16	-.03
Authoritative	-.17	.06
Authoritarian	.22°	-.02
Inconsistent	.05	-.03
Infant Classifications		
Autonomous-disengaged	.14	.13
Autonomous-compliant	-.03	.05
Persistent-compliant	-.13	-.06
Persistent	.07	-.12

[a] $N = 61$
° $p \leq .10$

The variable representing the infant's performance on "acting on other" tasks, where the infant was asked to "act on" his/her mother, was not correlated with any of the MCS variables, although significance was approached in a positive correlation with MCS in the play context ($r = .22$; $p = .09$) (See Table 33). This "acting on other" variable was, however, significantly and positively correlated with the total care scores from the Parental Bonding Instrument as well as care experienced from the mother's father ($r = .32$; $p \leq .01$; and $r = .29$; $p \leq .05$, respectively) (Table 35). The two aspects of agency, "acting on self"

Table 35.

"Acting on Self" and "Acting on Other" Agency Tasks with PBI Scores: Pearson Correlation Coefficients.[a]

	PBI Scale Scores								
Agency Tasks	Care Mother	Care Father	Care Total	Overprot Mother	Overprot Father	Overprot Total	Mother Total	Father Total	Total PBI
acting on self	-.09	-.05	-.09	-.13	-.17	-.18	-.13	-.12	-.16
acting on other°	.18	**.29** *	**.32** **	.04	.05	-.05	.15	-.01	**.24**

[a] N = 61
° p ≤ .10 * p ≤ .05 ** p ≤ 0.01

vs. "acting on other", were not significantly correlated (r = .085; p = .52) with each other. This is in contrast with findings by Pipp et al. (1992) who found a high correlation between the number of agency self and other tasks performed, across ages 12-36 months (r = .71; p < .001), and with age partialed out (r = .56; p < .001).

To further explore the differences in self-vs-other agency task performance, self and other agency scores were combined into four categorical variables, each representing a combination of high and low self and other scores (Table 36). The first variable represented low scores on self and low scores on mother tasks; the second entailed high self/low mother scores; the third represented low self/high mother scores; and the last variable entailed high self/high mother scores.

These variables were then examined in simple correlations with other study variables. This time both positive and negative significant correlations were found with MCS variables (Table 37). The two categories of high self/low mother task scores, and low self/high mother scores were significantly correlated in opposite directions with MCS scores. High self/low mother task scores were significantly negatively correlated with MCS in play and significance was approached with the less control-salient mean. Conversely, the

Table 36.

Frequencies of Groups Defined by Combined Agency High/Low/Self/Other Scores [a]

Groups representing combined variables		n	% of N	Cum %
Group 1	Low self/low other	13	21 %	21 %
Group 2	High self/low other	16	26 %	48 %
Group 3	Low self/high other	14	23 %	71 %
Group 4	High self/high other	18	30 %	100%

[a] N = 61

group of low self/high mother scores were significantly positively correlated with MCS in snack, play, and the less control-salient mean. While the overall MCS mean was also positively correlated with the low self/high other group, when the variance due to the less control-salient mean scores were considered in a regression analysis, the overall mean MCS scores were no longer significantly related. These findings indicate that infants with less sensitive mothers acted on themselves more readily than upon their mothers in the assessment context, and the reverse was true for infants with more sensitive mothers; infants with more sensitive mothers acted upon their mothers more readily than upon themselves. This pattern was different than expected and is addressed further in the discussion section. Correlations were not significant for clean-up, teaching, or prohibition sequences, nor the more control-salient mean. No correlations were found with PBI scores, or with maternal or infant prohibition categories.

None of the featural recognition task variables, representing knowledge of self and other as objects, correlated significantly with MCS scores, maternal experiences with their own parents, or maternal limit-setting classifications. Two significant correlations between self and other featural knowledge scores were found with infant demographics, however. Female infants tended to have higher self and other featural knowledge scores. These

Table 37.

Agency High/Low Self/Other Combinations by Ainsworth Maternal Care Scale Scores: Pearson Correlation Coefficients.[a]

Infants' Response to Limits Classifications	Interaction contexts				
	play	teach	clean	prohib	snack
Low self/low other	-.14	-.06	.13	-.07	.01
High self/low other	**-.27***	-.11	**-.21°**	-.04	-.15
Low self/high other	**.34****	.11	.20	.09	**.29***
High self/high other	.07	.06	-.09	.03	-.13

	MCS mean	less control-salient mean	more control-salient mean
Low self/low other	-.03	-.07	-.001
High self/low other	-.19	**-.23°**	-.14
Low self/high other	**.25***	**.35****	.16
High self/high other	-.02	-.04	-.004

[a] $N = 61$
° $p \leq .10$ * $p \leq .05$ ** $p \leq 0.01$ *** $p \leq .001$

findings are not particularly meaningful in relation to the goals of this study and may also be spurious. The overall lack of findings in relation to featural knowledge are in accordance with Pipp et al.'s (1992) findings for infants aged 12 months, as infants aged 12 months may be too young to be assessed on this variable. Pipp et al. (1992) discussed that the

testing procedures to assess this variable most likely require representational abilities not found in most infants aged 12 months.

Comparison Of NCATS and Ainsworth Maternal Care Scales

The next research goal focused on comparing and contrasting the two measures of maternal sensitivity and responsiveness, the Ainsworth Maternal Care Scales (MCS) and the Nursing Child Assessment Teaching Scale (NCATS). The reader is reminded that the NCATS assessed only mother-infant interaction in the teaching interaction. Results concerning the maternal (caregiver) NCATS scales are reported here; results from the infant scales are reported in the next section.

Simple correlations were examined between the two measures of maternal sensitivity and responsiveness (Table 38). Significant correlations with the NCATS maternal teaching scores were found mainly with MCS snack interaction scores. The meaning of these correlations in the absence of few significant correlations with the MCS scores in the other interactions, including the teaching interaction, is unclear. However, NCATS caregiver cognitive growth fostering approached significance with MCS teaching scores, as did NCATS caregiver total scores ($r = .22$, $p \leq .10$ and $r = .22$, $p \leq .10$, respectively).

The MCS less control-salient mean was signficantly related to the NCATS caregiver total and the NCATS caregiver sensitivity scores, and approached significance with NCATS caregiver cognitive fostering scores (Table 30). Since the less control-salient mean consisted of snack and play interactions and none of the MCS play scores were correlated with NCATS scores, it was suspected that much of the correlation between the NCATS scores and the MCS less control-salient mean score was due to the association with the snack scores. A regression analysis confirmed this. Once the variance associated with the MCS snack scores were accounted for, the less control-salient mean was no longer significantly associated with either total caregiver scores ($t = -.95$; ns), caregiver sensitivity

Table 38.

NCATS Maternal and Infant Scores with Ainsworth Maternal Care Scale Scores: Pearson Correlation Coefficients.[a]

NCATS	Interaction Contexts				
	Play	Teach	Clean	Prohib	Snack
Maternal Scales					
Cognitive Growth	.15	**.21**	.11	.15	**.28***
Responsiveness	.07	.18	.10	.19	**.26***
S/E Growth Foster	-.03	**.22°**	.05	.01	.20
Sensitivity	.11	.09	.11	.19	**.33****
Total	.11	**.22°**	.05	.13	**.35****
Infant Scales					
Clarity Of Cues	-.04	**-.25°**	-.04	**-.26***	-.02
Responsiveness	.08	-.18	-.01	-.16	-.16
Contingency	.06	-.20	-.02	-.18	-.14
Total	.04	**-.22°**	-.02	**-.21***	-.16

	MCS Mean	Less control-salient Mean	More control-salient Mean
Maternal Scales			
Cognitive Fostering	-.14	**.24°**	.18
Responsiveness	-.14	.19	.10
S/E Growth Fost	-.10	.10	.10
Sensitivity	**.21°**	**.25***	.20
Total	**.21°**	**.27***	-.09

	MCS Mean	Less control-salient Mean	More control-salient Mean
Infant Scales			
Clarity Of Cues	-.15	-.03	**-.22°**
Responsiveness	-.03	.13	-.13
Contingency	-.05	.11	-.02
Total	-.08	.08	-.02

[a] $N = 61$

° $p \leq .10$ * $p \leq .05$ ** $p \leq 0.01$ *** $p \leq .001$

scores (t = -.77; ns), or caregiver cognitive growth fostering scores (t = -.16; ns). The t value is used to compare whether the amount of variance accounted for by the variable under consideration is significantly greater than the variance already explained by the existing regression equation. Therefore, the less control-salient mean did not explain a significantly greater amount of variance than did the snack scores alone. Similarly, although the NCATS caregiver total also approached significance with the overall MCS mean (r = .22; $p \leq .10$), this association was not remarkable (t = -1.0; ns) once the variance related to the snack scores was accounted for.

These findings were expected as previous research has suggested that the NCATS scales may measure somewhat different aspects of mother-infant interaction than the Maternal Care Scales. The NCATS scales have been minimally associated with infant attachment security and some measures of maternal depression, for example.

Comparison Of NCATS and Ainsworth Maternal Care Scales in Relation to Maternal and Infant Prohibition Classifications

The two measures of maternal sensitivity and responsiveness were then examined and compared in relation to maternal limit-setting style. First, there were several significant correlations between the NCATS scores and maternal limit-setting styles (Table 39). A maternal authoritative style was significantly positively related to caregiver social emotional growth fostering (r = .25; $p \leq .05$), and approached significance for caregiver responsiveness, caregiver total scores, and caregiver-infant total scores, and caregiver-infant combined contingency scores ($p \leq .10$). An authoritarian style was negatively correlated with caregiver responsiveness (r = -.42; $p \leq .001$) and an inconsistent maternal style was negatively correlated with caregiver cognitive fostering (r = -.26; $p \leq .05$).

However, there were fewer correlations between the maternal limit-setting styles and NCATS scores, than occured between the limit-setting styles and the MCS scores. The redirective maternal style yielded no correlations with the NCATS scales. In contrast, the MCS scales were highly correlated with the redirective style in all the interactive contexts,

Table 39.

NCATS Maternal and Infant Scores with Maternal Prohibition Classifications: Pearson Correlation Coefficients:[a]

NCATS	Maternal Prohibition Cassifications			
	Redirective	Authoritative	Authoritarian	Inconsistent
Maternal Scales				
cognitive growth	-.01	.14	.08	**-.26***
responsiveness	.19	**.22°**	**-.42****	.12
s/e growth fostering	-.03	**.25***	-.11	-.14
sensitivity	.06	-.04	-.04	.04
contingency	.06	.18	-.19	-.02
total	-.03	**.23°**	-.08	-.13
	Redirective	Authoritative	Authoritarian	Inconsistent
Infant Scales				
clarity cues	-.12	.05	-.07	.12
responsive	.03	.11	-.11	-.02
contingency	.01	.11	-.14	.03
total	-.02	.11	-.10	.03
Maternal-Infant Contingency Total	.03	**.22°**	-.18	-.06
Maternal-Infant Total	-.03	**.22°**	-.11	-.09

[a] N = 61
° p ≤ .10 * p ≤ .05 ** p ≤ 0.01 *** p ≤ .001

including the teaching context. Of six NCATS subscales, including the caregiver total, only one of these was significant for each of the remaining three maternal limit-setting styles. The direction of these significant associations between both NCATS and MCS scores in relation to maternal authoritative and authoritarian styles were the same, but generally the magnitude of the correlations were less with the NCATS scores. These findings are again expected in light of literature suggesting these two measures of maternal sensitivity and responsiveness measure slightly different aspects of mother-infant interaction.

Infant responses to maternal prohibition limit-setting styles were also examined in relation to the NCATS scores in the teaching interaction. Infant persistent-compliant responses to prohibition (Table 40) were associated with caregiver responsiveness ($r = .28$; $p \leq .05$), caregiver social emotional growth fostering ($r = .34$; $p \leq .01$) and approached significance for total infant-caregiver contingency scores; $p < .10$). Persistent infant behavior was negatively correlated with caregiver responsiveness ($r = -.30$; $p \leq .05$), the caregiver-infant contingency total, and approached significance in a negative association with caregiver contingency ($r = .-22$; $p \leq .10$) and the caregiver total ($r = .-21$; $p \leq .10$). In contrast with findings between the infant classifications and the MCS scores (Table 18), different patterns are evident. MCS scores were associated with autonomous-disengaged and autonomous-compliant infants, and NCATS scores are associated with persistent-compliant and persistent infants.

Comparison Of NCATS and Ainsworth Maternal Care Scales in Relation to Mothers' Experiences with Care and Overprotection

NCATS maternal scores were examined in relation to mothers' experiences with care and overprotection from their own parents (PBI scores). There were no significant correlations except between total father scores (combined father care and father overprotection scores) and caregiver socio-emotional growth fostering ($r = -.31$; $p \leq .01$). This finding is in the opposite direction than expected and, when considered along with the lack of other significant correlations, is difficult to interpret and is possibly spurious. Correlations between the MCS scales and PBI scores were also infrequent, although significant correlations did occur between paternal and total overprotection scores and MCS scores in the clean-up context.

Comparison Of NCATS and Ainsworth Maternal Care Scales in Relation to Infants' Sense of Self and Other

NCATS scores were then examined in relation to the infants' sense of self and other (Table 41). As can be seen in Table 39, no significant correlations were found between the

Table 40.

NCATS Scores with Infant Response to Prohibition Classifications: Pearson Correlation Coefficients.[a]

	Infant Prohibition Classifications			
NCATS	Autonomous-Disengaged	Autonomous-Compliant	Persistent-Compliant	Persistent
Maternal Scales				
cognitive growth	.001	.02	.08	-.14
responsiveness	-.16	.05	**.28***	**-.30***
s/e growth fostering	-.08	-.18	**.34****	-.20
sensitivity	-.12	-.06	.15	-.01
contingency	-.08	-.005	**.22°**	**-.22°**
total	-.07	-.01	**.21°**	**-.21°**
	Autonomous-Disengaged	Autonomous-Compliant	Persistent-Compliant	Persistent
Infant Scales				
clarity of cues	.06	-.13	.04	.03
responsive	.09	-.12	.10	-.09
contingency	.06	-.12	.12	-.10
total	.09	-.14	.08	-.06
Caregiver-Infant Contingency Total	-.01	-.05	**.24°**	**-.30***
Caregiver-Infant Total	-.01	-.07	.20	-.19

[a] N = 61
° p ≤ .10 * p ≤ .05 ** p ≤ 0.01 *** p ≤ .001

maternal NCATS scores and infants' ability to act on self or other. Significance was approached (p ≤ .10) in a negative correlation between the NCATS cognitive growth fostering scores and infants' acting on self. In addition, the NCATS caregiver total approached significance in a negative correlation with acting on self and in a positive correlation with acting on other (p ≤ .10).

Table 41.

NCATS Maternal Scores with Agency "Acting on Self" and "Acting on Other" Scores: Pearson Correlation Coefficients.[a]

NCATS Scores	Agency tasks	
	Acting on self	Acting on other
Maternal Scales		
cognitive growth	**-.22°**	.19
responsiveness	-.14	.08
s/e growth fostering	-.21	.15
sensitivity	-.04	.14
total	**-.22°**	**.23°**
Infant Scales	**Acting on self**	**Acting on other**
clarity of cues	-.07	.09
responsiveness	-.16	**.26***
contingency	-.16	**.28***
total	-.15	**.23°**
Caregiver-Infant Total	**-.23°**	**.28***

[a] N = 61
° p ≤ .10 * p ≤ .05 ** p ≤ 0.01 *** p ≤ .001

As described earlier, Ainsworth MCS scores were also negatively correlated with "acting on self" tasks and approached positive significance with "acting on other" tasks. Correlations between the agency tasks and NCATS maternal scores were similar, in that the NCATS also approached negative significance with agency "acting on self" tasks, and positive significance in one correlation with "acting on other" tasks. Thus, the overall direction of correlations between the two measures of maternal sensitivity and responsiveness and agency tasks were the same, although they differed in magnitude. Using infant total scores as well, the NCATS caregiver-infant total was significantly positively correlated with agency "acting on other" tasks. Of note is that the correlations between agency scores and maternal NCATS scores actually reached significance only when NCATS maternal scores were combined with NCATS infant scores. Acting on other

scores were also significantly positively correlated with infant responsiveness (r = .28; $p \leq$ .05) and infant contingency scores (r = .28; $p \leq .05$).

Positive correlations were also found between NCATS maternal scores and the combined self/other agency categorical variables (Table 42). The low self/high mother category approached significance with caregiver sensitivity (r = .25; $p \leq .10$) and combined caregiver-infant total scores (r = .23; $p \leq .10$). Caregiver sensitivity also approached a significant negative relationship with low self/low mother scores (r = -.23; $p \leq .10$).

Overall, these findings point again to a general pattern of higher maternal sensitivity/responsiveness being related to infants' demonstration of greater agency toward mother with limited self-agency, as was found with the Ainsworth Maternal Care Scales. There were no significant correlations between NCATS maternal behavior scores and maternal experiences with their own parents (PBI scores).

Infant Interactive Behavior

Infant interactive behavior was assessed in relation to MCS, and in relation to maternal experiences with overprotection and care from their own parents. This section will also report on findings for relationships between infant interactive behavior and other study variables. Infant interactive behavior was assessed primarily by the NCATS infant behavior scales, but also through the infants' response to limits classifications. This section will report on relationships between NCATS infant behavior scales, and other study variables, as well as infants' response to limits in relation to the maternal limit-setting classifications. The reader is referred to previous sections for results of other analyses concerning infants' response to maternal limits in relation to other study variables.

Infant Interactive Behavior and Maternal Sensitivity and Responsiveness

Infant interactive behavior was assessed using the NCATS infant interactive scales. Infant interactive behavior was expected to be related to maternal sensitivity and responsiveness, which was assessed in relation to both the NCATS maternal scales, as well as the Maternal Care Scales (MCS). Infant interactive behavior was, in general,

Table 42.

NCATS Maternal Scores with Combined Agency High/Low Self/Other Scores: Pearson Correlation Coefficients.[a]

	Agency Tasks			
NCATS Scores	Low Self/ Low Other	High Self/ Low Other	Low Self/ High Other	High Self/ High Other
Maternal Scales				
Cognitive Growth	.06	-.15	.05	.05
Responsiveness	-.21	.14	.18	-.12
S/E Growth Fostering	.06	-.07	.07	-.05
Sensitivity	**-.23°**	.09	**.25°**	-.11
Contingency	-.18	.09	.19	-.10
Total	-.11	-.03	.16	-.02
	Low Other Low Self/	Low Other High Self/	High Other Low Self/	High Other High Self/
Infant scales				
Clarity of Cues	-.09	.04	.05	-.001
Responsive	-.18	-.18	**.28***	.07
Contingency	-.17	-.20	**.27***	.08
Total	-.17	-.12	**.23°**	.06
Caregiver-Infant Contingency Total	-.20	-.01	**.27***	-.06
Caregiver-Infant Total	-.16	-.07	**.23°**	.01

[a] N = 61
° p ≤ .10 * p ≤ .05 ** p ≤ 0.01 *** p ≤ .001

significantly correlated with NCATS maternal scores (Table 43). Infant responsiveness was significantly correlated with all maternal scores except caregiver cognitive fostering. Infant clarity of cues, however, only approached significance with caregiver total scores, and caregiver contingency scores.

Table 43.

NCATS Maternal Scores with NCATS Infant Scores: Pearson Correlation Coefficients.[a]

	NCATS Infant scales			
NCATS Scores	Infant clarity of cues	Infant responsiveness	Infant contingency	Infant total
Maternal scales				
cognitive growth	.16	.07	.05	.11
responsiveness	.10	**.29***	**.29***	**.25***
s/e growth fostering	.16	**.35****	**.33****	**.32****
sensitivity	.04	**.24°**	.17	.19
contingency	**.24***	**.29***	**.27***	**-.22°**
total	**.23°**	**.32****	**.30***	**.32****
caregiver-infant contingency total	**.46*****	**.68*****	**.67*****	**.67*****
caregiver-infant total	**.54*****	**.68*****	**.66*****	**.70*****

[a] N = 61
° p ≤ .10 * p ≤ .05 ** p ≤ 0.01 *** p ≤ .001

In relation to the Maternal Care Scales (MCS), infant clarity of cues were significantly negatively correlated with MCS in prohibition (r = .-.26; p ≤ .05) and approached significance with teaching MCS scores (r = -.25; p ≤ .06). (Please see Table 38). Again, however, there was a relative lack of correlation between the NCATS scales and the MCS scales, this time in regard to the infant interactive behavior and MCS scores.

Infant Interactive Behavior and Infant Responses to Prohibition

Infant interactive behavior was also examined in relation to infant responses to maternal limits in the prohibition context. Infant interactive behavior scores, alone, were not significantly correlated with infant responses to prohibition (Table 40). The infant-

caregiver contingency total, however, was negatively related to persistent infant behavior (r = -.30; $p \leq .05$), and approached positive significance with persistent-compliant infant behavior (r = .24; $p \leq .10$). These findings point to associations between higher levels of mutually contingent behavior and persistent-compliant infant responses to limits at this age, and lower levels of mutually contingent behavior and the persistent infant category. These results are consistent with overall findings for the generally adaptive nature of the persistent-compliant infant category at 12 months, and for the less adaptive persistent category, which is characterized by persistence toward the prohibited object without engagement with the mother.

Infant Interactive Behavior And Maternal Experiences With Care and Overprotection

No significant correlations were found between maternal experiences with their own parents (PBI scores) and NCATS infant interactive behavior. This is consistent with the lack of findings between maternal experiences with their own parents and NCATS maternal interactive behavior. In other words, maternal relationship history as assessed by the PBI was not associated with NCATS maternal or infant scores.

Infant Interactive Behavior And Self/Other Agency Development

Significant correlations were found between self and other tasks and infant interactive behavior (Table 41). Infant total scores approached significance (r = .23, $p \leq$ .10) with the low self/high mother agency category. NCATS infant responsiveness and infant contingency scores were significantly correlated with agency "other" tasks (r = .28, $p \leq .05$; r = .28, $p \leq .05$, respectively). Infant responsiveness scores were also significantly positive in relation to low self/high agency mother scores (r = .28; $p \leq .05$) as were infant contingency scores (r = .28, $p \leq .05$) and total caregiver-infant contingency scores (p = .27, $p \leq .05$, n = 57) (Table 42). Once infant contingency scores were controlled for, however, combined mother-infant contingency scores did not contribute significantly to the low self/high other agency category (t =.907, ns.) These findings suggest that infants who were more able to "act on" their mothers in the agency assessment

were also more responsive and contingent in relation to their mothers during the teaching task. These infants, however, also tended to be less apt to act on themselves in the agency assessment context.

Maternal Limit-Setting Classifications and Infants' Response to Limits Classifications

Maternal limit-setting classifications were examined in relation to infants' response to limits classifications, to assess for patterns of association between maternal and infant behavior in a limit-setting context. A Chi square analysis indicated that maternal and infant prohibition classifications occurred together in ways that exceeded their occurrance by chance alone (Table 44). Specifically, autonomous-disengaged infant behavior occurred more frequently with authoritarian mothers and less often with redirective and authoritative mothers; autonomous-compliant infant behavior occurred more often with authoritative mothers and less often with authoritarian mothers. Persistent compliant infant behavior, compromising 50% of the sample, occurred more frequently than other infant classifications, and occurred more often with redirective and authoritative mothers and less often with authoritarian mothers. Persistent infant behavior did not occur with redirective or authoritative mothers but occurred only with authoritarian and inconsistent mothers.

Caution, however, must be used when interpreting those findings. In the Chi-square analysis, due to the large number of cells and relatively small sample size, there were 12 of 16 cells (75%) with expected frequencies of less than $n = 5$. Only up to twenty percent of the total number of cells, or in this case 3 to 4 cells, with expected frequencies of less than five is acceptable (Hays, 1973; Spence, Cottonwood, Underwood & Duncan, 1976). Therefore even though these findings support the theoretical positions implied by the literature and the other patterns of more and less adaptive maternal and infant behavior found in this study, due to the large number of cells and relatively small sample size, replication of this analysis using the larger sample is recommended (Munro, Visintainer, &

Table 44.

Maternal Prohibition Classifications by Infants' Response to Limits Classifications: Chi Square Analysis.[a,b,c]

	Maternal Prohibition Classifications				
Infant Responses to Limits	Redirective	Authoritative	Authoritarian	Inconsistent	
Autonomous-disengaged	0 (1.3)	0 (2.8)	9 (4.1)	1 (1.8)	16.4%
Autonomous-compliant	2 (1.7)	7 (3.6)	2 (5.3)	2 (2.3)	21.3%
Persistent-compliant	6 (3.9)	10 (8.4)	9 (12.3)	5 (5.4)	49.2%
Persistent	0 (1.0)	0 (2.2)	5 (3.3)	3 (1.4)	13.1%
Column percents	13.1%	27.9%	41.0%	18.0%	100 %

Note: Values given first are observed values, values in parentheses are expected values.
[a] N = 61
[b] 12 cells (75%) have expected frequencies of less than five
[c] Chi square (Pearson, d.f.= 9) = 23.83, $p \leq .01$

Page, 1986) before conclusions can be drawn. Additional correlational analyses of infant and maternal prohibition classifications, however, demonstrated a similar pattern of association (see Table 45).

Table 45.

Maternal Limit-Setting Classifications by Infants' Response to Limits: Pearson Correlation Coefficients.[a]

	Maternal Prohibition Classifications			
Infant responses to limits:	Redirective	Authoritative	Authoritarian	Inconsistent
Autonomous-disengaged	.17	**-.28***	**.44*****	-.09
Autonomous-compliant	.03	**.30***	-.27	-.04
Persistent-compliant	.20	.11	**-.22°**	-.04
Persistent	-.15	**-.24°**	.17	.20

[a] N = 61
° p ≤ .10 * p ≤ .05 ** p ≤ 0.01 *** p ≤ .001

CHAPTER V

DISCUSSION

The purpose of this study was to examine maternal sensitivity and responsiveness in the context of the infant's transition into toddlerhood. There were five major goals addressed by this study. The first two examined maternal sensitivity across interactional contexts with varying control salience. With the onset of toddlerhood, the infant becomes increasingly autonomous with an increased ability for locomotion and communication. The mother of a toddler is required to adapt to these changes in her infant, and to be sensitive and responsive to her infant's emerging autonomy. The mother's ability to be sensitive and responsive to her infant's emerging autonomy during the transition to toddlerhood was explored in relation to her ability to be sensitive and responsive during the first year of the infant's life, and was also examined across interactional contexts differing in control saliency. It was anticipated that mothers who were more sensitive and responsive during the first year of the infant's life may be more sensitive and responsive during the transition to toddlerhood as well, but that some or all mothers may also be relatively less skilled in contexts which challenge them to use skills that directly address or negotiate with the child's emerging autonomy.

The third goal of the study was to explore the relationship between mothers' experiences with affection and control from their own parents, and their sensitivity and responsiveness during interactions of varying control saliency during the transition to toddlerhood. One interactional context of higher control salience which must be negotiated by mothers of toddlers is how to prevent them from touching or playing with unsafe or otherwise prohibited objects. Mothers' experiences with their own parents were examined in relation to maternal prohibition styles as well.

The fourth goal of the study was to examine the relationships among maternal sensitivity and responsiveness, maternal prohibition style, and infant temperament. Infant

temperament was conceptualized as a contributing infant characteristic which may affect maternal behavior and interactional processes during infancy and toddlerhood. The fifth goal of the study was to examine the impact of the above maternal and infant characteristics and interactional processes on the development of the infant's self during the transition to toddlerhood.

In this chapter, the findings and limitations of the study are discussed in relation to the above goals and the literature review. Conclusions and suggestions for future research are presented.

Sensitivity and Responsiveness Across Interactions of Varying Control Salience

To begin the discussion of findings in relation to the first research goal, assumptions about differences between the less control-salient and more control-salient interactional contexts will be reviewed. This investigation assumed that feeding and, in most cases, play interactions occur regularly between mother and infant over the first year of the infant's life. They were assumed to represent more highly patterned interactions, due to practice, as compared with interactions involving teaching the infant a task, cleaning up toys, and/or prohibiting the child from playing with a desired object. The latter situations were conceptualized as representing interactions which become more frequent only as the infant gains mobility and increased cognitive and interactive capacity during the transition to toddlerhood. Mothers were expected to have less skill in the latter situations than the former, more familiar, contexts. In addition, snack and play contexts were seen as tasks in which infants' autonomous actions may be more readily in accord with the goals and tasks of the interactive context, than in contexts of being taught to stack blocks, put away toys, and/or being prohibited from playing with an object. Thus, snack and play contexts may require less interactive skill on the part of the mother. Lastly, in the snack context, the child was placed by the mother in a high chair, already controlling the infant's behavior to a

certain degree, and making the coded portion of snack interactions potentially less control oriented. It is also important to point out, however, that all of these situations may be equally potentially control-salient, depending on the interactive goals and behavior of mother and child.

Analyses targeted toward the first question revealed that mothers' sensitivity and responsiveness in any one interactional context was related to all other interactional contexts assessed in this study. This included a high correlation between more control-salient and less control-salient contexts ($r = .74$; $p \leq .001$). This indicates that maternal sensitivity and responsiveness were significantly stable across contexts involving varying degrees of control salience. Mothers that were more sensitive in one interactive context were also more sensitive in the other contexts, including across the more and less control oriented contexts. Therefore, adding the aspect of control salience does not markedly affect a mother's level of sensitivity, relative to other mothers. From this it may be interpreted that mothers who were more sensitive during the first year of life would also be more sensitive as their infant transitions into toddlerhood.

Findings from the second question and research goal indicated that while mothers' relative sensitivity remained significantly stable across the more and less control-salient interactions, mothers were still significantly less sensitive in the more control-salient interactions, compared with the less control-salient interactions. It is important to note that discrepancy between mother and infant goals alone did not lower ratings, nor did the expression of negative infant affect. Rather, a mother's lack of sensitivity within the context of those discrepant goals and negative affect lowered ratings. It was also not assumed that a control-salient context by nature required less sensitivity in order for the mother to be effective, nor was the child's success at the task needed to indicate maternal sensitivity. Rather, the mothers' ability to cooperate with their infants' interests, emotional state and activities as well as the nature of the task was rated. The smoothness and appropriateness of the mothers' interventions and actions was a point of focus, as well as

their comprehension and sensitivity to their child's ability to participate in the interactions and tasks.

The findings indicated that mothers did a better job with the emerging toddler's autonomy in situations that were less control-salient. The reasons for this and its implications are unclear. Whereas it seems clear that more control-salient interactions may demand somewhat different interactional behaviors from the mother, less maternal sensitivity in these interactions may indicate lack of skill, knowledge, experience, or all of those. Both the more control and less control-salient interactions were correlated positively with maternal age and number of children, indicating that mothers may increase their overall interactional skill as they gain experience with both life and children. Less maternal sensitivity may be due to inexperience with a 12 month old infant in more control-salient interactions, since this is the beginning of the toddlerhood period. Forty-three percent of the sample were first-time mothers; for them, the emerging autonomy of the toddler may be a particularly new phenomenon. Education, or highest educational grade completed, however, was only related to maternal sensitivity in the less control-salient interactions, but not to sensitivity in the more control-salient interactions. While that finding may be spurious, it may possibly indicate a general societal lack of information or knowledge about how to sensitively handle more control-salient interactions. Perhaps information about sensitivity and responsiveness as related to regulating child behavior and control-related processes is not as available as it might be for mothers of young infants.

Further study is also indicated in regard to the significance of less maternal sensitivity/responsiveness in these interactions. The impact of less maternal sensitivity in more control-salient inteactions needs further study in relation to outcome measures. It may be that less sensitivity is, after all, inherent in more control-salient interactions. What will less maternal sensitivity in control-salient interactions mean for the child? Analysis and results from the larger study may help to inform this question further.

Maternal Sensitivity and Responsiveness and Maternal Prohibition Style

The third research goal was to examine how maternal sensitivity and responsiveness was related to the maternal prohibition (limit-setting) classifications (redirective, authoritative, authoritarian, and inconsistent). There were positive correlations between MCS scores and redirective and authoritative styles, and negative correlations with an authoritarian style. These positive and negative associations were strong enough to significantly discriminate between an authoritarian style, and both redirective and authoritative styles. These relationships indicate that more sensitive mothers utilize redirective or authoritative styles of limit-setting and that less sensitive mothers tend to use authoritarian styles.

The literature on the development of self control and self-regulation may further inform these findings. Kopp (1992) portrayed the infant at 12 months of age as nearing the end of the stage of "self-modulation", which is the first stage in the development of self-control and self-regulation. During the height of this stage, infants' activities and motivation are based primarily within a context of stimulus attraction. Infants in this stage are motivated to pick-up or touch an attractive object merely because they are able to perceive its presence. According to Kopp, self-modulation lays the foundation for later achievements by allowing the infant to both organize and become aware of their actions. Kopp (1992) points out that while sensorimotor modulation involves the process of learning to change one's sensory motor activities in response to the situation at hand, at this age this is not yet a conscious process and does not yet involve intention or awareness of the meaning of the situation. From this perspective, the maternal redirective style seems quite in tune with this stage of infant development. The redirective mother may sensitively acknowledge the infant's inability to respond in any other way to an attractive object, and therefore focus on redirecting or keeping the infant away it. The redirective mother may

playfully interact in a game-like manner to keep the infant from coming into conflict with his/her primary motivational process.

At approximately 9-12 months, the infant begins to learn the difference between his/her actions and those of others, and to show awareness of social and task demands. This heralds the onset of the ability of the infant to "initiate, maintain, modulate, or cease physical acts, communication, and emotional signals" in accordance with caregiver demands (Kopp, 1992, p.204). The maternal authoritative style of prohibition also seems to acknowledge these emerging abilities of the infant at the age of 12 months. By addressing the prohibited object as prohibited, the mother allows the infant to become aware of such demands and to learn to adjust his/her behavior accordingly. Infants will continue to require maternal cueing in order to inhibit their behavior across contexts and over time, however, as they do not yet have the cognitive capacity for self-reflection or to recall events. They are not yet able to generalize this information to different contexts.

With infants at 12 months of age, both redirective and authoritative styles were associated with higher levels of maternal sensitivity and responsiveness (MCS scores). These findings indicate that the more sensitive and responsive mothers acknowledge and respond to the difficulty infants at this age will have in internalizing and managing impulse control. Mothers of both styles acknowledge, through their actions, that infants will not be able to comply independently with a prohibition. Infants at this age may just have beginning awareness of the meaning of a prohibition. Distraction was used by both redirective and authoritative mothers as a way to both lessen the infant's interest in the object and to involve him/her in other constructive activities. In the case of the authoritative mother, her distraction generally followed or included addressing the object as prohibited, as well. Many authoritative mothers allowed their infants freedom to approach the keyboard and "practice" the prohibition. These mothers also provided assistance in the form of distraction, and/or explanations and discussion about the keyboard. The affective tone of

redirective and authoritative mothers was generally positive and conveyed a sense of "working with" the infant rather than being involved in a power struggle.

In contrast, mothers using an authoritarian style displayed little sensitivity for or acknowledgement that the infant's abilities for self-inhibition were only emergent and not fully developed. Indeed, many of these mothers seemed to expect the infant to have a precocious ability for self-regulation, and seemed to assume that they were able to perform acts of self-regulation. Little support was provided in the form of explanation or distraction. Authoritarian mothers used increased power assertion as their primary method of assisting the child to keep away from the keyboard, as if they expected the child would finally get the message if they were firm enough or stern enough. Some of these mothers used an angry tone when their infants persisted, as if interpreting their non-compliance as a willful act of disobediance. Some of them slapped their infant's hands or placed the infant in the corner or a chair for a "time-out", with seemingly little ability to gauge the infant's ability to learn from that experience.

Inconsistent mothers, while using varying amounts of sensitivity (all MCS correlations were negative but nonsignificant) were indeed inconsistent about the prohibition and sometimes seemed to even encourage the infant toward the prohibited object. The inconsistency may be problematic at this age because it does not encourage infants to learn self-modulation, self inhibition or self-control in regard to consistent social demands and expectations. One of the needs of the infant in learning about self-modulation, for example, is to learn the difference between actions of self and other (Kopp, 1992; Pipp, 1990). Observation of some of the dyads with inconsistent mothers revealed a lack of clarity between whether or not an infant was persisting toward the keyboard, or following the mothers leads toward the keyboard. This context would not seem to lend itself well to learning differentiation of actions of self - vs.- other.

These findings provide validity for the use of these maternal prohibition classifications with infants at age 12 months. The highest correlations between maternal

sensitivity and responsiveness and maternal redirective behavior suggests these mothers may have a greater awareness of their infants' developmental limits for self-regulation. They may prefer to wait until the infant is more cognitively developed before they start to actively socialize their infants toward self-control and regulation. However, these mothers may not be providing their infants with as many opportunities to practice self-inhibition as they could, which may slow their infants' development of self-regulation. There may be a curvilinear relationship for maternal sensitivity and responsiveness during the transition to toddlerhood; a moderate level of infant frustration may be optimal. That is, more active socialization of the infant in regard to self-inhibition and self-control, as demonstrated by the authoritative mother, may further the development of self-regulation.

Both of these hypotheses were supported by Chi-square analyses of mother and child prohibition classifications (Table 36). Fifty percent (49.2%) of infants were persistent-compliant in their responses to maternal prohibition, were partnered with mothers in all four maternal classifications. This suggests that most of these infants were predominantly at a sensorimotor cognitive level. In spite of their mothers' range of control strategies, they were in general still compelled toward the attractive object as well as their mothers' actions and distractions. Thus, these infants were unable to internalize the prohibition and consistently inhibit their approach to the keyboard even when socialized and cued by authoritative mothers. On the other hand, infants classified as autonomous-compliant--who were able to inhibit their approach to the keyboard, occurred more often than by chance only with authoritative mothers. Kopp (1992) stated that infant self-inhibition requires an awareness of what is acceptable and unacceptable to caregivers. The more active socialization and clarification of the prohibition characteristic of the authoritative mother did appear to be associated with more internalization of impulse control and self-inhibition at 12 months.

However, rather than suggesting that one of these styles, a redirective or an authoritative approach is better at this age, it may be that there is an optimal age range for

the initiation of more active inhibition socialization so that at age 12 months, redirective or authoritative styles of prohibition are optimal. Further longititudinal research is needed to explore the relationship between maternal sensitivity/responsiveness, the time of onset and quality of maternal limit-setting and the development of self-regulation. At this point however, according to these findings and theoretical expectations, both redirective as well as authoritative limit-setting methods appear to be theoretically valid and adaptive prohibition styles appropriate for the developmental range of most infants at age twelve months.

Maternal Sensitivity and Responsiveness and Infants' Response to Limits

Infant responses to maternal prohibition were also examined in relation to maternal sensitivity and responsiveness. At the age of 12 months, negative relationships were found between the autonomous-disengaged infant category and maternal sensitivity/responsiveness in all interactive contexts. These infants, who were more able to stay away from the keyboard but who also distanced themselves from their mothers, tended to have mothers who were less sensitive in the prohibition sequence and in all other interactions. These infants seemed to stay away from the keyboard out of fear; perhaps thay also stayed away from their mothers out of fear. They tended to engage minimally with their mothers during the prohibition interaction. As seen in Table 36, most of these infants had authoritarian mothers. It is possible that these infants may be learning to follow external directives without learning constructive coping strategies to assist with future self-direction, and without a sense of supportive others.

Autonomous-compliant infant behavior, characterized in part by self-inhibitory behavior, was positively associated with maternal sensitivity/responsiveness in the prohibition context. This makes sense within a conceptualization of the infants' needs for maternal cueing and limits in order to learn self-inhibitory behavior. Maternal sensitivity in

conjunction with active socialization around limits, rather than maternal sensitivity/responsiveness alone appears be more related to autonomous-compliant infant behavior. In other interactive contexts, sensitivity/responsiveness of these mothers varied somewhat. Further exploration of the contribution of limit-setting style in combination with varying levels of maternal sensitivity /responsiveness across contexts, to infant development of self-regulation may yield potentially valuable information. For example, exploration of infant outcomes in relation to less sensitive authoritative mothers and more sensitive authoritarian mothers, would be of interest.

Persistent-compliant infant behavior was also associated with varying levels of maternal sensitivity/responsiveness in most interactive contexts, being significantly related to MCS scores only in the snack context. As described earlier, the high number of infants in this category may indicate that many infants at this age are still operating at the stage specified by Kopp (1992) as "self-modulation", operating primarily at a sensorimotor level. These infants may be likely to engage with their mothers and follow their distractions even with lower levels of sensitivity and responsiveness, given at least intermittently positive maternal behavior. It may be that, as infants advance cognitively and develop representational speech and play abilities, their varying experience with maternal sensitivity and responsiveness may become more apparent. Those with less sensitive mothers may begin to appear less constructively adaptive. Further research will be needed to explore maternal sensitivity and reponsiveness, maternal prohibition style, and infant reponses to limits, and their relative contributions to the development of the infant's self and self-regulation over time.

Persistent infant behavior was negatively associated with all variables, but only approached significance for the less control-salient contexts. Other factors may influence persistent infant behavior, so that, at this sample size, the effects of maternal sensitivity and responsiveness alone were not large enough to reach significance. Temperament was initially thought to be a possible contributing factor to this classification, but, as will be

discussed in a later section, did not prove to be so. From these findings, it seems that maternal behaviors are more influential in shaping infants' responses to limits, rather than infant contributing characteristics such as temperament.

Maternal Sensitivity and Responsiveness, and Maternal Prohibition Style as Related to Maternal Experiences of Care and Protection

Maternal Sensitivity and Responsiveness and Maternal Experiences of Care and Overprotection

The next research goal was to examine how maternal sensitivity/responsiveness and maternal prohibition styles were related to maternal relationship history. In spite of the relative lack of significant correlations between PBI scores and maternal sensitivity and responsiveness in other interactional contexts, the overprotection/control parental dimension was conceptualized as potentially having particular relevance during the transition to toddlerhood. For this reason, total overprotection scores were chosen for further analysis in relation to maternal sensitivity and responsiveness, revealing a significant interaction effect (Table 23, 24). Mothers with high or low PBI scores were significantly more or less sensitive within some interactive contexts. These significant interaction differences may be most meaningful when considered as part of the overall pattern of findings, as is demonstrated in Table 25.

Although only clean-up was significantly linearly correlated with parental overprotection scores, both clean-up and mother-infant play followed a linear pattern with parental overprotection. These linear patterns indicate that less optimal parental experiences were associated with less optimal maternal sensitivity/responsiveness, and more optimal parental experiences were associated with more optimal maternal sensitivity/responsiveness. Similarities may be seen in both play and clean-up interactions: they may be somewhat less structured than are teaching, prohibition, and snack

interactions. In snack, teaching, and prohibition situations, conversely, the nature of those tasks tend to be more focused on the infant--assisting the infant to eat, teaching him/her to stack blocks, preventing him/her from playing with something. Play and clean-up, however, are activities where the mother's focus is potentially less one of encouraging, assisting or discouraging the infant from doing something, and more potentially a cooperative activity toward a mutual focus or task. In these situations, the infant's behavior may not be the primary focus. For example, in mother-infant play the mother may play with toys by herself, may initiate play with the infant with toys of her own choosing, or may follow the infant's lead. She may teach the infant how to put objects in a bottle or may follow the infant's interest in banging cups together. The interaction is more open ended and the direction the mother takes is potentially more varied. In clean-up, the mother may put the toys away herself, may insist that the infant put toys away. or may put the toys away while engaging the infant in learning how to put toys away, possibly enriching the situation with stories. In both situations, the mother has more choice in how to divide her attention between the infant and her own interests, task or activity at hand. These situations may tap a dimension related to the mother's ability to sensitively negotiate a more "mutual autonomy".

In these situations, mothers' sensitivity and responsiveness reflected a linear relationship with their experiences from their own parents. This linear relationship was significant in toy clean-up, which also was the more control-salient task. In other words, those mothers who had more highly controlling or overprotective parents were also more controlling and less sensitive to their own child's state during clean-up, than were mothers who reported more positive experiences with their parents. Mothers with more positive histories, in contrast, were less controlling, and more apt to cooperate with, follow, and/or acknowledge their child's emotional state and interests in the task. These mothers were less likely to push their infant to put toys away in ways beyond their capabilities, yet engaged them in the task to varying degrees. It is possible that these situations may reflect a

mother's ability to encourage a balance of autonomy and engagement in everyday situations which are somewhat less structured. In addition, when mothers' experience with parental care and overprotection was held constant, maternal age was no longer a significant predictor for maternal sensitivity/responsiveness in the clean-up situation. Mothers' behavior in such less structured situations may be more reflective of their internal working models of relationships, or their relationship histories, as there is less external structure to focus their behavior. Since many day-to-day interactional situations at home are of this nature, these patterns may have important implications for the developing infant.

In the more inherently child-focused and structured interactions of the teaching, snack, and prohibition tasks, mothers who reported moderately high levels of parental overprotection were unexpectedly the most sensitive compared with all other mothers. This surprising finding may suggest that when the situation calls for more structured focus on the infant's behavior, these mothers may do quite well but, when the situation calls for more flexibility or more "mutual" activity, these mothers may have trouble adjusting to the infant's autonomy and, thus, become more insensitive. These mothers seemed to have more difficulty in achieving and orchestrating more mutually determined activities with their infant. Instead, they either became more negatively controlling in an attempt to convince the infant to remain compliant with their agenda, or behaved in a more disengaged fashion with little involvement with the infant. Whether their ability to be sensitive in the more structured, infant focused situations is also part of their internal working models of relationships, or whether it is something adaptive in the face of a largely negative working model, is unclear. Extrapolating into other types of relationships, these mothers' behavior can be interpreted as resembling adult "codependent" relationship behaviors where the adult prefers to focus on another's behavior rather than learn to modulate and organize their own behavior in respect to their own needs and states, which would in turn allow them to participate in more mutually co-determined relationships. Codependency is viewed as a

familial, intergenerational pattern (McMahon, 1992), and may be seen in early interactive relationships.

Further study is needed to examine the impact of task structure on both the measurement of interactional phenomena of interest, as well as examining the combined contribution of different structure-related parental competencies toward infant and child developmental outcomes. For example, parents who are able to be more sensitive in more structured interactions, although they may be less sensitive in lessstructured interactions, may have more competent children than parents who are less sensitive in both types of interactions.

Interactional Behaviors as Related to the Internal Working Models or Maternal Relationship History

The relative lack of correlation between maternal sensitivity/responsiveness and relationship history may also be due to a difficulty in defining specific more micro-level interactional behaviors that are representative of the relationship history as measured by the PBI. Internal working models are thought to be internal "representations" of actual relationships and made up of the balance of interactions with caregivers in varying contexts (Bretherton, 1985). Such representations, in turn, guide behavior which also varies across time and contexts. The transmission of these patterns of behavior is assumed to be measurable through interactional behaviors and qualities. The lack of more intermediary correlations between PBI and MCS scores may point to a definitional problem with respect to the specific interactional behaviors involved in processes of intergenerational transmission for a given age range, pattern of behavior, time period, or context. For example maternal relationship history as assessed by the PBI may relate to different aspects of maternal behavior with toddlers than the ones assessed in these interactions. While the scales in this study were adapted to attend to sensitive behavior relevant to the transition to toddlerhood, in particular, maternal responses to autonomous infant behaviors--the scales

may still not adequately capture interactional behavior reflecting relationship history as assessed by the PBI.

Limitations of the Parental Bonding Instrument

Limitations of the PBI itself may also explain the relative lack of correlations with maternal sensitivity and responsiveness. While these limitations were discussed in Methods, Chapter 3, they will be reviewed here. First, the PBI may not discriminate between low levels of parental intrusiveness, or overprotection/control, and parental neglect. However, only the teaching interaction scores reflected such a curvilinar relationship, where maternal sensitivity/responsiveness declined with the history of overprotection. In this study, data analysis using the combined profiles of PBI scores, such as low overprotection/low care, vs. low overprotection/high care, was intended, in part, to address this issue. In fact, mothers with low care/low overprotection tended to be authoritarian in the prohibition context.

Second, the instrument does not account for mothers who have worked through negative parental experiences such that they have become free to be more positive and sensitive with their own children. These mothers may report on the PBI negative experiences during their first sixteen years of life but be able to be relatively sensitive and responsive parents. It is recommended that future research with the PBI include a question which asks whether mothers have been able to accept and forgive their own parent's negative treatment of them. Thirdly the PBI does not capture mothers' denial of conflicts with their parents, or areas of inconsistency in mothers' recollections of their experiences. While the mothers expressing inconsistent information may have lower scores than mothers with more positive relationship histories, the PBI does not account for the presence of the inconsistency itself, which may be an important aspect of an internal working model.

These limitations of the Parental Bonding Instrument may have been more problematic than expected, so that a mother's relationship history scores may be more positive, more negative or just different, from her current internal working model of

relationships. That is, some mothers' self-reported relationship histories may not adequately reflect their current internal working model, and thus not adequately predict their current behavior with their infant.

Summary of Findings in Relation to Maternal Sensitivity and Responsiveness and Maternal Experiences of Care and Overprotection

In summary, there were only two significant relationships between maternal relationship history and maternal sensitivity/responsiveness. Those relationships were between mothers' sensitivity in toy clean-up and a history of overprotection from the mother's own father, as well as a history of combined (total) mother and father overprotection. As previously suggested, variations within the interactional contexts in this study may influence the expression of maternal sensitivity and responsiveness relative to internal working models or relationship histories of control or overprotection. Previous findings suggest at least two dimensions may have been operating to influence the variance of maternal sensitivity/responsiveness scores. The first is that of a more or less control-salient dimension, which may operate somewhat independently of maternal experiences of care and overprotection. This dimension may be more related to experience or education. Secondly, a dimension related to task structure, specifically, in regard to task oriented, infant focused contexts vs. more potentially open-ended contexts that allow more autonomous but mutually engaged activity, was identified as possibly more interactive with maternal experiences of care and overprotection.

Maternal Experiences With Care and Overprotection, and Maternal Limit-Setting Classifications and Infants' Response to Limits

Although there was limited association between maternal relationship history and maternal sensitivity/responsiveness during the transition to toddlerhood, findings of positive correlations between the maternal relationship history and the maternal and infant

prohibition classifications evidence that a mother's relationship history may not only influence maternal behavior patterns in a limit-setting context, but third generation infant behavior patterns as well. Mothers with positive relationship histories tended to be authoritative; mothers with negative relationship histories tended to be authoritarian. Recall that a redirective limit-setting style was related to maternal sensitivity/responsiveness in all interactive contexts. A redirective maternal style, however, was not related to maternal relationship history, until the variance due to maternal sensitivity/responsiveness was accounted for. When maternal sensitivity and responsiveness was held constant, a negative relationship between a redirective style and relationship history emerged. Thus, some redirective mothers may be compensating for a negative relationship with their own mother by being very sensitive with their own infants. It is possible these mothers are redirective out of fears of recreating their negative family experiences with their own infants; they may fear they may be harsh or over-controlling. Or, these mothers may be redirective due to a lack of skill around limit-setting, having had poor role models in their own families. It is not clear, however, what makes these mothers very sensitive and redirective, rather than authoritarian or inconsistent. Here is where other aspects of maternal history may interact with a negative maternal relationship history, to allow the development of an internal working model that allows them to become more sensitive and responsive.

Persistent-compliant infant behavior again most likely reflects the developmental level of the sample. In general, persistent-compliant infants had mothers with varying levels of maternal sensitivity and responsiveness, and varying limit-setting styles. However, a positive maternal relationship history, in conjunction with a maternal redirective style, remained the best predictor of this infant classification. Infants who had redirective mothers with less positive histories may have been autonomous-compliant, or persistent, for example. Maternal sensitivity/responsiveness was not a contributing factor. The significant relationships between this infant classification and a positive maternal relationship history, as well as a maternal redirective style, make sense theoretically. The

higher numbers of these infants may have also produced more variance in the data, which may have contributed to these more interesting findings in relation to maternal limit-setting style and maternal experiences of care and overprotection.

Autonomous-compliant infant behavior was predicted only by maternal sensitivity/responsiveness in the limit-setting context. Once maternal sensitivity/responsiveness in the limit-setting context was controlled, an authoritative style and paternal relationship history were no longer significant contributors to the autonomous-compliant infant style. However, mothers' relationship history may still have indirectly affected these infants' behavior, through perhaps facilitating their mothers' adoption of an authoritative style. Mothers who used an authoritative style tended to be more sensitive around limit-setting, and to have had more caring and less overprotective/controlling mothers themselves.

Mothers who reported experiencing less optimal parental overprotection and care levels tended to be authoritarian. Authoritarian mothers also tended to be less sensitive and responsive across all interactive contexts, and to report higher levels of control/overprotection from their own parents. Infants with autonomous-disengaged behavior during the prohibition interaction tended to have mothers who were authoritarian. Further analysis, however, indicated that when a maternal authoritative style was considered as a predictor of infant autonomous-disengaged behavior, neither maternal sensitivity and responsiveness, nor maternal relationship history continued to be significant predictors. That is, if an infant was autonomous-disengaged, the mother was likely to be authoritarian, but may have varying levels of sensitivity/responsiveness, or care and overprotection experiences. In the case of the autonomous-disengaged infant, a mother's experience with her own parents tends to have indirect, rather than direct, effects on her infant's response to limit-setting. A mother's negative relationship history may facilitate her adoption of an authoritative limit-setting style, but may not influence her infant's behavior in other ways, at least in terms of the variables assessed in this investigation.

In summary, maternal relationship history tended to indirectly affect autonomous-compliant, and autonomous-disengaged behavior, perhaps by facilitating a mother's adoption of a particular style of limit-setting. Maternal relationship history appears to be more directly related to the occurrance of persistent-compliant infant behavior. The actual maternal interactional correlates of that history, that is, how that relationship history actually influenced her infant's behavior, is not yet clear. Such a transmission may involve interactions outside the limit-setting context as well. And, while maternal relationship history was associated with maternal authoritative and authoritarian limit setting styles, in opposite directions, maternal relationship history scores did not significantly differentiate between those styles. Thus, while relationship history may influence the adoption of certain limit setting styles, other factors are influential as well.

Infant Temperament, Infant Response to Limits, and Maternal Sensitivity and Responsiveness

Infant temperament was not related to any of the main variables in the study, including maternal sensitivity/responsiveness, maternal experiences with care and overprotection, maternal and infant prohibition classifications, and infant self and other agency demonstration. Explanations for these lack of findings include that maternal sensitivity and responsiveness may occur independently of temperament, or at least interact with other maternal characteristics which buffer the effect of temperament on infant developmental outcome. Alternatively, maternal self-report bias may have introduced both random and systematic error into the temperament ratings, so that even if temperament was actually related to variables in this study, those relationships were not detected.

Seifer, Sameroff, Barrett, and Krafchuk (1994), publishing their findings after this study had begun, reported that maternal observational and standard questionnaire ratings of temperament had little relationship with observers' direct observations. The highest

Pearson correlation occurred between maternal and observer observations, but at $\underline{r} = .48$, a less than satisfactory reliability rating. Both maternal and researcher observations took place eight times over eight weeks in the home. Nor were maternal observational reports correlated with maternal questionnaire ratings, using four standard well known temperament inventories, including the Infant Temperament Questionnaire by Carey and McDevitt. The TTQ, the toddler version of that scale, is used in this study. Wolk, Zeanah, Coll, & Carr (1992) found both parental and infant variables to make independent contributions to parental temperament ratings. Those same authors (in a review, 1992) listed maternal attributes of gender, socioeconomic status, race, parity, mental health status, and extroversion as influencing maternal ratings of infant temperament. Further research in regard to the measurement and assessment of infant temperament is needed to clarify issues of measurement error and maternal reports. Accurate measurement of temperament will be essential to assess its true contribution to maternal and infant behaviors, and enhance our confidence in temperament research findings and reports.

Many research studies have found that temperament contributes at least somewhat to many developmental variables, as briefly discussed in the literature review. At the same time, other studies have found mother-infant interaction and related outcomes such as infant attachment--to be largely independent of temperament, or to have a weak relationship with temperament. (Bretherton, 1985; Goldsmith & Alansky, 1987). Measurement error, maternal bias, or poor statistical power notwithstanding, the findings of this study seem to suggest that temperament has little effect on maternal sensitivity and responsiveness in the transition to toddlerhood, or on maternal or infant prohibition styles. There was also no interaction between mothers' reported experiences with their own parents and temperament, in any associations with the main study variables, including the infants developing sense of self and others. Perhaps relationships between temperament and these variables will emerge with the larger sample size from the larger study, and/or longitudinally across the infants' second and third years. The current findings, however, point to the primary importance of

maternal interactional behavior for the developing infant, over and above infant temperamental characteristics.

Maternal Sensitivity and Responsiveness, Maternal Limit-Setting Style, and Maternal Experiences with Care and Overprotection: Effects on the Infant's Developing Sense of Self and Other

As delineated in the results section, there were two sets of significant findings between the variables of maternal sensitivity/responsiveness (Table 33), maternal limit-setting style and infants' responses to limits (Table 34), maternal experiences with care and overprotection (Table 35) and the infant's developing sense of self and other. One was a set of negative correlations between maternal sensitivity/responsiveness and the developing infant's sense of self-agency (Table 33). The other was a significant positive correlation between care from mothers' own parents in conjucntion with care from father alone, and infants "acting on other" agency scores (Table 35). Thus, the discussion will be limited to these findings and more generally regarding the lack of significant findings with the other variables.

"Acting on self" tasks were: feeding self a Cheerio, and pretending to feed self from a bottle, cup, spoon and plate. These tasks were modeled by the experimentor who then requested them of the infant. The experiment also modeled these same tasks toward the mother, e.g., fed the mother a cheerio, etc., and asked infants to feed their mothers in the same fashion to assess their ability to "act on other". Mother tasks were performed immediately after the self version for each task. See, Methods, Chapter 3 for a futher description.

The negative correlations between maternal sensitivity/responsiveness and the infant's developing sense of self-agency indicate that in this context infants with less sensitive mothers successfully performed more "acting on self" tasks than did infants with

more sensitive mothers. "Acting on other" tasks were not significantly related with maternal sensitvity/responsiveness.

These findings were in contrast to findings by Pipp, Easterbrooks, & Harmon (1992) who found that, at 12 months, infants with secure attachments performed better on agency tasks in general (combined self and other scores) than did infants with insecure attachments. Since infant attachment has been related to maternal sensitivity and responsiveness, expectations for this study were that infants with more sensitive and responsive mothers would perform more agency tasks in general. This expectation was not supported by the data. The negative correlation is, in fact, at odds with this expectation. Pipp et al. (1992) reported a high correlation between the number of agency self and other tasks performed; these correlations also were not replicated with this study sample. The methods used in this study followed descriptions by Pipp in a procedural manual regarding the task administration and so the reason for this discrepancy in findings is not clear.

To further examine these findings in the present sample, the differences in the infants' performances of self version -vs.-mother version of tasks was explored. As discussed in the results section, self and mother scores from the agency tasks were combined into four categories representing the presence of high and low combinations of self and mother scores. Recall that there were positive relationships between low self/high mother task performance and maternal senstivity and responsiveness: this indicates that those infants with more sensitive mothers across those interaction contexts tended to feed their mothers more, and themselves less. Correlations were not significant for the clean-up, teaching, or prohibition sequences. Conversely, infants who acted on themselves more and their mothers less tended to have less sensitive mothers in play, and significance was approached for the less control-salient mean and the overall mean excluding prohibition. Perhaps, in the face of maternal insensitivity, infants become more self sufficient, at least with regard to such essential tasks as self-feeding. In contrast, infants whose mothers are

more sensitive may internalize her role and be more "other" oriented, and learn to "act-on" others. Why these latter infants do not also "act-on" themselves, however, is not clear.

Writings by Pipp, Watson, and Wellman & Hickling about infants' developmental phases at this age are summarized here to possibly clarify these findings. Pipp (1990) describes infants' ability for agency at the sensorimotor level as consisting of an increasing number of generalizations of particular action sequences. For example, infants learn to combine action sequences together to make meaningful actions, such as feeding self or other. They learn that they can combine the actions required to feed themselves in a way which is generalizable across feeding situations. They do not yet have the ability to consider or enact these combinations of actions, however, separately from an actual feeding situation. This would occur with the ability for representation, or the ability to "represent" actions, ideas, etc. mentally, in the absence of the actual occurance of an event or action. The " Cheerio" tasks in this assessment procedure (feeding self and mother a cheerio) were designed to assess sensorimotor abilities in relation to feeding. Feeding with the bottle and cup may also be primarily sensorimotor in nature.

Watson (1990) described the first phase in the development of agency as the infant's acknowledgement of the other as an instrument of the self. Wilson notes that infants begin to use adults as instruments of the self at about 12 months. In this stage, infants begin using others to accomplish what they cannot do themselves, although their motivations are still in the here and now, rather than in the realm of "representational" play and pretend. At this point, they do not yet have a "representation" of agency, that is, an infant's conceptions, ideas, and thoughts of themselves and others, are not yet separate from their actions. However, they are beginning to realize that they cannot do everything they need to do for themselves, a realization which may cause them to develop a more complex awareness of self and other.

According to Watson, in the next stage, infants begin to perform "pretend" actions on <u>self</u>, such as feeding self, and haircombing, at about 14 months. Weiss, Beeghly, &

Cicchetti (1985) also found that non-handicapped as well as Down syndrome children first symbolically represented themselves during play. Later, infants begin to represent "others" in their pretend play, such as feeding a doll, or washing its face, at approximately 16-18 months. (Watson, 1990). These "others" are at first passive recipients of the toddlers administrations, that is, toddlers at this age usually do not yet embue a doll with speech, or actions of its own.

In the present sample, some infants were casually observed during the play contexts to initiate pretend play actions, representing simple play activities such as feeding themselves or mother during mother-infant play. Wellman & Hickling (1993) also note the occurrance of symbolic representation, or "pretense play" at the age of 12 months. At the same time, most infants in this sample were largely non-verbal, able to speak only a few words which were rarely elicited in the observational setting. Speech is a form of representational thought: it requires the ability to separate oneself somewhat from involvement in the immediate context in order to assign a verbal label to an object or action. That some infants in this study were occasionally seen to demonstrate "pretense play" but that most were still largely non-verbal indicates that most infants in this sample are often still embedded in sensorimotor level operations, but are acquiring rudimentary representational abilities. Lillard (1993) discussed how infants may demonstrate precocious abilities for pretense in play, before they display such abilities in non-play situations. Most infants were able to feed self or mother without the presence of actual food, at the table, with only utensils present. Only one infant, however, was able to walk to the corner and pretend to eat with a plate and spoon during the agency assessment. Such a task requires more defined representational abilities, in order to conceptualize walking away from the table, carrying and then eating with a plate and spoon in a new situation away from the immediate context of eating at the table with the utensils present and ready.

Infants in this sample performed more "self" versions of the agency tasks than "other" versions. Findings that infants at 12 months performed better in general with self-

related tasks than mother-related tasks suggests that most infants at this age are more able to represent themselves symbolically (act on themselves) than their mothers (acting on others). This is in accordance with the theorized order of development of representational agency abilities; the infant first learns to "act on" in relation to him/herself and then in relation to others (Watson, 1990; Pipp, 1987).

Infants with less sensitive mothers, in addition to being more likely to feed themselves than their mothers, were also less likely to feed their mothers relative to other infants in the sample. Therefore, less maternal sensitivity and responsiveness in this sample was related to less infant cognitive maturity with less "other" agency ability. Infants with less sensitive mothers do not yet have the complexity of self-other differentiation to go beyond acting on themselves: they cannot yet act on other.These infants also tended to have mothers who had experienced more negative parental overprotection from their own parents, suggesting again a three generation pattern of influence facilitated at least in part by mothers' relationship history, which may directly or indirectly impact infants' cognitive development.

Infants who were more likely to represent and "act-on" their mothers tended to have more sensitive and responsive mothers, supporting theoretical expectations for a relationship between higher maternal sensitivity and responsiveness and the development of a more complex and differentiated agency ability. The ability of infants to represent "other" and feed their mother in the agency tasks was also associated with their mothers' experience of better care from their own parents, again suggesting multi-generational processes. However, why some of these infants with more sensitive mothers, and who could feed their mothers reliably, were less inclined to feed themselves relative to other infants is not yet clear. Do these infants represent a pattern of self-differentiation which may be more optimal, less optimal or just different?

An immediate intuitive solution might be that these infants are more other-focused and less self-focused out of a general lack of sensorimotor and representational ability in

relation to self. However, representing the self is thought to proceed the ability to represent other in the developmental sequence of agency ability. If these infants are somehow impaired in their general ability to "act on" self, it would indicate a different process of development than has been previously suggested.

These infants may, however, have the ability to act on self and are just not displaying it in the assessment context. One possible interpretation is that this may be explained by their level of development at 12 months. Bowlby stated that prior to the development of representation, the stability of attachment patterns will be more a function of the properties of the dyad than of the infant (Bowlby, 1982). Thus infants who are still primarily sensorimotor in their orientation, even with rudimentary representational abilities, will remain fairly dependent on the immediate interactional context for a number of behaviors (Pipp, 1989; 1992). Their rudimentary representational ability may not be developed enough to carry them through the task without some familiar interactional cues. A relatively unfamiliar examiner who first feeds herself and then invites the infant to do so may be a new situation for these infants. Feeding the mother, however, may bring their behavior back into a more familiar territory and they may be better able to accomplish the task. If this is the case, these infants' behavior may be based on uncertainty due to unfamiliarity with the context, or examiner. Ainsworth, et al. (1978) however, wrote of the contribution of attachment security to the expression of stranger anxiety, and indicated that more secure infants may be more likely to explore and interact with a friendly stranger if the mother were present. However, exploration and interaction may not necessarily mean they should be able to perform a particular task in an unfamiliar situation. Secure infants, whose mothers were high in sensitivity and responsiveness, may have more awareness of the unfamiliarity of the relationship context itself. They may possibly be more mature than infants only able to feed themselves, being beyond the more narrow, sensorimotor appeal of the immediate situation. They may have developed a more complex agency ability, yet

without the ablity or willingness to fully use the representational ability necessary to perform the self-related tasks outside of a familiar relationship.

Unwillingness to participate with an unfamiliar examiner may also indicate that sensitive mothers facilitate expression of the self within certain relationship parameters which may not be met in the assessment context. That is, in addition to influencing less or more cognitive maturity, mothers may also influence a less or more relationship-based facility for agency. Perhaps there is a difference between acting on self in the presence of a "familiar other" as opposed to an "unfamiliar other". The demonstration of perhaps both sensorimotor and representational abilities may differ in relation to the specific caregiver involved. Attachment research has found infants' attachment patterns differ when assessed with different caregivers (Bretherton, 1985; Goossens & van Ijzendoorn, 1990); perhaps infants also will demonstrate differing proclivities for agency with different caregivers as well.

Another explanation could be that this group does represent a less than optimal, different pattern of development. It may be that these infants are somewhat compromised in their ability to "act-on" themselves. Since this pattern is associated with higher maternal sensitivity/responsiveness, it may be that higher levels of sensitivity/responsiveness somehow inhibit an infant's maturation processes. It may be that there is an optimal level of maternal sensitivity and responsiveness, and beyond that, an infant's ability to act on behalf of the self becomes impaired. This pattern is different than a harsh and controlling pattern of insensitivity but may still interfere with infant self development. The highly sensitive and responsive mother may not challenge her infant enough to facilitate optimal growth and autonomous development. Van den Boom (1994) suggests that there may be an optimal level of maternal sensitivity and responsiveness, and that although "the more the better" may be in vogue in the literature and current early infancy intervention, it may not actually be optimal for the infant. Self reliance and learning to share the mother with others, for example, may possibly be benefits of an optimal but not maximal maternal responsiveness

(van den Boom, 1994). The findings in this study may represent a less self-reliant pattern associated with more than optimal maternal sensitivity/responsiveness.

How might over-sensitivity impact the development of these infants at age 12 months? It may be that while they may be able to perform the self-agency actions, their dependence on the context of a close, more familiar and quite attentive relationship actually compromises their demonstration of self-agency ability with an unfamiliar person. Their lessened inclination to demonstrate self-agency with an unfamiliar person may not be adaptive at this age, but may be a risk factor.

Attachment theory has included the tenet, based on research findings, that higher levels of maternal sensitivity/responsiveness in general are related to more secure infant attachment. Another consideration is that rather than displaying excessive levels of sensitivity, it may be that these mothers are actually less sensitive in ways not captured by the present studies' methodology. The present study examined maternal responsiveness to a wide variety of infant behaviors, including infant autonomous behaviors. It may be that whereas the more harsh, controlling, intrusive, or neglecting and ignoring mothers were well defined as less sensitive, other mothers who were more subtly insensitive by being somewhat over involved or "infantalizing" with their infants in a way that compromised autonomy, were not well depicted. According to Ainsworth et al. (1978) gentleness and tenderness in physical contact are required from a mother during earlier infancy but, as the infant becomes "sturdier, more active, and more competent [in the fourth quarter of the first year]" (p.150), tender, careful behavior was not associated with security of attachment. Thus, high levels of maternal gentleness and tenderness may be less than optimal at this age. Anecdotally, although mothers noted to be excessively gentle and tender with their infants in the present sample were rated as less than optimally sensitive, these mothers were still rated as more sensitive than the harsher, more obviously controlling mothers. Therefore, they would be represented in the data as relatively sensitive.

The laboratory format in the present study may also have limited the accuracy of assessments. The present study assessed maternal sensitivity in 5 interactional contexts for each dyad, each lasting from 3 to 10 minutes, for a total of about 30 minutes. These interactions were assessed by viewing video tapes, filmed in an observational room using a two-way mirror. Mothers and infants stayed in the observational room and were directed to interact in various ways by a project staff member. Therefore, the focus of each interaction was determined by the study protocol. In contrast, several past studies which have related maternal sensitivity and responsiveness to quality of infant attachment have examined maternal sensitivity and responsiveness over longer periods of time in home environments, and for a minimum of two hours (Ainsworth, Blehar, Waters & Wall, 1978; Bates, Maslin, & Frankel, 1985; Grossman, Grossman, Spangler, Seuss, & Ungler, 1985). Ainsworth et al.(1978) initially developed the Maternal Care Scales based on 4-hour home visits ocurring every 3 weeks over the first year of the infants life, from 3 weeks to 54 weeks. Using less structured, longer observations in home settings, it may be that such maternal over-involvement may become more clear, and these mothers may be rated as less sensitive. The balance of mother-initiated vs. infant-initiated interactions would be observable, for example, as well as time spent in interactions vs. time spent apart, which may be important.

It also might be informative to examine these infants' ability during more natural infant play situations, alone and with their mothers, to see if they do display representational play in relation to the self. If these infants reveal an ability for self representational play, yet they did not display it in the context of agency assessment with a unfamiliar examiner, it would support a hypothesis that self-agency ability was still more context dependent, and less generalizable across contexts. These infants may be less "mature" than their peers who are able to act-on self more independently from their mothers and who can act on themselves reliably as well.

Whether or not these infants are actually less "mature" however, at the age of 12 months, is not yet clear. The significance of the relationship between higher maternal

sensitivity and responsiveness and lower infant self-agency scores needs further exploration. At the age of 12 months, it is difficult to predict how these patterns may play out in the context of future infant, maternal, dyadic, and environmental development. Further study is indicated to determine what these patterns mean and if these infants are more or less advantaged. This pattern may in fact lead to more competent infant behavior later on. The overall significance of these patterns may also depend more on the pattern of continued maternal influence within the dyad, for example, or increasing maturity of the infant. Some mothers may adjust their behavior as the infant acquires new abilities. In the context of increasing infant autonomy, redirective mothers may become authoritative, facilitating the child's self development through the learning of self-regulation. In addition, the mediating influence of other variables on the infant's developing self is no doubt of importance, such as the infant's experience with the infants' father and other major caregivers, and the infant's intelligence level.

These and other variables may also help to clarify why in this sample there were no significant findings in relation to high self/high agency scores, thought to represent the most optimal combinations of scores. This combination of agency scores was associated with a wider range of Ainsworth maternal sensitivity and responsiveness scores, suggesting the influence of other factors which may explain these infants' agency ability. One of the infants who demonstrated both high self and high other agency scores, for example, also had a relatively insensitive mother. That pattern may reflect mere compliance, for example, in the context of the agency testing situation at 12 months of age.

Infant Agency and More vs. Less Control-Salient Interactions

The significant correlations between the combined self/mother agency scores and Ainsworth derived maternal sensitivity/responsiveness (MSR) scores occurred with MSR interactions in the interactional contexts primarily conceptualized for this study as "less control-salient". These were conceptualized as representing feeding and play interactions

assumed to occur regularly between mother and infant across the first year of the infant's life. These interactions were assumed to represent more highly practiced, patterned interactions as compared with the interactions involving teaching the infant a task, toy clean-up, and/or being prohibited from playing with an object. The latter situations were, again, conceptualized as representing interactions which become more prevalent only as the infant gains mobility and increased cognitive and interactive ability, during the transition to toddlerhood.

The findings of this study support that conceptualization. In that context, it is not surprising that the combined variables of self/other tasks correlated signficantly with MSR scores primarily in the less control-salient interactional contexts, rather than the more control-salient interactions. Attachment theory states that the emergent self at 12 months is based on the quality of interactions which take place over the first year of life. Thus it would make sense that the level of self development as assessed in agency tasks may be related to maternal behavior in contexts which estimate interactions occurring over the first year of life. The more control-salient contexts, in contrast, are conceptualized as contexts focusing on interactions which are just developing in relevancy for the dyad. It may be that these more control-salient interactions will be more related to the infants' sense of self at 24 months, as the mother-infant dyad develops increasing experience with control negotiations across the second year. This may also be in part why maternal limit-setting (prohibition) classifications were not related to the infant's sense of self and other at 12 months. Prohibition and limit-setting interactions are expected to occur more often during the second year in response to growing infant autonomy and mobility, and may also be more related to infant outcomes at the age of 24 months.

Comparison of the Two Measures of Maternal Sensitivity and Responsiveness: The Nursing Child Assessment Teaching Scale, and Ainsworth Maternal Care Scales

Another goal of this study was to compare and contrast the interactional assessment ability of the The Nursing Child Assessment Teaching Scale (NCATS), and the Ainsworth Maternal Care Scales (MCS). The reader is reminded again that the NCATS scale was used to assess mother-infant interaction only during the teaching episode.

The Nursing Child Assessment Teaching Scale (NCATS), and the Ainsworth Maternal Care Scales (MCS)

The NCATS (teaching) scores were not significantly related to the Ainsworth Maternal Care Scales (MCS), except with MCS scores from the snack context. The meaning of these relationships with interaction in the snack episode is unclear given the lack of significant correlations within the other interactive contexts. The predominate lack of significant correlations across contexts, and the fact that the two measures were similarly but also somewhat differently related to other study variables confirms that the two measures may assess somewhat different aspects of maternal sensitivity/responsiveness.

Gross, Conrad, Fogg, Willis, and Garvey (1993) found the NCATS scale to be unrelated to measures of maternal depression, or maternal self-efficacy, but related to maternal knowledge of developmental and parenting principles, and maternal education. Their conclusions included that the NCATS primarily assesses cognitive factors underlying the mother-child relationship, rather than affective factors. In contrast, the Ainsworth Maternal Care Scales include an affective subscale, which in this data set correlated at a level of .6 or above with the other Ainsworth subscales of accessibility, cooperation, and overall sensitivity. In addition, the NCATS items often assess the presence or absence of one occurrance of a behavior, but it rarely discriminates between a mother who performs a

behavior once and one who performs it 20 times. Qualities of intensity, appropriateness and effectiveness of maternal qualities/behaviors may not be as readily discernible using such a measure. The Maternal Care Scales on the other hand do incorporate those latter aspects of maternal behavior in their assessment. Thus the Maternal Care Scales contain affective components, as well as dimensions of appropriateness and effectiveness, which may not be included in the NCATS scores, and the NCATS may assess specific cognitive components not present in the Maternal Care Scales.

NCATS Scores and Prohibition Classifications

There were several relationships between the NCATS scores and maternal prohibition style and infant response to limits. These findings, similar to those with the MCS, again indicate that more sensitive/responsive mothers tend to utilize authoritative styles and less sensitive/responsive mothers tend to use authoritarian styles. In addition, since NCATS scores were only derived from the teaching context, this again indicates that authoritative mothers tended to be more sensitive outside prohibition contexts, and authoritarian mothers less sensitive. NCATS scores, were not, however, related to the redirective maternal style and Ainsworth scores were not correlated with an inconsistent style. Following a conceptualization that the NCATS may assess more cognitive aspects of maternal sensitivity and responsiveness, and the Ainsworth MCS assess more emotional, qualitative aspects of maternal sensitivity and responsiveness, the NCATS findings may highlight the inconsistent style as one used by mothers who, in other settings as well, may not provide the infant with clear direction or enough cues for cognitive growth. In the prohibition setting, inconsistent mothers were not clear about the prohibition, at times seeming even to encourage their infant to persist toward the object. On the other hand, higher Ainsworth MCS scores were highly associated with a maternal redirective style, suggesting that these mothers value a positive emotional experience with their infants and may prefer to avoid confrontations and their potentially more negative emotional

consequences. To summarize the findings of both NCATS and Maternal Care Scales together, in relation to maternal prohibition styles: a variety of maternal qualities which can be labeled as sensitivity/responsiveness, including both specific behaviors as well as more global, qualitative aspects such as affect and appropriateness, may enable a mother to assist (or not assist) her infant to stay away from a prohibited object and learn self-control and self-regulation.

Infant responses to prohibition may further illuminate similarities and differences between the scales in relation to infant behavior at this age. Both the scales can be said to be negatively associated with infant disengagement from the mother, and positively associated with infant engagement with the mother. However, the NCATS scales were associated with engagement-disengagement in the context of persistent infant behavior, the MCS scales were associated with engagement-disengagement more in the context of autonomous infant behavior. The significance of these different patterns of association are unclear at present. Perhaps the MCS scales' theoretical context of attachment theory, emphasizing maternal facilitation of the balance of infant autonomy (exploration) and engagement (comfort seeking), as opposed to the NCATS focus on the mothers' ability to be sensitive in the context of dyadic task involvement, may provide some clues. Perhaps most important are the similarities in their associations with engagement and disengagement.

NCATS, MCS, and Agency Scores

Similar to findings in relation to the Maternal Care Scales, there was also a trend with the NCATS scores toward a negative relationship with "acting on self" task performance, and a trend toward a positive relationship with "acting on other" tasks, although these trends were not significant. This again suggests that more sensitive maternal behavior may be associated with agency scores indicating more relationship based self-agency ability. Again, a more relationship based self-agency ability may result in a decreased tendency to act on behalf of the self outside the context of certain relationships.

Whether or not this finding is a transitory phenomenon at this stage of development, or indicative of a more or less adaptive ability for self-agency is not clear. While previous research findings using NCATS scores have not seemed to suggest that higher maternal sensitivity may be related to different or less competent behavior, this may be the case for the development of self-agency. Again, the NCATS assesses the presence or absence of a number of discrete maternal behaviors, but it rarely discriminates between a mother who performs a sensitive behavior once and one who performs it 20 times. High scores on NCATS may therefore also represent more than optimal as well as optimal maternal sensitivity/responsiveness.

The findings between the NCATS variables and the combined agency high/low self/other variables also reflect findings similar to those found in relation to the MCS variables. Low self/high mother scores were associated positively with NCATS infant responsiveness and infant contingency scores. Contingent behavior can be seen as acknowledgement of the others' ability to "act-on" or influence one's interactional partner. In other words, if the mother responds contingently to an infants' cues, it means she has been influenced by the infant's behavior. Her response also gives meaning to the infants' behavior, further shaping a pattern of interaction. Contingent maternal behavior seems integral to the development of infant agency abilities. However, infant contingency scores alone were significant--there was no relationship between low self/high other agency ability and maternal contingent behavior. Although these mothers were relatively sensitive as assessed by the MCS scores, they did not tend to be more contingent as assessed by the NCATS. Thus, infants who demonstrated abilities to "act-on" their mothers in the agency context were also more contingent and responsive to their mothers during the teaching context, perhaps more so than their mothers in return. Perhaps this may provide a clue to these infants' behavior as well. These infants may be attempting to engage their mothers to participate more, in response to a subtle lack of maternal sensitivity and responsiveness.

The lack of relationship between infant agency ability and the maternal NCATS scores suggests that the measurement of maternal sensitivity and responsiveness continues to present a challenge. The presence of significant relationships with infant behavior and infant agency ability suggests that maternal sensitivity and responsiveness is involved in its development. Houck (personal communication, 1995) found that while infant interactive behaviors in an assessment context were related to certain maternal variables of interest, maternal interactive behavior was not. She concluded that maternal behavior may vary more contextually, especially in an assessment context where mothers may interact more positively or negatively, due to the stress of being observed. Infant behavior, in contrast, may vary less in response to social demand and may more likely reflect the ongoing pattern of the mother-infant relationship. While it may be difficult to alter maternal behavior at the more micro level assessed by the NCATS scales, never-the-less, ongoing aspects of maternal sensitivity and responsiveness important to infant agency development have not been significantly detected with this measure, in this context, and/or this sample size.

Infant Interactive Behavior, Maternal Sensitivity and Responsiveness, and Maternal Experiences with Care And Overprotection

Relationships between agency "self" and "other" ability and NCATS scores revealed that infants who were more able to be contingent and responsive toward their mothers during the teaching task, also demonstrated significantly more ability to "act-on" their mothers in the context of the agency tasks. This suggests that these infants were able to interact meaningfully with their mothers across a variety of contexts. An infant's ability to interact meaningfully with his/her mother at this stage was conceptualized in this study as being dependent on the mother's prior sensitivity and responsiveness, which gives meaning to infant cues and behaviors and provides a basis for meaningful interaction. In other words, these infant interactive characteristics should reflect the overall patterns of the

parent-infant relationship. In support of this conceptualization, infant responsiveness was significantly correlated with four out of five NCATS caregiver subscale scores (Table 31). Only one NCATS maternal scale score, however, even approached significance with agency "acting-on-other" scores. This may indicate again that while infant interactive behaviors may be expected to reflect the ongoing patterns of the relationship, maternal behaviors which may relate to specific child outcomes, such as agency ability, are more difficult to assess or identify in a brief observational laboratory assessment. Equally interesting was that NCATS infant responsiveness or contingency scores were not correlated with any of the Ainsworth Maternal Care Scales. Rather than providing evidence contrary to the assumption that infant interactive behavior is an outcome of maternal sensitivity and responsiveness, this may indicate that again, further research is needed to clarify the various components of maternal sensitivity and responsiveness, as related to specific infant interactive behaviors as well as to other infant outcomes.

Limitations of the Study

Measurement Issues

Agency Assessment Procedure

The assessment of the infants' agency ability, to act on self and other, is still relatively new, and its reliability and validity are yet to be established. The various components of ability needed by the infant in order to complete the agency tasks have not been well defined. These include the infant's ability to attend to and follow the examiner, to imitate the modeled actions, and to comply with or be motivated to perform them. (Pipp, 1992). Nor is the effect of the context of the testing situation fully considered. These components will no doubt contribute to infants' scores on these tasks. Thus the full scope of infant behavior and attributes demonstrated in this procedure, and the effects of differing assessment contexts are not yet well understood, making interpretation of scores somewhat

difficult. Further research on the conceptualization and measurement of agency in infants and toddlers is indicated.

Toddler Temperament Questionnaire

Seifer, Sameroff, Barrett, and Krafchuk (1994) concluded that maternal reports of infant temperament may be inadequate measures of temperament, in that maternal perceptions may be biased or inaccurate. Further research in regard to the measurement and assessment of infant temperament is needed to clarify issues of measurement error and maternal discrepant reports. Accurate temperament measurement will be essential to assess its true contribution to maternal and infant behaviors, and to enhance our confidence in temperament related research findings and reports.

Parental Bonding Instrument

Limitations to the Parental Bonding Instrument were discussed in Methods, Chapter 3. The reader is referred to that section for further information.

Observational Coder Bias

A possible limitation to the observational methods of this study is the possibility of coder bias. The investigator of the present study was the primary coder of the data, for both the Ainsworth MCS data, as well as the maternal and infant prohibition classifications. However, reliability procedures were conducted for the MCS data with a student who was not aware of the questions of the study. The primary investigator of the larger study served as reliability coder for the prohibition classifications, and nearly all of the present sample was coded to consensus as part of the training for the larger study coding procedures. In addition, the coding system for both the MCS and prohibition coding systems required considerable concentration and attention to detail. Coding was conducted within each context, one context at a time, for all subjects, rather than by subject. With 61 subjects, five interactional sequences and two coding systems for each subject (427 interactions total), complex coding systems, and variability between subjects and across the interactions, the

overall study goals lost salience relative to immediate coding goals for the investigator, making bias less likely. Nonetheless, it remains a possible source of error.

Limitations Due to Observational Assessment.

Another limitation may occur from the observational method of data collection. Mothers may act differently when they are observed than they would otherwise. While mothers may be observed for longer periods, and may get used to being observed, or feel more comfortable with observation at home, it may not ever be possible to assess maternal behavior totally free from the effect of observation. Some alteration in maternal behavior must therefore be assumed. However, findings of expected relationships in the data confirms that maternal behavior does vary in systematic ways and in ways other than due to method bias. And, as has been mentioned earlier, an infant's behavior may vary less across contexts than maternal behavior, as infants and young children are less sensitive to social expectations. In these cases, an infants' behavior may be assumed to more accurately reflect the dyads'interactive patterns than maternal behavior. Finally, the stress of observational assessment was expected to facilitate more accurate assessment of maternal sensitivity and responsiveness (Smith & Pederson, 1988). Never-the-less, error due to the observational method of assessment remains a limitation of this study.

Statistical Limitations

Statistical Models

Statistical models may limit the findings of this study. This study utilized parametric statistical models, mainly correlation, regression, and analyses of variance. Given the possibility that higher levels of maternal sensitivity may be negatively associated with some developmental variables, further studies of this nature should consider non-linear statistical models as well. Roberts (1986) suggests that many developmental phenomena are in fact

non-linear. For example, Baumrind (1971) found that maternal warmth and control actually had curvilinear, inverted-U, effects on child competence when considered separately.

Sample Size

The sample size used for this study is another possible source of error. The sample size was calculated overall to detect significance from moderate effect sizes, the size which would be detectable to the naked eye and applicable to practice related qustions. While sixty subjects rendered a power of over .81 to detect significant differences across the five interactional situations using a repeated measures analysis of variance, the study's power to detect significant simple correlations at $r = .30$ ($r^2 = .09$, a moderate effect size) was only .65. Many of the findings of this study were limited to simple bivariate correlations. It is possible that there may be more significant and meaningful correlations if a larger sample was employed. Cohen (1988) states that even smaller correlations, if they are due to effects which occur repeatedly over time, may over time also be important and meaningful. Interactions between mothers and infants/toddlers are those which will occur repeatedly over days, weeks and years. Therefore even very small effects may be quite important over time. A larger sample size would detect such significant effects and may even be indicated in interactional research. Analyses should therefore be repeated using the larger study sample, and future studies should be conducted using larger sample sizes whenever possible to detect significant smaller effects.

Selection of Variables

The creation of further classifications of mothers using combinations of variables is suggested to further discern the multivariate effects of variables in future studies. For example, the impact of higher maternal sensitivity in combination with an authoritarian prohibition style may be compared with lower maternal sensitivity in conjunction with an authoritarian style, in relation to infant outcome measures. This type of analysis would provide more information beyond mere findings, for example, that maternal sensitivity and responsiveness is negatively related to the presence of an authoritarian style.

Summary and Recommendations for Future Research

This study examined certain maternal characteristics during the transition to toddlerhood which are thought to facilitate optimal toddler growth and development. The age of 12 months was conceptualized as a time when infants' sense of autonomy is rapidly emerging and when mothers must adapt their own behaviors accordingly. As infant autonomy increases, mother-infant interactions are viewed as bcoming increasingly control-salient, as control negotiations become an increasingly important part of interactions. Of particular interest was how mothers' sensitivity/responsiveness would differ across situations varying in control salience. Maternal sensitivity/responsiveness during the transition to toddlerhood was also examined in relation to maternal limit-setting style and infants' response to limits. Attachment theory served as a basis for questions examining the influence of maternal relationship history on maternal and infant interactive behavior, questions regarding maternal interactive behavior in relation to the infant's interactive behavior, and on the infant's development of ability to act upon self and other. Infant temperament was also assessed as an infant characteristic potentially contributing to those transactional processes.

The overall results of the study indicate that in general, mothers who were more sensitive with their infants at 12 months during less control-salient interactions were also more sensitive in interactions with more control saliency. Therefore adding the aspect of control salience did not markedly affect a mother's level of sensitivity, relative to other mothers. This may be interpreted to indicate that mothers who were more sensitive during the first year of life would also be more sensitive as the infant transitions into toddlerhood.

However, while mothers' relative sensitivity remained significantly stable across the more and less control-salient interactions mothers were significantly less sensitive in the more control-salient interactions compared with the less control-salient interactions. The

reasons for mothers' decreased sensitivity in more control-salient interactions is not clear. A general lack of experience, skill, and/or information and education about sensitively regulating child behavior may be implicated. The high proportion of authoritarian mothers in this sample seems to support this hypothesis. Further research is needed to explore educational needs of mothers with toddlers.

It may be that some degree of lessened sensitivity and responsiveness is somewhat inherent in more control-salient interactions. This seems unlikely; rather the definition of sensitivity and responsiveness may require some change in a more control-salient context. Longitudinal assessment of changes in maternal sensitivity and responsiveness as toddlerhood progresses, may assist to further clarify changes in the nature and quality of maternal sensitivity over time as the child ages. When is some alteration in sensitivity and responsiveness during control-salient interactions adaptive, and when is it indicative of problematic interactions? Which maternal changes are normative and adaptive in the face of child development, and which ones are indicative of problematic interactions which may compromise the development of the child and the health of the parent-child relationship? To answer these questions, the contribution of changes in maternal sensitivity/responsiveness to child outcomes must be studied. These questions must be answered if interventions are to be designed to effectively assist mothers in their interactions with their children.

The findings of this study suggest that mothers additionally vary in their sensitivity in relation to the amount of structure and infant-focus inherent in the interaction, as well as by their relationship history of overprotection/control. Less sensitive mothers with histories of overprotective or overcontrolling parents were more sensitive when they were involved in more highly structured interactions. These were interactions where it was appropriate to be more focused on the infant's behavior rather than in coordinating mutual activity. In less structured interactions, however, which had the potential for more mutual autonomy and coordinated relatedness toward a common goal, those mothers with less optimal histories tended to adopt more controlling and/or less sensitive approaches. Since this interpretation

was determined in "post hoc" fashion, however, rather than from a planned research hypothesis, further study is required to assess these patterns, beginning with replication with the larger study sample. If present in the larger study sample, longitudinal implications must be explored. Given the large number of interactions in a home environment which may involve similar situations, this finding does warrant further study.

Study in a home environment is indicated, as well. A limitation of this study was in the highly structured observational format. The research protocol served to structure the observation sequences in varying degrees. Home observations would allow examination of how mothers choose to structure their time with their infants, and how maternal choices for interactional structure relate to maternal and infant interactive characteristics, and how those results would compare with data obtained using the present laboratory format. Longer observations in the home may also help to further clarify the ranges of optimal maternal sensitivity and responsiveness, and if maternal over-sensitivity and responsiveness is a phenomenon.

Regarding maternal prohibition styles, the findings of this study indicate that more sensitive mothers tended to use either redirective or authoritative limit-setting styles with their infants at the age of 12 months. Attachment theory suggests that a mother's relationship history with her own parents may affect her interactional behavior with her own infant. Indeed, mothers who were authoritative tended to have had positive histories with their own parents on dimensions of care and overprotection/control. Mothers who were redirective tended to have more negative histories on the care dimension and may be compensating for that by being very sensitive with their own children. Both of these two styles, however, seemed to complement infant developmental capacities for self-inhibition and self control at this age, consistent with their sensorimotor and early representational cognitive abilities. More infants were classified as persistent-compliant than any other classification, a pattern that entails the ability to engage with their mothers actions and cues as well as the inability to effectively internalize a prohibition. The optimal onset of more

active maternal socialization of self-inhibition/control, represented by the maternal authoritative pattern, is unclear at this time. Mothers who were authoritarian, in contrast, tended to be less sensitive, to have more negative histories with their own parents in areas of care and overprotection/control, and to have infants who were less engaged with their mothers.

Further study is warranted to trace the transaction of infant and maternal limit-setting styles as the infant grows older. How well these styles complement infants' developmental abilities later in toddlerhood, and whether or not mothers will shift their limit-setting methods as the toddler develops, is of interest and importance. Some redirective mothers, for example, may become more authoritative as the child becomes more consistently able to internalize and generalize prohibitions across contexts. While it is fairly clear that authoritarian maternal styles are more undesirable and negatively correlated with maternal sensitivity/responsivness, and will no doubt remain so, the effects of an inconsistent style are unclear. It is possible that mothers using an inconsistent style may become more consistent over time, adopting one of the other styles. In turn, assessing any infant changes in their responses to limits over the course of toddlerhood is of importance. Persistent-compliant infants are expected to adopt other styles, which may also differ qualitatively from those assessed at the age of 12 months. Follow-up of these findings in toddlers longitudinally is indicated

Maternal relationship history as assessed by the Parental Bonding Instrument (PBI) proved to influence several study variables, including both maternal and infant limit setting styles. These findings again point to the importance of maternal experiences with being parented on a mother's own parenting and, in turn, for the developmental outcomes of her children. Further longitudinal study with the PBI is warranted to further examine the findings of this study, to ascertain the continuing influence of maternal relationship history on study variables. While re-conceptualizing the concept measured by the PBI as "maternal relationship history" rather than "internal working model" may in part define a limitation of

this study, this distinction may also guide future research to clarify various factors which may contribute to the formation, maintenance and adaptation of internal working models, and related behavioral correlates. Maternal perceptions of relationship history may be compared and contrasted with internal working models of relationships, and they may be assessed together in relation to outcome variables of interest such as maternal and infant prohibition behavior. For example, what makes the redirective mother able to compensate for her negative affective experiences with her own family? Or, how might variables of risk and resilience transact with maternal relationship history to produce current internal working models of attachment or relationships? Including a measure of internal working models of relationships, such as The Adult Attachment Interview, would be a requirement for this process.

Questions are also raised by this study in regard to the measurement and meaning of the development of self and other agency ability. The pattern of lower ability for "self" in combination with higher ability for "other" agency ability in the presence of higher maternal sensitivity and responsiveness as measured by both NCATS and Ainsworth scores was unexpected and requires further research. It is unclear whether this pattern is indicative of more or less infant competence at this age. Decreased sensitivity in the form of more subtle "over-sensitivity", manifested as over-involvement or excessive gentleness, was also suggested as resulting in infants' lessened ability to "act-on" self independently of the mother. Analysis with the larger study sample and other samples is indicated as is study with other outcome measures. Since these patterns were identified in the context of examination by a relative stranger, infant and toddler socio-emotional and relationship indicators may be particularly relevant , as well as measures of infant cognitive capacity and development, inlcuding representational ability.

The possibility of maternal "over sensitivity" adds to findings that the construct of maternal sensitivity and responsiveness continues to present a challenge in aspects of measurement and meaning. The two measures of maternal sensitivity and responsiveness

used in this study were related to other study variables similarly yet differently, supporting previous research findings indicating that the two measures may tap into somewhat different aspects of maternal sensitivity and responsiveness. In addition, there were only limited associations between a mothers' relationship history and her interactive behavior outside a limit-setting context, indicating problematic issues in the definition, measurement and assessment of maternal interactive behavior as related to both maternal relationship history and maternal internal working models. When considering the variety of possible behaviors presented by an infant and the variety of maternal choices in response to those infant behaviors, as well as the variety of possibilities in methods of measuring those maternal and infant behaviors, these difficulties are not surprising. While the findings of this study raise more questions and increase the complexity of issues of measurement and meaning in regard to maternal interactional behaviors and the developmental outcomes to which they are related, these findings eventually are expected to add clarity and precision to research and knowledge in this area.

That maternal relationship history was related to both maternal and infant prohibition classifications in this study, suggests that identifying maternal patterns, or organizations, of behaviors may be productive. Infant attachment style, for example, is one such organization, or classification of behavior. These broader classifications may capture a range of behaviors which may better represent relationship history or internal working models across varying contexts. Such classifications may be more important to consider as dyadic behavior acquires new dimensions, such as during the transition to toddlerhood, as they can combine dimensions such as sensitivity/responsiveness with control-salient behavior. There should, however, also be more specific maternal behaviors which would vary on a more micro-level, in relation to the relevant internal working models. Further study may validate that assumption by clarifying more specific maternal behaviors which may vary in specific contexts in relation to relationship history and internal working models.

The lack of findings in relation to infant temperament suggests that temperament may have little effect on infant responses to maternal limits, or on the infant's development of self and other agency ability, in this study. These findings, along with the lack of correlation between temperament and maternal sensitivity and responsiveness, indicates that temperament may not effect the infant outcomes measured in this study, either directly or through maternal mediating characteristics. Recent research findings, however, indicating the presence of maternal bias in self-report temperament ratings (Seifer, et al., 1994; Wolk, et al., 1992) indicates the need to explore more objective methods of temperament assessment and for replication of these findings using more objective assessment methods.

Because attachment style per se was not assessed, this study was not able to identify any changes in infant attachment status as a result of the changing interactional requirements during the transition to toddlerhood. However, consistent with attachment theory, infants' developing sense of self at 12 months was primarily related to interactional variables representing common interactions through the first year of life, those that were less control-salient. While these findings require replication with the larger study sample, the lack of correlations between the infant's developing sense of self and the more control-salient interactions supports this study's conceptualization that these more control-salient interactions are in fact new sets of behaviors developing between mother and infant. They may not yet have occurred often enough to affect the developing infant's ability for self-agency. These more control-salient interactions may influence infant outcomes developing over the course of the second year, and contribute more to infant characteristics assessed at 24 months. Therefore, further longitudinal study is required in order to determine the full impact of the changing interactional requirements involved in parenting a toddler, on the developing self of the toddler. Future studies may assist to further differentiate between changes in maternal sensitivity and responsiveness that are adaptive with development, and which changes may herald problems in the mother-toddler relationship.

This study drew upon attachment theory as a theoretical model which suggested some of the areas of inquiry, specifically that a mother's relationship history with her own parents may affect her interactional behavior with her infant, and that those behaviors may in turn affect her infants' interactive behavior and development of sense of self. A mother's relationship history was viewed as contributing to her current internal working model of relationships, which in turn would guide her behavior with her infant, and, again in turn, her infants' interactive behavior and development of self. The findings of this study support these tenets of attachment theory broadly. A mothers' relationship history was found to be related to her interactive behavior, specifically, her limit-setting style, and also to her infants' behavior in a limit-setting context. Maternal relationship history and maternal interactions conceptualized as occurring during the first year of life were also related to aspects of the infant's developing self, specifically, a sense of agency with others. And, the finding that infant temperament was not related to any major study variables supports the assumption of attachment theory that maternal internal working models and interactive behavior primarily determine infants' development of a social-emotional self. In conclusion, attachment theory has provided a useful theoretical framework for the assessment and understanding of these concepts and their associations. Further assessment of these relationships through the second and third years, and attention to methodological issues of measurement and assessment promise to broaden our knowledge of this theory's utility through the transition to toddlerhood.

Implications for Nursing

While many findings in this study provide the basis for further study, some findings can be more immediately applied to nursing practice. The findings of this study support existing literature indicating that maternal sensitivity and responsiveness are important to infant development. In addition, mothers with infants entering the toddler

period will encounter situations that are increasingly control-salient, and these situations will require increasingly complex interactional skills. Part of what influences a mother's ability to manage her infant in limit-setting and prohibition contexts are her own experiences with care and overprotection/control from her own parents. Mothers who had parents who were more caring and less overprotective/controlling, also tended to have more constructive limit-setting styles with their own infants. This information can be used by nurses in their assessment of mothers who may be encountering parenting difficulties or negative parenting practices in control-salient interactions. This knowledge can be used also to develop and maintain supportive and empathic approaches toward parents. For example, the practicing nurse who provides education about the quality of one's relationship history as affecting one's own parenting may present this information as a no-fault model. In this no-fault approach, parenting practices are presented as learned from one's own parents and role models, who learned them from their own parents and role models. In this way, parenting may be seen as less of an inherent, and good or bad, trait of the person. This approach may be more appealing and less threatening to many parents, who almost always are doing their best parenting possible given their own situation and experiences. This lack of blame, in that our parenting practices are learned and not innate, can help free people to grow and change.

This study also shows that measures such as the Parental Bonding Instrument (PBI) may provide important information relevant to some clinical nursing practice contexts. While such measures will never take the place of observational and behavioral assessments, or interviews involving both parents and children, self report measures such as the PBI may serve to alert clinicians to the possibility of parental relationship histories and internal working models which may both help or hinder a parent's efforts to provide a positive interactive environment for his/her children.

In addition, evidence that parents with fairly negative histories with their own parents can be sensitive in some situations, such as those with more structure and infant

focus, like teaching tasks, identifies an area of strength for these parents and their children. Identifying and focusing on these areas of strength can serve to build an alliance with these parents as well as provide information about how to direct these parents and childrens' time together to encourage such times of positive interaction. Assistance may be provided toward increasing interactional skill in other situations as well.

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APPENDIX A

PARENTAL BONDING INSTRUMENT

This questionnaire lists various attitudes and behaviors of parents. Please mark how much each item was like or unlike your mother and father, as you remember them during your first 16 years. Please mark items for your mother using an O, and your father using an X.

(Example: Spoke in a warm and friendly voice 0 X (2) 3)

O = Mother X = Father	Very like	Moderately like	Moderately unlike	Very unlike
1. Spoke to me with a warm and friendly voice.	0	1	2	3
2. Helped me as much as I needed.	0	1	2	3
3. Let me do those things I liked doing.	0	1	2	3
4. Seemed emotionally cold to me.	0	1	2	3
5. Appeared to understand my problems and worries.	0	1	2	3
6. Was affectionate to me.	0	1	2	3
7. Liked me to make my own decisions.	0	1	2	3
8. Let me grow up.	0	1	2	3
9. Tried to control everything I did.	0	1	2	3
10. Invaded my privacy.	0	1	2	3
11. Enjoyed talking things over with me.	0	1	2	3
12. Frequently smiled at me.	0	1	2	3
13. Tended to baby me.	0	1	2	3
14. Seemed to understand what I needed or wanted.	0	1	2	3
15. Let me decide things for myself.	0	1	2	3
16. Made me feel I wasn't wanted.	0	1	2	3
17. Could make me feel better when I was upset.	0	1	2	3
18. Talked with me often.	0	1	2	3
19. Tried to make me dependent on her/him.	0	1	2	3
20. Felt I could not look after myself unless she/he was around.	0	1	2	3
21. Gave me as much freedom as I wanted.	0	1	2	3
22. Let me go out as often as I wanted.	0	1	2	3
23. Was overprotective of me.	0	1	2	3
24. Praised me often.	0	1	2	3
25. Let me dress in any way I pleased.	0	1	2	3

APPENDIX B

TODDLER TEMPERAMENT SCALE

Subject #_____
Child's Age _____

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TODDLER TEMPERAMENT SCALE

For 12 month old children

BY

William Fullard, PhD., Sean C. McDevitt, PhD., and William B. Carey, MD.

RATING INFORMATION

1. Please base your rating on the child's recent and current behavior (the last four to six weeks).
2. Consider only your own impressions and observations of the child.
3. Rate each question independently. Do not purposely attempt to present a consistent picture of the child.
4. Use extreme ratings where appropriate. Avoid rating only near the middle of the scale.
5. Rate each item quickly. If you cannot decide, skip the item and come back to it later.
6. Rate every item. Circle the number of any item that you are unable to answer due to lack of information or any item that does not apply to your child.

TODDLER TEMPERAMENT

Using the following scale, please circle the number that indicates how often the child's recent and current behavior has been like that described by each item.

	Almost Never	Rarely	Variable Usually Does Not	Variable Usually Does	Frequently	Almost Always
1. The child gets sleepy at about the same time each evening *(within 1/2 hour)*.	1	2	3	4	5	6
2. The child fidgets during quiet activities *(story telling, looking at pictures)*.	1	2	3	4	5	6
3. The child takes feedings quietly with mild expression of likes and dislikes.	1	2	3	4	5	6
4. The child is pleasant *(smiles, laughs)* when first arriving in unfamiliar places.	1	2	3	4	5	6
5. The child's initial reaction to seeing the doctor is acceptance.	1	2	3	4	5	6
6. The child pays attention to game with parent for only a minute of so.	1	2	3	4	5	6
7. The child's bowel movements come at different times from day to day *(over one hour difference)*.	1	2	3	4	5	6
8. The child is fussy on waking up *(frowns, complains, cries)*.	1	2	3	4	5	6
9. The child's initial reaction to a new baby sitter is rejection *(crying, clinging to mother, etc.)*.	1	2	3	4	5	6
10. The child reacts to a disliked food even if it is mixed with a preferred one.	1	2	3	4	5	6
11. The child accepts delays *(for several minutes)* for desired objects or activities *(snacks, treats, gifts)*.	1	2	3	4	5	6
12. The child moves little *(stays still)* when being dressed.	1	2	3	4	5	6
13. The child continues an activity in spite of noises in the same room.	1	2	3	4	5	6
14. The child shows strong reactions *(cries, stamps feet)* to failure.	1	2	3	4	5	6
15. The child plays continuously for more than 10 minutes at a time with a favorite toy.	1	2	3	4	5	6

TODDLER TEMPERAMENT

Using the following scale, please circle the number that indicates how often the infant's recent and current behavior has been like that described by each item.

	Almost Never	Rarely	Variable Usually Does Not	Variable Usually Does	Frequently	Almost Always
16. The child ignores the temperature of food, whether hot or cold.	1	2	3	4	5	6
17. The child varies from day to day in wanting a bottle or snack before bedtime at night.	1	2	3	4	5	6
18. The child sits still while waiting for food.	1	2	3	4	5	6
19. The child is easily excited by praise *(laughs, yells, jumps)*.	1	2	3	4	5	6
20. The child cries after a fall or bump.	1	2	3	4	5	6
21. The child approaches and plays with unfamiliar pets *(small dogs, cats)*.	1	2	3	4	5	6
22. The child stops eating and looks up when a person walks by	1	2	3	4	5	6
23. The child seems unaware of differences in taste of familiar liquids *(type of milk, different juices)*.	1	2	3	4	5	6
24. The child moves about actively when he/she explores new places *(runs, climbs or jumps)*.	1	2	3	4	5	6
25. The child fusses or whines when bottom cleaned after bowel movement.	1	2	3	4	5	6
26. The child smiles when played with by unfamiliar adults.	1	2	3	4	5	6
27. The child looks up from play when mother enters the room.	1	2	3	4	5	6
28. The child spends over an hour reading a book or looking at the pictures.	1	2	3	4	5	6
29. The child responds intensely *(screams, yells)* to frustration	1	2	3	4	5	6
30. The child eats about the same amount of solid food at meals from day to day.	1	2	3	4	5	6

TODDLER TEMPERAMENT

Using the following scale, please circle the number that indicates how often the infant's recent and current behavior has been like that described by each item.

	Almost Never	Rarely	Variable Usually Does Not	Variable Usually Does	Frequently	Almost Always
31. The child remains pleasant when hungry and waiting for food to be prepared	1	2	3	4	5	6
32. The child allows face washing without protest *(squirming, turning away)*	1	2	3	4	5	6
33. The amount of milk or juice the child takes at mealtime is unpredictable from meal to meal *(over 2 oz. difference)*	1	2	3	4	5	6
34. The child practices physical activities *(climbing, jumping, pushing objects)* for under 5 minutes	1	2	3	4	5	6
35. The child vigorously resists additional food or milk when full *(spits out, clamps mouth closed, bats at spoon, etc.)*	1	2	3	4	5	6
36. The child plays actively *(bangs, throws, runs)* with toys indoors	1	2	3	4	5	6
37. The child ignores voices when playing with a favorite toy	1	2	3	4	5	6
38. The child approaches *(moves toward)* new visitors at home	1	2	3	4	5	6
39. The child plays outside on hot or cold days without seeming to notice differences in temperature	1	2	3	4	5	6
40. The child continues playing with other children for under five minutes and then goes elsewhere	1	2	3	4	5	6
41. The child continues to look at a picture book in spite of distracting noises *(car horns, doorbell)*	1	2	3	4	5	6
42. The child wants a snack at a different time each day *(over one hour difference)*	1	2	3	4	5	6
43. The child is pleasant *(smiles)* when put down for nap or at night	1	2	3	4	5	6
44. The child takes several days to get used to *(show usual behavior in)* new situations away from parent *(play group, day care center, sitter.)*	1	2	3	4	5	6
45. The child speaks *(or vocalizes)* right away to unfamiliar adults	1	2	3	4	5	6

TODDLER TEMPERAMENT

Using the following scale, please circle the number that indicates how often the infant's recent and current behavior has been like that described by each item.

	Almost Never	Rarely	Variable Usually Does Not	Variable Usually Does	Frequently	Almost Always
46. The child reacts strongly *(cries or screams)* when unable to complete a play activity	1	2	3	4	5	6
47. The child enjoys games with running and jumping over games done sitting down	1	2	3	4	5	6
48. The child notices wet clothing, and wants to be changed right away	1	2	3	4	5	6
49. The child is fussy or moody throughout a cold or an intestinal virus	1	2	3	4	5	6
50. The child ignores parent's first call while watching a favorite T.V. program	1	2	3	4	5	6
51. The child loses interest in a new toy or game within an hour	1	2	3	4	5	6
52. The child runs to get where he/she wants to go	1	2	3	4	5	6
53. For the first few minutes in a new place *(store, home or vacation place)* the child is wary *(clings to mother, holds back)*	1	2	3	4	5	6
54. The child takes daytime naps at differing times *(over 1/2 hour difference)* from day to day	1	2	3	4	5	6
55. The child reacts mildly *(frown or smile)* when his/her play is interrupted by parent	1	2	3	4	5	6
56. The child accepts being dressed and undressed without protest	1	2	3	4	5	6
57. The child is outgoing with adult strangers outside the home	1	2	3	4	5	6
58. The child runs ahead when walking with the parent	1	2	3	4	5	6
59. The child's period of greatest physical activity comes at the same time of day	1	2	3	4	5	6
60. The child can be coaxed out of a forbidden activity	1	2	3	4	5	6

TODDLER TEMPERAMENT

Using the following scale, please circle the number that indicates how often the infant's recent and current behavior has been like that described by each item.

	Almost Never	Rarely	Variable Usually Does Not	Variable Usually Does	Frequently	Almost Always
61. The child stops play and watches when someone walks by.	1	2	3	4	5	6
62. The child goes back to the same activity after brief interruption *(snack, trip to toilet)*	1	2	3	4	5	6
63. The child laughs or smiles when meeting other children	1	2	3	4	5	6
64. The child sits still while watching T.V. or listening to music	1	2	3	4	5	6
65. The child will avoid repetition of misbehavior if punished firmly once or twice	1	2	3	4	5	6
66. The child continues to play with a toy in spite of sudden noises from outdoors *(car horn, siren, etc.)*	1	2	3	4	5	6
67. The child ignores dirt on himself/herself	1	2	3	4	5	6
68. The child's time of waking in the morning varies greatly *(by 1 hours or more)* from day to day.	1	2	3	4	5	6
69. The child has moody or "off" days when he/she is fussy all day.	1	2	3	4	5	6
70. The child reacts mildly *(frowns or smiles)* when another child takes his/her toy	1	2	3	4	5	6
71. The child stays with a routine task *(dressing, picking up toys)* for 5 minutes or more.	1	2	3	4	5	6
72. The child stops eating and looks when he/she hears an unusual noise *(telephone, doorbell).*	1	2	3	4	5	6
73. The child sits still *(moves little)* during procedures like hair brushing or nail cutting.	1	2	3	4	5	6
74. The child shows much bodily movement *(stomps, writhes, swings arms)* when upset or crying	1	2	3	4	5	6
75. The child is pleasant *(smiles, laughs)* during face washing	1	2	3	4	5	6

TODDLER TEMPERAMENT

Using the following scale, please circle the number that indicates how often the infant's recent and current behavior has been like that described by each item.

	Almost Never	Rarely	Variable Usually Does Not	Variable Usually Does	Frequently	Almost Always
76. The child's initial reaction at home to approach by strangers is acceptance *(looks at, reaches out)*.	1	2	3	4	5	6
77. The child is hungry at dinner time.	1	2	3	4	5	6
78. The child continues to get into forbidden areas or objects in spite of parents' repeated warnings.	1	2	3	4	5	6
79. The child stops to examine new objects thoroughly *(5 minutes or more)*.	1	2	3	4	5	6
80. The child ignores odors *(cooking, smoke, perfume)* whether pleasant or not.	1	2	3	4	5	6
81. The child looks up from an activity when he/she hears the sounds of children playing.	1	2	3	4	5	6
82. The child falls asleep at about the same length of time after being put to bed.	1	2	3	4	5	6
83. The child greets babysitter loudly with much expression of feeling whether positive or negative.	1	2	3	4	5	6
84. The child is moody for more than a few minutes when corrected or disciplined.	1	2	3	4	5	6
85. The child sits still *(little squirming)* when traveling in car or stroller	1	2	3	4	5	6
86. The child watches T.V. for under 10 minutes, then turns to another activity.	1	2	3	4	5	6
87. The child is shy *(turns away or clings to mother)* on meeting another child for the first time.	1	2	3	4	5	6
88. The child is still wary of strangers after 15 minutes.	1	2	3	4	5	6
89. The child frets or cries when first learning a new task *(dressing self, picking up toys)*.	1	2	3	4	5	6
90. The child sits quietly in the bath.	1	2	3	4	5	6

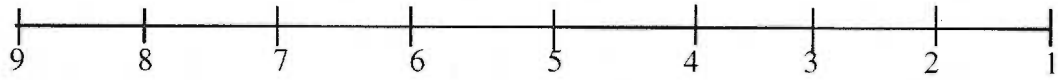
TODDLER TEMPERAMENT

Using the following scale, please circle the number that indicates how often the infant's recent and current behavior has been like that described by each item.

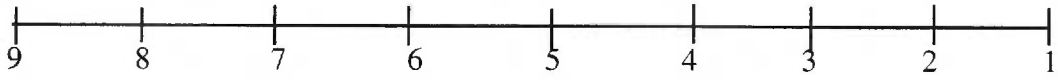
	Almost Never	Rarely	Variable Usually Does Not	Variable Usually Does	Frequently	Almost Always
91. The child practices a new skill *(throwing, piling, drawing)* for 10 minutes or more	1	2	3	4	5	6
92. The child ignores differences in taste or consistency of familiar foods	1	2	3	4	5	6
93. The child sleeps poorly *(restless, wakeful)* in new places for first 2 or 3 times	1	2	3	4	5	6
94. The child is fearful of being put down in an unfamiliar place *(supermarket cart, new stroller, playpen)* with parent present	1	2	3	4	5	6
95. The child frowns or complains when left to play by self	1	2	3	4	5	6
96. The child accepts within 10 minutes *(feels at home, at ease)* new surroundings *(home, store, play area)*	1	2	3	4	5	6
97. The child looks up from play when the telephone or doorbell rings	1	2	3	4	5	6

APPENDIX C

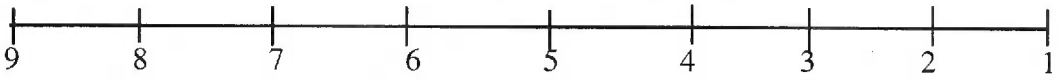
AINSWORTH MATERNAL CARE SCALES



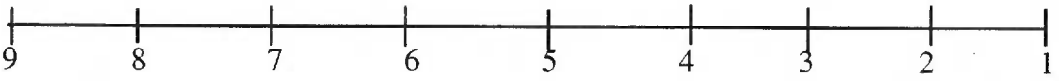
Acceptance -vs.- Rejection



Accessibility -vs.- Ignoring



Cooperation -vs.-Interference



Sensitivity -vs.-Insensitivity

Ainsworth Scales
Revised 3/6/69

ACCEPTANCE VS. REJECTION

This scale deals with the balance between the mother's positive and negative feelings about her baby--about having a baby and about this particular one--and with the extent to which she has been able to integrate these conflicting feelings or to resolve the conflict. At the positive pole there is love and acceptance over-riding frustrations, irritations, and limitations--or perhaps more accurately, encompassing and defusing the negative feelings. At the negative pole anger, resentment, hurt or irritation conflict conspicuously with and limit positive feelings and result in more or less overt rejection of the baby. It is assumed that the arrival of a baby poses a potentially ambivalent situation--and that for all mothers there are positive and negative aspects. Among the negative aspects is the fact that the new baby impinges on and limits the mother's own autonomy and interferes with other activities which are important to her in one way or another. Furthermore there are inevitable irritations and frustrations in interacting with this particular baby from day to day. Among the positive aspects is the undeniable appeal a baby makes to his mother--evoking tenderness, protectiveness, and other positive reactions.

It is assumed that there are positive and negative elements in all mother-infant relationships. We are concerned with how the mother, given her present life situation, has been able to balance them. It is assumed that at the desirable, accepting, positive end of this continuum negative components are not so much absent as somehow subsumed within the context of the positive relationship. It is also assumed that at the undesirable, rejecting, negative end of this continuum positive components are not so much lacking as they are not integrated with the negative, rejecting components, so that there is an alternation between tenderness, nurturance, and delight on the one hand, and anger, resentment, irritation, hurt, and rejection on the other, without any adequate meshing of the two together. There is a good and lovable baby and a bad and infuriating baby, but the real baby as he actually exists is somehow lost between the two.

The assessment of the balance between positive and negative is not easy. The social norm is that mothers love their babies and do not reject them. The angry, rejecting, negative components of the mother's relations with the baby tend, therefore, to be suppressed or repressed. The positive components are, of course, more acceptable, and the mother usually feels free to express positive feelings openly. She may even feel impelled to put on a show of affection in excess of her real feelings. To complicate things further a baby has much appeal even to an essentially rejecting mother, and she may be genuine in her positive expressions while trying to hide (perhaps even from herself) her negative feelings. Finally, it is acknowledged to be healthy for a person--even a mother--to give vent to angry feelings rather than trying to submerge them with the consequence that they may simmer for long periods of time during which they color the tone of behavior and interfere with positive feelings. Momentary outbursts of anger or irritation must not be given undue weight if they are embedded in an otherwise clearly positive, warm, loving relationship. On the other hand the rater must be alert to signs of submerged resentment in the case of a woman who finds it very difficult to acknowledge anger, and must give them due

weight.

Some mothers clearly have positive feelings uppermost; they express them frequently and spontaneously and without any apparent striving to play a loving role, to make a good impression, or even to be kind to the baby. They acknowledge the baby's exploratory interests, and do not feel hurt when these lead him away from her. They sense and respect the baby's budding desire for autonomy and mastery and understand his anger when he is frustrated; therefore they do not view early conflicts of interests as struggles for power in which they must be aggressive or else be overwhelmed. These are women whose love-hate impulses are well enough integrated that they can feel almost wholly positive toward their babies without danger of repressed hostility. Such a mother, perhaps because she is able to empathize with the baby, does not interpret instances of disruptive, annoying behavior as an indication of a potential character defect in the baby which must be "nipped in the bud." Although sometimes the baby may seem clearly angry at her, she interprets neither such episodes, nor episodes of more diffusely uncooperative or annoying behavior, as adequate reason for her to feel hurt or to institute retaliative measures. She may feel a brief surge of annoyance, but she does not consider the baby himself as a suitable target on which to focus her anger. She may discourage the behavior in question. She may deal with her own momentary irritability by some means which gives her a chance to "cool off" before resuming her interaction with the baby. But she does not harbor resentment or hurt, and because she does not "take it out" on the baby, he is unlikely to feel rejected, especially if momentary irritation or behavior-directed disapproval is embedded in general warm acceptance.

Some outwardly accepting mothers are more rejecting than those, described above, who can give brief, healthy, situation-specific vent to annoyance. These pseudo-accepting mothers comply with the baby's demands, but in a way which is in itself inappropriate. They comply masochistically, and in a pseudo-patient, long-suffering way, and usually underneath this type of compliance lies much repressed aggression--which is usually deep-seated and of long standing, and which has little to do with the baby except as his behavior may serve to activate this repressed aggression and threaten the defenses against it. Such a mother cannot give healthy vent to anger occasioned by the baby's behavior. She smothers it, and tries to be patient. Her very defenses against expressing her anger make it impossible for her to be truly responsive to the baby, and hence he tends to find her compliance unsatisfying. Both this and the often inappropriate outbursts of irritation which inevitably break through the defenses add up to rejection.

Clear-cut, overt rejection is unmistakable. Some highly rejecting mothers are quite open in their rejection. Such a mother may say that she wishes that the child had never been born, or she may be less open but nevertheless say what a nuisance he is and how he interferes with her life. Or she may complain more specifically, pointing out the baby's defects and shortcomings, and dwelling on her problems with him. To be sure, to talk with the observer about concerns and problems does not necessarily imply substantial rejection, but to emphasize these constantly rather than the baby's good points and the pleasure he yields suggests at least an undercurrent of rejection. (In fact, it is well known that damaged or handicapped babies, who obviously present more problems than "normal" babies do, tend also to activate more rejection in their mothers. Therefore, whether or not the "problem" has an adequate realistic basis is irrelevant for our purposes.) Another way in which a mother may voice rejecting attitudes, without actually saying that she rejects the baby, is to say, often in a heavy-handed "joking" manner, all sorts of

uncomplimentary things to the baby while she is interacting with him--"stinkpot", "fatso", "stupe", and the like--or to comment to the observer, in an apparently "objective" way that this is an ugly baby, uglier than its siblings, or that it has a flat head, protruding teeth, or a nasty temper (just like his father's) and the like. (Such uncomplimentary remarks should be distinguished--although this is sometimes difficult--from "tough" comments made by an essentially accepting mother to disguise from the word just how crazy she is about this baby.)

Rejection is of course expressed in behavior as well as verbally. When it is overt, it is unmistakable. The highly rejecting mother may show her rejection by constantly opposing the baby's wishes, by a generally pervasive atmosphere of irritation or scolding, by jerking him about with ill-concealed anger, and by joining battle with him whenever he seems to challenge her power. Less obvious--and perhaps less highly rejecting--is chronic impatience, or a punitive or retaliatory putting of the baby away or deliberately ignoring his overtures, as though the mother were trying to say to the baby: "You snubbed me, didn't do what I wanted you to do, rejected my overtures, and now I will 'show you'!" Teasing is sometimes a less obvious way of expressing negative feeling-components. Even when the baby responds positively to teasing there seems to be some negative, aggressive component in the teaser's behavior--and in extremes teasing is obviously sadistic, even though the sadism may be veiled by seeming warmth and good humor.

This scale is related to the previous scale, MA-3--Mother's Acceptance of the Baby--which dealt with the mother's acceptance-rejection in terms of the degree to which the baby is felt to interfere with her own autonomy. This emphasis seemed appropriate during the first three months when the chief issue of acceptance seemed to be one of the mother's autonomy. In the latter part of the first year, however, the baby has emerged as more of a person in the mother's eyes--a person who can be sometimes entrancing or appealing and sometimes irritating and infuriating. The present scale therefore focuses chiefly on the balance between positive and negative feelings. Nevertheless the previous issue of the mother's acceptance or resentment of the degree to which the baby infringes on her own autonomy is still relevant and will be taken into consideration.

MISSING PAGE

suggested. If the baby is in the same room with his mother, and if it is clear that her ignoring of his signals is deliberate, then the instance in question will be considered rejection--especially if there is evidence that the mother is motivated by an angry or "hurt" desire to punish or to retaliate. (Similarly, the mother who arbitrarily puts the baby away--for a nap or gives him to someone else--will be considered rejecting, especially if there is evidence that she is irritated by his behavior or tired of him.) It is assumed that somehow the baby can perceive rejection under these circumstances. If however, the baby is in another room--as for example, when he is crying when put down for a nap or waking from a nap--the mother's failure to respond will be considered ignoring. It is emphasized that this is only a rule of thumb. Ignoring in the sense of being oblivious to the baby and failing to perceive his signals may be a special case of rejection, and may have similar motivation, although the implication is that the negative component is more completely repressed than in rejection. Indeed some mothers may be both rejecting and ignoring, alternating more or less overt rejection with the covert rejection implicit in ignoring. It

nevertheless seems worthwhile to distinguish these two variables because it seems likely that babies respond differentially to the two patterns of behavior, and that certain patterns of infant behavior may be associated with relatively overt rejection in which the angry component can be more clearly sensed that to the covet rejection implicit in ignoring.

Furthermore, the positive ends of the two scales--accessibility and acceptance--maybe distinguished. Some mothers are accessible in the sense of being clearly aware of the baby and yet behave in a rejecting way. Other mothers may be on balance positive in their feelings, and hence fairly accepting, and yet may become involved in other activities to the extent that their accessibility is fairly frequently low.

9 Highly accepting. M is highly accepting of B and his behavior, even of behaviors which other mothers find hurtful or irritating. She values the fact that the baby has a will of his own, even when it opposes hers. She is pleased to observe his interest in other people or in exploring the world, even though this may on occasion lead him to ignore her overtures. She even finds his anger worthy of respect. She can, on rare occasions, be irritated or frustrated by B's behavior, but this tends to be brief--soon over and done with--and it does not occur to her to feel that B himself is a worthy target upon which to focus her anger. She not only loves B, but she respects him as an individual. At the same time she accepts the responsibility for caring for him, and does not chafe against the bonds which tie her down temporarily and which restrict her from activities in which she would otherwise enjoy participating.

7 Accepting. The balance of feeling is still clearly toward the positive, accepting, loving side, and irritation and resentment are infrequent in comparison. This mother does not show as much respect for the baby as a separate, autonomous person as do mothers with higher ratings, and she may not show as much obvious acceptance of the fact that he has a will of his own, that he is often interested in other people and things, and that he can get angry. She is generally patient with B, and her patience seems a matter of genuine acceptance of his demands and inefficiencies rather than over-compliant, long-suffering, pseudo-patience. She seems to suppress (or repress) relatively little of her feeling toward B, perhaps chiefly because there is relatively little undercurrent of negative feeling, especially toward him. Moreover she generally accepts the limitations to her own autonomy presented by B and her care of him.

5 Ambivalent. M seems chiefly positive in her feeling toward B, and on occasion she obviously enjoys him; nevertheless resentment or hurt may break through in inappropriate ways. The inappropriateness is largely a matter of M taking some behavior of the baby's--angry, frustrated behavior, or assertion of will, or momentary preference for other people or things--as a deep-seated mother-directed hostility, opposition or rejection, and this leads her to retaliate with behavior that is essentially rejecting behavior. Or, M may be somewhat impatient and irritable with the baby at times, rejecting him when he ceases to be compliant or endearing, and yet there is enough positive interaction to preclude a lower rating. Or M may point out either frequently or inaccurately that B rejects her, in that he sees to prefer someone else or will not come to her readily; her dwelling upon behavior that she interprets as rejection seems likely to imply an undercurrent of rejecting B. Or M may tease B when he is upset, angry, or otherwise difficult--

and the teasing, of course, aggravates the difficulty. For a rating of "5" the expressions of negative feeling must not be predominant over positive, mutually enjoyable interaction, whatever the assessment of underlying dynamics; if they are, the rating should be lower.

3 **Substantially rejecting.** M's negative responses, veiled or open, are frequent enough to outweigh expressions of positive feelings toward B--although she is neither as openly nor as strongly rejecting as women with lower ratings. Ways in which her anger or resentment toward B may be expressed are as follows: (a) by putting him away from her when he does not do what she wants--or by deliberately ignoring him as a retaliation--and this is not merely a matter of insensitivity but a clear rejection if him; (b) by dwelling in conversation on B's bad points and the problems he occasions rather than upon his good points, accomplishments, and the pleasure he yields; (c) by saying critical, uncomplimentary, nasty things to and about B in his presence even though these are "joking" (although it is difficult, these should be distinguished from "tough" comments designed to conceal strong positive feelings); (d) by a veiled irritation with B which underlies a long-suffering, pseudo-patient compliance to his demands (which are perfunctory compliance and hence not satisfying) and which occasionally becomes overt in impatient, rejecting behavior; (e) marked impatience; (f) a sadistic undercurrent which is largely concealed but which comes out in little ways. Also here one might classify the mother who shows hurt, retaliatory behavior more frequently or more strongly than the "5" or "4" mother.

1 **Highly rejecting.** M is clearly rejecting of B and her positive feelings toward him are frequently overwhelmed by her resentful, angry, rejecting feelings. This may be manifest in any one or a combination if different ways. She may openly voice an attitude of rejection, saying that she is sorry that she ever had him. Or she may somewhat less openly voice her rejection by implying that he is a great nuisance, and that he interferes substantially in her life and with what she would like to be able to do. Or she may complain about B more specifically, pointing out his defects and shortcomings. Even though she may refrain from verbalizing her rejection of B, she may manifest it by a constant opposition to his wishes, by a generally pervasive atmosphere of irritation and scolding, by jerking him about with ill-concealed anger, and by joining battle with him whenever he seems to challenge her power. There may be positive aspects in her relations with B which suggest that she can enjoy B, but these are rare and isolated in their manifestations.

* Difficulties have been encountered in rating highly defended mothers who seem bland or emotionally detached, and who give evidence neither of positive acceptance as defined by scale points 9 and 7 nor of the hostile components of feeling or behavior as specified by the other scale points. It seems best to rate such women 5, despite the fact that they do not show the expressions of negative feeling specified in the definition of that scale point. It is understood that the intermediate points 4 or 6 may also be used, depending upon the tendency for either negative or positive feelings to break through the generally emotionless facade. It is further understood that there may be enough veiled rejection in a seemingly "matter of fact", emotionless mother to justify a rating of 3 as that rating point is presently defined.

ACCESSIBILITY VS. IGNORING AND NEGLECTING

The central issue of this scale is the mother's accessibility to the baby, with emphasis upon her responsiveness to him. Although the essential component of psychological accessibility is that the mother be aware of the baby, she is not truly accessible unless she also actively acknowledges and responds to him.

A highly accessible mother has her baby in her field of perceptual awareness at all time so that he is within reach, at least, through distance receptors. She can divide her attention between the baby and other persons, things, and activities without losing awareness of the baby. She is never too preoccupied with her own thoughts and feelings or with her other activities and interactions to have him in the background of her awareness and to sense where he is and what he is doing. When he is in another room she is quick to perceive any sounds he may make, and she takes precautions not have him so far away or so closed off that she cannot hear a sound as loud as a cry.

The highly accessible mother not only is aware of her baby's activity and signals, but she responds to him readily. She can switch attention to him easily if he needs her supervision or protection or if he approaches or tries to catch her attention. To be accessible, the mother does not necessarily understand and sensitively interpret the baby' behavior nor does she necessarily respond appropriately to the baby's signals--nevertheless, the accessible mother is perceptually alert and responsive to her baby most of the time.

An inaccessible mother ignores her baby and in this sense she neglects him. "Neglect" in this context does not necessarily imply physical neglect. The neglect is psychological for the most part--although mothers in inaccessible moods may sometimes show surprising lapses in failing to protect the baby from danger. There are two major types of women who can be described as inaccessible, ignoring and neglecting. First, there are mothers who are unaware of much of the baby's behavior; they do not perceive his signals and communications and therefore cannot respond to them. Second, there are mothers who perceive the baby's signals well enough, but do not acknowledge them ore respond to them, hence must be to the baby just as inaccessible as if they had been unaware.

Let us first consider mothers who are frequently imperceptive and unaware of their babies' signals. Two main types have been observed. The dynamics of the first type seem the more pathological. Such a mother seems to teeter on the brink of depression and/or fragmentation and disintegration. She finds the demand implicit in the baby's signals an intolerable threat to her precarious balance. It is necessary, in order to hold herself together, to "tune out" the baby's signals. The baby may simply be blotted out of awareness for relatively long periods of time. If he cries she does not hear him; if he greets her she does not see him. If the baby's signals do break through his mother's defensive barrier, she tends to fall back on a second line of defense, somehow removing from the stimuli emanating from the baby their signal quality. The baby is perceived as making happy sounds rather than crying, or, if he is perceived as crying, the mother cannot imagine what the cause might be and, since she does not know what to do, she does nothing. Whatever the mechanism, the baby's signal is so distorted in the process of reception that it loses any power to impel his mother to respond. Such a mother rarely attends to the baby or the consequence of his behavior, however much the baby may clamor for attention--and often

enough her baby learns the futility of trying to break through such a barrier and does not clamor. Such a mother tends to attend to her baby according to her own programming as though she reminded herself: "Now is the time to attend to the baby." It seems that her caretaking is a response to the thought of him--to the concept of baby--rather than to her perception of him and his signals. When the baby is out of sight he tends to be out of mind, except that the mother can talk about him, discussing him, her plans for him, or her policies in managing him. She may give information about him, but often enough this is meager because she has not observed his behavior closely enough to give much detail. It is as though her concept of the baby is more real than the baby as he actually exists.

The second major type of mother who is frequently imperceptive and unaware has dynamics that seem less pernicious than that of the first, because the mother is not rendered quite as impervious to the baby's signals and communications. This mother creates a barrier against the baby's demands, but, since she does not back this up by a distortion of perception of his signals, he can, if he signals intensely enough or persistently enough, break through. These mothers tend to be somewhat compulsive. The get preoccupied with their own activities, whether work or conversations, or they ruminate, lost in their own thoughts or worries. While they are preoccupied thus, the baby may go unnoticed, Such women are one-track-minded, and find it difficult to switch from one set of activities to another--from housekeeping to mothering, for example. Sometimes they bolster up their need to be uninterrupted by arranging the physical environment so that the baby will not impinge upon them while they are engaged in something else--work, napping, or adult sociability. They may put the baby away in another room, preferably one far enough away or soundproofed so that they will not be interrupted by him, or they may arrange to turn him over to someone else--a housekeeper or perhaps another member of the family. They often seem as inaccessible as women who are more defensively unaware, but the critical difference is that, provided the baby is within signal range, she is not completely impervious.

Whatever the mother's reasons for putting the baby away--whether rejecting or not--it may be argued that a mother is more less ignoring and neglecting under either of the following circumstances: (a) when the baby is having a long "nap" while the mother is talking to the visitor or doing other things and the baby is too far away to have any signals heard and the mother makes no effort to "check" on him; (b) when the mother <u>could</u> be accessible to the baby (i.e. is at home) but turns him over to a housekeeper, another member of the family, or even to the visitor, and busies herself with something else, has a nap or goes out on an inessential errand, thus making herself inaccessible to the baby, and perhaps even making it impossible for her to be aware of any signals he might make. Under such circumstances the mother has either arranged matters (deliberately or not) so that she cannot be aware of the baby's signals or has turned over to someone else the responsibility for responding to any signals he makes. When such conditions occur, the rater may shift this rating to a point on the scale somewhat lower than would be suggested by the mother's behavior when she is with the baby or is accepting responsibility for him. The rater will, however, take into account qualifying features such as the mother's attitude and how usual or unusual these circumstances seem to be.

Let us now consider mothers who are inaccessible despite being perfectly well aware of the baby's signals and interpreting them correctly. Such a mother is merely unresponsive to the

baby and his signals. She ignores them deliberately--whether through policy, for discipline, or through pique. Sometimes it may seem incomprehensible to the observer that the mother can note the baby's behavior, that she can comment upon and correctly interpret the cause for his fuss and still continue to ignore him. These women do not have distorted perception, but somehow they are not sufficiently able to see things from the baby's point of view--or perhaps to feel things from his point of view--to want to intervene. They are too impersonal and objective; in their failure to acknowledge the baby they must seem as inaccessible to the baby at if they did not perceive him.

Throughout this discussion emphasis has been placed upon the mother's failure to perceive and/or to be responsive to the baby's signals. Inaccessibility is most obvious when the baby is, in fact, signalling, and the mother does not respond. There are, however, babies who make few demands--perhaps because they have become accustomed to being ignored. The relative lack of frequency, intensity, or persistence of signalling behavior on the part of the baby may make it all the easier for his mother to ignore him, but the rater should not be misled into over-rating the mother's accessibility on this account. If she can go for long periods without seeming to notice the baby or to acknowledge him, she is a candidate for a low rating regardless of whether or not the baby is making obvious demands.

In summary, an accessible mother is aware of her baby and of his behavior most of the time and usually acknowledges his presence, his signals and his communications. A mother is judged to be inaccessible if she frequently or perhaps for prolonged periods does not acknowledge the baby or respond to him--whether she is aware of his behavior or not, and, indeed, whether she is in the same room or not.

The scale does not take into account the quality of care that the mother gives the baby or the quality of her interaction with him. Some mothers are constantly aware of the baby and responsive to his signals, and yet they respond inappropriately or even sadistically. It is the bare fact of the mother's acknowledgement of his real presence that is important to this scale--not the quality of her response to him.

Note: This variable is similar to Scale MC-1 of the first quarter ratings scales--mother's availability to the baby. The previous scale was, however, concerned with the issue of the limited availability of the part-time mother. This present scale is concerned only with the mother's accessibility when she is at home. The working mother, therefore, will be rated only on the basis of her behavior when she has returned home from her work.

9 Highly accessible. M arranges things so that she is accessible to B and B to her. She keeps him close enough so that she can be aware of his states, signals, and activities. She is very alert to his whereabouts and doings. Even when he is napping in his room she has a selective filter tuned in to any sounds he might make. She is capable of distributing her attention between B and other people and things, and is rarely so preoccupied that she is unaware of B and unresponsive to what he is doing. She rarely, if ever, ignores any active approach or demand of B's even though she may not do what he seems to want her to do. She does not even pretend to ignore him, but rather acknowledges his presence and his overtures or demands in some way. She rarely, if ever, enters a room without giving B some acknowledgement that she is aware of him.

7 Usually accessible. M is usually accessible psychologically. There may be brief periods

during which other demands and other activities prevent her from being aware of B and what he is doing, but most usually her attention is "tuned in" to him. She is not as smooth about dividing her attention between competing demands as are women with higher ratings, but rather tends to alternate. Nevertheless she can fairly easily switch her attention to B. She may sometimes be preoccupied enough with her own activities--including activities concerned with B's care--that she fails to acknowledge B, perhaps going in and out of the room without seeming see B's interest in her presence. For the most part, however, she acknowledges B when she enters a room, especially if they have been apart for more than a few moments. (Mothers may be given this rating also if they habitually and deliberately ignore B under one set of circumstances--for example, ignoring any crying B may do when he is put down for a nap--and yet are highly accessible at most other times.)

5 **Inconsistently accessible**. M is inconsistent in her accessibility to B. Fairly long periods of close attention and accessibility alternate with periods of seeming obliviousness to B, during which M is occupied with other things despite B's presence and perhaps even despite his attempts to catch her attention. The inaccessibility of some mothers may be quite unpredictable because of a tendency to become easily preoccupied with their own activities and thoughts; other mothers may regularly and routinely plan prolonged periods of unavailability such as during those hours when they do their household chores. During these planned or unplanned periods, M may ignore B when she enters a room, even after a substantial absence, being concerned with other things. She may become so caught up in a conversation, activity, or thought that she seemingly forgets about B and ignores what he is doing--responding neither to his attention-getting behavior, nor to dangerous or "naughty" behavior which ordinarily would evoke an intervention. Nevertheless, this mother is more often accessible than inaccessible, and during her periods of accessibility, she is highly responsive to B.

3 **Often inaccessible, ignoring, or neglecting**. M occasionally ***responsive to B's behavior and to the signals implicit in it, but she is more frequently inaccessible than accessible to him. She may be too preoccupied with her own thoughts or activities to notice him, or she may notice and correctly interpret his signals without being moved to acknowledge them. She typically enters and leaves the room without acknowledging B or his signals, whether they are conspicuous, subtle, or muted. Although she frequently ignores him, she in not entirely oblivious. If B signals strongly enough or persistently enough, M may respond to him--and in this she differs from mothers with even lower ratings. On the other hand, if the baby is an undemanding baby, and tends not to signal frequently or strongly, the mother's accessibility must be judged in accordance with the extent to which she does acknowledge him, whether he demands it or not. The mother with this rating--and also and even to a greater extent mothers with lower ratings--tends to give B attention with her own programming rather than in accordance with his, although she may give him intense attention on the occasions when she decides to attend to him at all.

1 **Highly inaccessible, ignoring or neglecting**. M is so preoccupied with her own thoughts and activities for most of the time that she simply does not notice B. She enters the room without even looking at him, let alone acknowledging him; his smiles are not returned.

When B is elsewhere she seems to forget his existence. B's sounds do not seem to filter through to her. She may talk about B, but it seems that the baby as conceptualized is more real than the baby upstairs crying, or the baby across the room who may be rocking, or playing or even actively demanding her attention. This mother only responds to B when she deliberately turns her attention to do something to or for B--making a project of it. In fact, M rarely "responds" to B in the sense of giving care and social attention contingent upon B's behavior. Rather, M is often so completely unaware of B's signals that her interventions are characteristically at her own whim and convenience.

COOPERATION VS. INTERFERENCE

The central issue of this scale is the extent to which the mother's interventions and initiations of interaction break into, interrupt or cut across the baby's ongoing activity rather than being geared in both timing and quality to the baby's state, mood and current interests. The degree of interference may be assessed in accordance with two considerations: (a) the extent of actual physical interference with the baby's activity, and (b) the sheer frequency of interruptions.

Some mothers are highly interfering in an overwhelming physical sense. Such a mother snatches the baby up, moves him about, confines him, and, indeed, releases him with utter disregard for his activity-in-progress. When she restricts and restrains his movements it tends to be by direct physical intervention or force. She may also try to use force in instances in which the baby's cooperation is required if the intervention is to be effective--for example, in feeding, in play and (although this usually comes later) in toilet training. Other mothers, who interference does not so conspicuously emphasize physical force, nevertheless must be considered highly interfering because they "at" the baby most of the time--instructing, training, eliciting, directing, controlling.

In either case it is clear that the highly interfering mother has no respect for her baby as a separate, active, and autonomous person, whose wishes and activities have validity of their own. The underlying dynamics of such an attitude are various; some examples follow. An obsessive-compulsive woman, for example, tends to require a tight control over other people in order to control her own anxieties; such a mother may become anxious and angry when the baby does not do exactly what she wants him to do, when she wants him to do it, and in the way she wants him to do it. Another kind of dynamic behind interference is shown by the woman whose baby continues to be a narcissistic extension of herself; such a woman tends to treat him as her possession, her creature, <u>hers</u>. When she is in a mood to play, she may find the baby charming, provided that he cooperates and plays; when she tires of him she puts him aside; in either case it does not seem to occur to her to attribute any validity to how the baby feels. A third kind of dynamic behind interference is an emphasis on training. The mother feels that she can shape the baby to fit her own concept of a good baby, whether through a determined attempt to elicit behavior she considers desirable or by punishing behavior that she considers undesirable. These three examples do not exhaust the possibilities, but it is hoped that they serve to illustrate the essentials of the underlying attitude--which is that the interfering mother feels that the baby is hers and that she has a perfect right to impose her will on him. She tends to treat him almost as an inanimate possession that she can move about as she wishes--or perhaps, as a more appropriate analogy, as a small child treats a pet kitten, to be handled, petted, fed, teased, carried, and put aside with complete lack of regard for the kitten's needs and wishes.

Mothers at the other end of this continuum seem to guide rather than to control the baby's activity. Such a mother integrates her wishes, moods and household responsibilities with the baby's wishes, moods, and ongoing activity. Their interactions and shifts of activity seem co-determined. Rather than interrupting an activity that the baby has in progress, she delays her intervention until a natural break in his activity occurs. Or through mediating activities, often of a playful sort, she can gradually divert him from what he is doing toward something she wants him

to do. Such a mother uses mood-setting techniques. At bed-time, for example, she gradually slows down the pace and vigor of their interaction until he is relaxed and calm and more ready for bed than he could have been at the peak of excited play. She invites him to come and cooperate with what she has in mind rather than imposing it on him.

A type of interference, less forceful than direct physical intervention, may be seen in play and vocalization. An interfering mother tends to play entirely or almost entirely by doing something to the baby, or by getting him to do something she wishes. Such mothers instruct the baby in tricks or stereotyped games, persisting even when the baby is in an unresponsive mood. Once the baby has learned the tricks and games to some degree, the mother subsequently plays by attempting to elicit them. Or, as an alternative, she does something playful to the baby, for example, tickling him or whirling him about. (These examples are not intended to imply that tickling or whirling are in themselves criteria of an interfering approach, but merely that they can be modes of play which are not co-determined, and often enough, together with "eliciting" or instructing, the only modes available to the interfering mother.) Similarly, with vocalization. The interfering mother persistently tries to elicit specific vocalization (or gestures) regardless of the bay's current interest in vocalizing or lack of it.

In contrast, a "co-determining" mother capitalizes on spontaneity. She responds to the baby's vocalizations, and does a minimum of trying to elicit specific sounds. She tends to pick up something the baby does at the beginning of a play sequence, and responds to his initiations of play. She may attempt to initiate play, but if the baby does not respond, she either desists, or shifts her approach. Most mothers undertake some kind of instruction, and on one occasion or another deliberately elicit something the baby has learned, so rating is a matter of balance between eliciting and instructing on one hand and spontaneity on the other--and also a matter of appropriateness of context and meshing with the baby's moods.

The extremes of physical interference are to be seen most usually in pick-up and put-down situations and when the baby is free on the floor. The highly interfering mother is likely to keep pulling the baby back from places she does not want him to go, perhaps interspersing direct control with multiple commands, "no-no's", and perhaps slaps. Of course, even a usually non-interfering mother will intervene abruptly and forcibly if the baby's activity threatens physical harm to him, for example if he is headed toward unguarded stairs or if he is about to swallow some small object. But it is characteristic of the non-interfering mother to "baby-proof" the house and its contents so that physical intervention is rarely necessary--by placing gates across the stairways, by putting away objects which could harm the baby or which she does not want him to have, and the like.

Restraint may sometimes be considered a form of interference, but there is a distinction to be made between forcible physical restraint, such as pinioning the baby's arms when there is a direct physical confrontation between mother and baby, and impersonal restraints such as playpens and the straps of a highchair. Restraint which involves physical confrontation will be considered interference. Thus strapping the baby in a highchair is not an interference, but if, when the baby has been refusing to sit, the mother jerks him down and straps him in, this would be considered an interference. Similarly, placing the baby in the playpen would not be considered an interference per se, but picking him up unceremoniously when he is in the midst of active exploration and dumping him down in the playpen would.

One difficulty with this rating scale is how to rate mothers who have been highly interfering in the past and whose babies have become passive as a result. Such babies may now not try to reach the bottle; it is no longer necessary to pinion their arms. Such babies when placed on the floor may not explore vigorously so it is not necessary to interfere. Even in instances where it is known that present generalized or situation-specific passivity is correlated with past restraints and interferences, the mother will be rated on the basis of positive evidence of interference (or conversely, cooperation) which she now shows. (It is assumed that ratings of earlier periods, when undertaken, will tell the story, if, indeed, the mother now gives little evidence of interference.)

Routines--feeding, changing, bathing, and bed-time--may be the occasion for interference, just as they may be the situations in which cooperation and co-determinism is most clearly illustrated. The general rule of thumb is that when interference is a matter of direct physical control it will be considered interference, but when it is a matter of tactful control or accepted impersonal restraint it will not be so considered. In between the two extremes come the milder interferences of verbal commands and prohibitions. Thus, for example, the mother who slaps or hold the baby's hands to prevent him from touching food would be considered interfering; the mother who scolds and warns without physical intervention would be considered interfering to a milder degree. The mother who gives no finger foods would not be considered interfering, unless she slaps, holds, scolds, or verbally prohibits. The mother who tussles or slaps an active child while changing him would be considered interfering. The mother who gives him something to manipulate or who holds his attention by talking to him playfully and thus does not need to interfere physically would be considered non-interfering. The mother who interrupts an active or excited or unsleepy baby and puts him to bed abruptly would be considered interfering. But the mother who plays gentle games, or holds and rocks, and who generally gets the baby into a nap-accepting mood will be considered cooperative. The timing of routines per se will not, however, be taken into account in rating this variable. (Timing will be reflected in the scale dealing with the mother's sensitivity to the baby's communications and signals.)

This present scale, although not entirely orthogonal to scales of ignoring and rejecting, is certainly not in one-to-one relationship with them. Some interfering mothers alternate interfering transactions with periods of ignoring the baby; others are clearly aware of the baby at all times and are by no means inaccessible.

9 **Conspicuously cooperative**. This mother views her baby as a separate, active, autonomous person, whose wishes and activities have a validity of their own. Since she respects his autonomy, she avoids situations in which she might have to impose her will on his, and shows foresight in planning ahead--by arranging the physical environment of the house or by her timing her own household routines--in such a way as to minimize the need for interference and for direct control.

She avoids interrupting an activity the baby has in progress. When it is desirable to intervene for a routine or to shift his activity, she truly engages his cooperation, by mood-setting, by inviting him, by diverting him, and by engaging him in reciprocal activity of some sort, often enough vocalization or play. In activity-shifting and indeed also in play she capitalizes on spontaneity, picking up cues from the baby to help her present what she wants him to do as

something that is also congenial to him.

Even a conspicuously cooperative mother inevitably will instruct her baby to some extent or attempt to elicit particular behaviors, but these mildly controlling interactions both constitute a small proportion of their total interaction and are themselves appropriate enough to the baby's mood and activity-in-progress to be considered co-determined.

Except in rare emergency situations this mother never interferes with the baby abruptly and with physical force. Verbal commands and prohibitions across a distance are an inevitable corollary of giving the baby freedom to explore and to learn, but the "conspicuously cooperative" mother manages to structure the freedom-to-explore situation so that she needs to command but rarely. In other words, to be co-determining does not imply either over-permissiveness or a "laissez-faire" attitude.

7 **Cooperative**. This mother does not have as conspicuous a respect for her baby's autonomy and ongoing activity as do mothers with higher ratings but on the whole she is cooperative and non-interfering. She shows less foresight than mothers with higher ratings in arranging the physical environment and her own routine so as to avoid the need for interference. Consequently, there are more occasions in which she feels it necessary to interrupt or to exert control. Although she may give more verbal commands or prohibitions than mothers with higher ratings, she tries to avoid undue frequency of interference, and rarely, if ever, intervenes in direct, abrupt, physical ways.

Nevertheless, she seeks the baby's cooperation in routines and in shifts of activity by mood-setting and other techniques mentioned above. She may, however, be somewhat less skillful than mothers with higher ratings in capitalizing on spontaneity and thus achieving optimum cooperation. Although the balance is in favor of spontaneity in play and in exchanges of vocalization, she may be somewhat more frequently instructive or "eliciting" than mothers with higher ratings.

5 **Mildly interfering**. This mother is not so much an interfering or controlling person as she is inconsiderate of the baby's wishes and activities. Consequently she interrupts and interferes more frequently than do mothers with higher ratings. On the whole her interference tends to be mild, however, rather than being direct, abrupt, and physically forceful. She tends to issue more verbal commands and prohibitions to control the baby across a distance than do mothers with higher ratings. She tends to rely more on instructive and "eliciting" modes of play and interaction and is less spontaneous than they are. Perhaps the most conspicuous difference from those with higher ratings, however, is in regard to routine interventions and shifts of activity. She pays much less attention to mood-setting and to other techniques which aid smooth transitions from one activity to another. She tends to be matter of fact. When she judges that a changing, a nap, a feeding, or merely a shift of locus or activity is desirable she acts accordingly, apparently disregarding the fact that her intervention may break in to the baby's activity-in-progress or the fact that the activity she proposes may be alien to the baby's present mood.

3 **Interfering**. In distinguishing the mother with a "3" rating from one with an even lower rating a judgement about arbitrariness is crucial. Like mothers with lower ratings these interfering

mothers display either direct, forceful, physical interference or frequent milder interferences or both. But usually the "3" mother has some kind of rationale for her actions which is perceivable to the observer (even though it may seem far from desirable); the interference is not obviously arbitrary. The mother may be focused on the desirability of undertaking a specific routine at this time; or she may be a "training" kind of mother who is determined to shape the baby to her way of doing things. There is, however, a reason for most of her interruptions or interferences, whereas the "1" mother is more frequently arbitrary, seeming to interfere for no reason at all. (It is assumed that the totally arbitrary interferences are as incomprehensible to the baby as they are to the observer, and that those that have some "reason" may have some thread of consistency which makes them easier for the baby to adapt to.)

In distinguishing the "3" mother from those with higher ratings, it is merely necessary to say that she is substantially more interfering either in frequency or in quality or both. She more frequently displays physical interference or restraint, or she more frequently interferes mildly , instructing, eliciting, prohibiting, and commanding--or both. Perhaps even more important than the absolute amount of interfering is the proportion of mother-infant transactions which are interfering. The "3" mother is interfering in a greater proportion of her transactions than the "5" or "4" mother.

1 **Highly interfering**. This mother has no respect for her baby as a separate, active and autonomous person, whose wishes and activities have a validity of their own. She seems to assume that the baby is hers and that she has a perfect right to do with him what she wishes, imposing her will on his, or shaping him to her standards, or merely following her own whims without regard for his moods, wishes, or activities. There is an arbitrariness about the interference that is striking. Much (although not all) of it is "for no apparent reason". Some highly interfering mothers are conspicuous for the extreme frequency of interruption of the baby's activity-in-progress, so that they seem "at" the baby most of the time--instructing, training, eliciting, directing, controlling. But the "1" mother tends to combine both types of interference, even though she may emphasize one type more than the other. Regardless of the balance between physical man-handling and milder interruptions, these mothers have in common an extreme lack of respect for the baby's autonomy, and an obtuseness which permits them to break into what the baby is doing without any need to explain to others or even to justify to themselves the reason for the interruption.

SENSITIVITY VS. INSENSITIVITY TO THE BABY'S COMMUNICATIONS

This variable deals with the mother's ability to perceive and interpret accurately the signals and communications implicit in her infant's behavior, and given this understanding, to respond to them appropriately and promptly. Thus the mother's sensitivity has four essential components: (a) her awareness of the signals; (b) an accurate interpretation of them; (c) an appropriate response to them; and (d) a prompt response to them. Let us consider each of these in turn.

The mother's awareness of her baby's signals and communications has two aspects. The first is the same as the issue covered in the scale "accessibility vs. ignoring and neglecting." In other words, the mother must be reasonably accessible to the baby's communications before she can be sensitive to them. Accessibility is a necessary condition for sensitive awareness. It is not a sufficient condition, however, for a mother can maintain the "baby" in her field of awareness without fulfilling the other conditions for sensitive awareness. The second aspect of awareness may be described in terms of "thresholds." The most sensitive mother--the one with the lowest threshold--is alert to the baby's most subtle, minimal, understated cues. Mothers with higher thresholds seem to perceive only the most blatant and obvious communications. Mothers with the highest thresholds seem often oblivious, and are, in effect, highly inaccessible. This second aspect is very closely related to the question of interpretation of the baby's signals, for usually the mother who is alert to minimal cues also interprets them correctly. This is not invariably the case, however. For example, some mothers are alert to the slightest mouth movement, and sometimes incorrectly interpret them as hunger--or they notice minimal tensions or restlessness and incorrectly interpret them as fatigue.

The mother's ability to interpret accurately her baby's communications has three main components: (a) her awareness, as previously discussed; (b) her freedom from distortion; and (c) her empathy. An inattentive, "ignoring" mother is, of course, often unable to interpret correctly the baby's signals when they break through her obliviousness, for she has been unaware of the prodromal signs and of the temporal context of the behavior. But even a mother who is highly aware and accessible may misinterpret signals because her perception is distorted by projection, denial, or other marked defensive operations. Mothers who have distorted perceptions tend to bias their "reading" of their babies according to their own wishes, moods, and fantasies. For example, a mother note wishing to attend to her baby might interpret his fussy bids for attention as fatigue and, therefore, put him to bed; she being in a hurry, might perceive any slowing down in the rate of feeding as a sign of satiation; or a mother who is somewhat rejecting of her infant might perceive him as rejecting and aggressive towards herself. Mothers who least distort their perceptions of their babies have some insight as tho their own wishes and moods, and thus can more realistically judge the baby's behavior. Furthermore, they are usually aware of how their own behavior and moods affect their infant's behavior.

The mother must be able to empathize with her baby's feelings and wishes before she can respond with sensitivity. That is, a mother might be quite aware of and understand accurately the baby's behavior and the circumstances leading to her baby's distress or demands, but because she is unable to empathize with him--unable to see things from the baby's point of view--she may tease him back into good humor, mock him, laugh at him, or just ignore him. The mother's

egocentricity and lack of empathy may also lead to detached, intellectual responses to the baby rather than to warm, sensitive interactions with the baby.

A high threshold of awareness and inaccurate perceptions certainly lead to insensitive responses. Nevertheless, the mother may be highly aware and accurate in her interpretation and still be insensitive. Therefore, in the last analysis, the appropriateness and promptness of the mother's response to communications are the hallmarks of sensitivity.

The quality of the mother's interaction with her infant is probably the most important index of her sensitivity. It is essential that the mother's responses be appropriate to the situation and to the baby's communications. Often enough, at least in the first year of life, the sensitive mother gives the baby what his communications suggest he wants. She responds socially to his attempts to initiate social interaction, playfully to his attempts to initiate play. She picks him up when he seems to wish it, and puts him down when he wants to explore. When he is distressed, she knows what kind and degree of soothing he requires to comfort him--and she knows that sometimes a few words or a distraction will be all that is needed. When he is hungry she sees that he soon gets something to eat, perhaps giving him a snack if she does not want to give him his regular meal right away. On the other hand, the mother who responds inappropriately tries to socialize with the baby when he is hungry, play with him when he is tired, or feed him when he is trying to initiate social interaction.

In play and social interaction, the mother who responds appropriately to her child does not overstimulate him by interacting in too intense, too vigorous, too prolonged, or too exciting a manner. She can perceive and accurately interpret the signs of over-excitement, undue tension,, or incipient distress and shifts the tempo or intensity before things have gone too far. Similarly, she is unlikely to understimulate the child, because she picks up and responds to the signals he gives when he is bored or when he wants more interaction than has heretofore been forthcoming.

In the second year of life, and sometimes also toward the end of the first year, it is maximally appropriate for the mother to respond to the baby's signals not so much in accordance with what he ostensibly wants as in terms of a compromise between this and what will make him feel most secure, competent, comfortable, etc. in the long run. This is a tricky judgment to make, for so much that is done "for the baby's own good" is done both contrary to his wishes and according to the mother's convenience, whim, or preconceived standards. Nevertheless there are situations in which limit-setting, even in the first year, clears the air even though it is initially contrary to the baby's wishes. Similarly there are situations in which the baby's signals might lead the mother to increase the tempo of interaction to the point of discomfort for hi, and in which it is appropriate gradually to diminish intensity. Furthermore, there is a fine point of balance at which the mother can begin to show the baby that she is not an instrument of his will, but a cooperative partner whose participation must be elicited appropriately. In such instances the mother will slightly frustrate the baby's imperious demands but warmly encourage (and reward) behaviors which are inviting or requesting rather than demanding. Nevertheless in such interactions the sensitive mother acknowledges the baby's wishes even though she does not unconditionally accede to them. The chief point is that a sensitive, appropriate response does not invariably imply complete compliance to the baby's wish--although very frequently compliance may be the most appropriate response.

The final feature of appropriate interaction is that is well-resolved, or well-rounded and

completed. For example, when the baby seeks contact the sensitive mother holds him long enough to satisfy him, so that when he is put down he does not immediately seek to be picked up again. When he needs soothing, she soothes him thoroughly, so he is quite recovered and cheerful. When he seeks social interaction she enters into a more or less prolonged exchange with him, after which, often enough, he is content to entertain himself. In contrast, some mothers with low sensitivity seem to be fragmented and incomplete; these mothers may try a series of interventions as though searching for the best method or solution. Highly sensitive mothers have completed, easily and well-resolved interactions.

Finally, there is the issue of the promptness of the mother's response to the baby's communication. A response, however appropriate, which is so delayed that it cannot be perceived by the baby as contingent upon his communication cannot be linked by him to his own signal. On the assumption that it is a good thing for a baby to gain some feeling of efficacy--and eventually to feel cumulatively a "sense of competence" in controlling his social environment--it seems a part of sensitivity to acknowledge the baby's signals in some effective way and to indicate that one is at least preparing to accede to them. During the first quarter of the first year, a mother's sensitivity is most easily judged by her latency in response to the baby's distress signals such as hunger. However during the last quarter, the mother's prompt response to the baby's social communication and signals is probably a more crucial measure. A mother is inevitably insensitive when she fails to respond to the baby's outstretched arms, to his excited greeting, or simply to his smile or gentle touch.

An issue which cuts across the various components of sensitivity concerns the timing of routine activities and play. In general, arbitrary or very rigid timing of major interactions cannot but be insensitive to the infant's signals, moods, and rhythms. The mother who arranges and organizes day by day activities with her infant in order to most convenience herself, or the mother who thinks by the clock, has little or no consideration of the infant's tempo and current state.

In summary, highly sensitive mothers are usually accessible to their infants and are aware of even their more subtle communication, signals, wishes, and moods; in addition, these mothers accurately interpret their perceptions and show empathy with their infants. The sensitive mother, armed with this understanding and empathy, can time her interactions well and deal with her baby so that her interactions seem appropriate--appropriate in kind as well as in quality--and prompt. In contrast, mothers with low sensitivity are not aware of much of their infant's behavior either because they ignore the baby or they fail to perceive in his activity the more subtle and hard-to-detect communications. Furthermore, insensitive mothers often do not understand those aspects of their infant's behavior of which they are aware or else they distort it. A mother may have somewhat accurate perceptions of her infant's activity and moods but may be unable to empathize with him. Through either lack of understanding or empathy, mothers with low sensitivity improperly time their responses, either in terms of scheduling or in terms of promptness to the baby's communications. Further, mothers with low sensitivity often have inappropriate responses in kind as well as quantity, i.e., interactions which are fragmented and poorly resolved.

9 **Highly sensitive**. This mother is exquisitely attuned to B's signals, and responds to them promptly and appropriately. She is able to see things from B's point of view; her perceptions of his signals and communications are not distorted by her own needs and defenses. She "reads" B's

signals and communications skillfully, and knows what the meaning is of even his subtle, minimal, and understated cues. She nearly always gives B what he indicates that he wants, although perhaps not invariably so. When she feels that it is best not to comply with his demands--for example, when he is too excited, over-imperious, or wants something he should not have--she is tactful in acknowledging his communication and in offering an acceptable alternative. She has "well--rounded" interactions with B, so that the transaction is smoothly completed and both she and B feel satisfied. Finally, she makes her responses temporally contingent upon B's signals and communications.

7 **Sensitive**. This mother also interprets B's communications accurately, and responds to them promptly and appropriately--but with less sensitivity than mothers with higher ratings. She may be less attuned to B's more subtle behaviors than the highly sensitive mother. Or, perhaps because she is less skillful in dividing her attention between B and competing demands, she may sometimes "miss her cues." B's clear and definite signals are, however, neither missed nor misinterpreted. This mother empathizes with B and sees things from his point of view; her perceptions of his behavior are not distorted. Perhaps because her perception is less sensitive than that of mothers with higher ratings, her responses are not as consistently prompt or as finely appropriate--but although there may be occasionally little "mismatches", M's interventions and interactions are never seriously out of tune with B's tempo, state and communications.

5 **Inconsistently sensitive.** Although this mother can be quite sensitive on occasion, there are some periods in which she is insensitive to B's communications. M's inconsistent sensitivity may occur for any one of several reasons, but the outcome is that she seems to have lacunae in regard to her sensitive dealings with B--being sensitive at some times or in respect to some aspects of his experience, but not in others. Her awareness of B may be intermittent--often fairly keen, but sometimes impervious. Or her perception of B's behavior may be distorted in regard to one or two aspects although it is accurate in other important aspects. She may be prompt and appropriate in response to his communications at some times and in most respects, but either inappropriate or slow at other times and in other respects. On the whole, however, she is more frequently sensitive than insensitive. What is striking is that a mother who can be as sensitive as she is on so many occasions can be so insensitive on other occasions.

3 **Insensitive**. This mother frequently fails to respond to B's communication appropriately and/or promptly, although she may on some occasions show capacity for sensitivity in her responses to and interactions with B. Her insensitivity seems linked to inability to see things from B's point of view. She may be too frequently preoccupied with other things and therefore inaccessible to his signals and communications, or she may misperceive his signals and interpret them inaccurately because of her own wishes or defenses, or she may know well enough what B is communicating but be disinclined to give him what he wants--because it is inconvenient or she is not in the mood for it, or because she is determined not to "spoil" him. She may delay an otherwise appropriate response to such an extent that it is no longer contingent upon his signal, and indeed perhaps is no longer appropriate to his state, mood, or activity. Or she may respond with seeming appropriateness to B's communications but break off the transactions before B is

satisfied, so that their interactions seem fragmented and incomplete or her responses perfunctory, half-hearted, or impatient. Despite such clear evidence of insensitivity, however this mother is not as consistently or pervasively insensitive as mothers with even lower ratings. Therefore when the baby's own wishes, moods, and activity are not too deviant from the mother's wishes, moods, and household responsibilities or when the baby is truly distressed or otherwise very forceful and compelling in his communication, this mother can modify her own behavior and goals and, at this time, can show some sensitivity in her handling of the child.

1 **Highly insensitive**. The extremely insensitive mother seems geared almost exclusively to her own wishes, moods, and activity. That is, M's interventions and initiations of interaction are prompted or shaped largely by signals within herself; if they mesh with B's signals, this is often no more than coincidence. This is not to say the M never responds to B's signals; for sometimes she does if the signals are intense enough, prolonged enough or often enough repeated. The delay in response is itself insensitive. Furthermore, since there is usually a disparity between M's own wishes and activity and B's signals, M who is geared largely to her own signals routinely ignores or distorts the meaning of B's behavior. Thus, when M responds to B's signals, her response is characteristically inappropriate in kind or fragmented and incomplete.

APPENDIX D

NURSING CHILD ASSESSMENT TEACHING SCALE (NCATS)

UNIVERSITY OF WASHINGTON
SCHOOL OF NURSING
NURSING CHILD ASSESSMENT TRAINING

TEACHING SCALE
(BIRTH TO THREE YEARS)

PERSON OBSERVED IN INTERACTION (CIRCLE)
MOTHER FATHER OTHER

MAJOR CAREGIVER (CIRCLE)
YES NO

TEACHING TASK _____

LENGTH OF TEACHING (CIRCLE) MIN.
1 or LESS 2 3 4 5 6 OR MORE

SETTING (CIRCLE)
HOME CLINIC OTHER

RECORDER'S NAME _____

DATE _____

CHILD'S FIRST NAME _____

CHILD'S AGE (IN MONTHS) _____

CHILD'S SEX _____

MOTHER'S RACE _____

PARITY _____

MOTHER'S EDUCATION (CIRCLE)
6 YRS OR LESS 7-8-9-10-11-12-13-14-15-16-17-18-19-20 -

MARITAL STATUS (CIRCLE)
MARRIED NOT MARRIED

MOTHER'S AGE (AT BIRTH OF CHILD) _____

	YES	NO
I. SENSITIVITY TO CUES		
1. PARENT POSITIONS CHILD SO CHILD IS SAFELY SUPPORTED		
2. PARENT POSITIONS CHILD SO THAT CHILD CAN REACH AND MANIPULATE MATERIALS.		
3. PARENT GETS THE CHILD'S ATTENTION BEFORE BEGINNING THE TASK, AT THE OUTSET OF THE TEACHING INTERACTION		
4. IN NEARLY ALL CASES PARENT GIVES INSTRUCTIONS ONLY WHEN THE CHILD IS ATTENTIVE (90%).		
5 PARENT ALLOWS CHILD TO EXPLORE THE TASK MATERIALS FOR AT LEAST 5 SECONDS BEFORE GIVING THE FIRST TASK RELATED INSTRUCTION.		
6. PARENT POSITIONS CHILD SO THAT IT IS POSSIBLE FOR THEM TO HAVE EYE-TO-EYE CONTACT WITH ONE ANOTHER DURING THE TEACHING EPISODE.		
7. PARENT PAUSES WHEN CHILD INITIATES BEHAVIORS DURING THE TEACHING EPISODE.		
8. PARENT PRAISES CHILD'S SUCCESSES OR PARTIAL SUCCESSES.		
9. PARENT ASKS FOR NO MORE THAN THREE PERFORMANCES WHEN CHILD IS SUCCESSFUL AT COMPLETING THE TASK.		
10. PARENT CHANGES POSITION OF CHILD AND/OR MATERIALS AFTER UNSUCCESSFUL ATTEMPT BY THE CHILD TO DO THE TASK.		
11. PARENT DOES NOT PHYSICALLY FORCE THE CHILD TO COMPLETE THE TASK.		
SUBSCALE TOTAL (NO. OF YES ANSWERS)		
RESPONSE TO DISTRESS: (INDICATE WHETHER DISTRESS OCCURRED OR NOT)		
12. STOPS THE TEACHING EPISODE.		
13. MAKES POSITIVE, SYMPATHETIC, OR SOOTHING VERBALIZATION.		
14. CHANGES VOICE VOLUME TO SOFTER OR HIGHER PITCH (DOES NOT YELL).		
15. REARRANGES THE CHILD'S POSITION AND/OR TASK MATERIALS.		
16. MAKES SOOTHING NON-VERBAL RESPONSE, E.G. PAT, TOUCH, ROCK, CARESS, KISS.		
17. DIVERTS CHILD'S ATTENTION BY PLAYING GAMES, INTRODUCES NEW TOY		
18. DOES NOT MAKE NEGATIVE COMMENTS TO THE CHILD.		
19. DOES NOT YELL AT THE CHILD.		
20. DOES NOT USE ABRUPT MOVEMENTS OR ROUGH HANDLING.		
21. DOES NOT SLAP, HIT OR SPANK.		
22. DOES NOT MAKE NEGATIVE COMMENTS TO HOME VISITOR ABOUT THE CHILD.		
SUBSCALE TOTAL (NO. OF YES ANSWERS)		
III. SOCIAL-EMOTIONAL GROWTH FOSTERING		
23. PARENT'S BODY POSTURE IS RELAXED DURING THE TEACHING EPISODE (AT LEAST HALF THE TIME).		
24. PARENT IS IN THE FACE-TO-FACE POSITION WITH THE CHILD DURING THE TEACHING INTERACTION (AT LEAST HALF THE TIME).		
25. PARENT LAUGHS OR SMILES AT CHILD DURING THE TEACHING.		
26. PARENT GENTLY PATS, CARESSES, STROKES, HUGS, OR KISSES CHILD DURING EPISODE.		
27. PARENT SMILES, OR TOUCHES CHILD WITHIN 5 SECONDS WHEN CHILD SMILES OR VOCALIZES		
28. PARENT PRAISES CHILD'S EFFORTS OR BEHAVIORS BROADLY (IN GENERAL) AT LEAST ONCE DURING THE EPISODE.		
29. PARENT MAKES CONSTRUCTIVE OR ENCOURAGING STATEMENT TO THE CHILD DURING THE TEACHING INTERACTION.		
30. PARENT DOES NOT VOCALIZE TO THE CHILD AT THE SAME TIME THE CHILD IS VOCALIZING.		
31. PARENT DOES NOT MAKE GENERAL NEGATIVE OR UNCOMPLIMENTARY REMARKS ABOUT THE CHILD		
32. PARENT DOES NOT YELL AT THE CHILD DURING THE EPISODE.		
33. PARENT DOES NOT MAKE CRITICAL, NEGATIVE COMMENTS ABOUT THE CHILD'S TASK PERFORMANCE.		
SUBSCALE TOTAL (NO. OF YES ANSWERS)		
IV. COGNITIVE GROWTH FOSTERING		
34. PARENT PROVIDES AN IMMEDIATE ENVIRONMENT WHICH IS FREE FROM DISTRACTIONS FROM ANIMATE SOURCES (SIBS, PETS, ETC.).		
35. PARENT FOCUSES ATTENTION AND CHILD'S ATTENTION ON THE TASK DURING MOST OF THE TEACHING (60% OF THE TIME).		
36. AFTER PARENT GIVES INSTRUCTIONS, AT LEAST 5 SECONDS IS ALLOWED FOR THE CHILD TO ATTEMPT THE TASK BEFORE PARENT INTERVENES AGAIN.		
37. PARENT ALLOWS NON-TASK MANIPULATION OF THE TASK MATERIALS AFTER THE ORIGINAL PRESENTATION.		
38. PARENT DESCRIBES PERCEPTUAL QUALITIES OF THE TASK MATERIALS TO THE CHILD.		
39. PARENT USES AT LEAST TWO DIFFERENT SENTENCES OR PHRASES TO DESCRIBE THE TASK TO THE CHILD.		
40. PARENT USES EXPLANATORY VERBAL STYLE MORE THAN IMPERATIVE STYLE IN TEACHING THE CHILD.		
41. PARENT'S DIRECTIONS ARE STATED IN CLEAR, UNAMBIGUOUS LANGUAGE (I.E. AMBIGUOUS = "TURN," "REACH;" UNAMBIGUOUS = "TURN THE KNOB TOWARD ME.")		
42. PARENT USES BOTH VERBAL DESCRIPTION AND MODELING SIMULTANEOUSLY IN TEACHING ANY PART OF THE TASK.		
43. PARENT ENCOURAGES AND/OR ALLOWS THE CHILD TO PERFORM THE TASK BEFORE INTRUDING IN ON THE USE OF TASK MATERIALS.		
44. PARENT VERBALLY PRAISES CHILD AFTER CHILD HAS PERFORMED BETTER OR MORE SUCCESSFULLY THAN THE LAST ATTEMPT.		
45. PARENT SMILES AND/OR NODS AFTER CHILD PERFORMS BETTER OR MORE SUCCESSFULLY THAN THE LAST ATTEMPT.		
46. PARENT RESPONDS TO THE CHILD'S VOCALIZATIONS WITH VERBAL RESPONSE.		
47. PARENT USES BOTH VERBAL AND NONVERBAL INSTRUCTIONS IN TEACHING THE CHILD.		
48. PARENT USES TEACHING LOOPS IN INSTRUCTING CHILD (75% OF THE TIME).		
49. PARENT SIGNALS COMPLETION OF TASK TO CHILD VERBALLY OR NONVERBALLY.		
50. PARENT SPENDS NOT MORE THAN 5 MINUTES AND NOT LESS THAN ONE MINUTE IN TEACHING THE CHILD THE TASK.		
SUBSCALE TOTAL (NO. OF YES ANSWERS)		

	YES	NO
V. CLARITY OF CUES		
51. CHILD IS AWAKE.		
52. CHILD WIDENS EYES AND/OR SHOWS POSTURAL ATTENTION TO TASK SITUATION.		
53. CHILD CHANGES INTENSITY OR AMOUNT OF MOTOR ACTIVITY WHEN TASK MATERIAL IS PRESENTED.		
54. CHILD'S MOVEMENTS ARE CLEARLY DIRECTED TOWARD THE TASK MATERIALS OR AWAY FROM THE TASK OR TASK MATERIALS (NOT DIFFUSE).		
55. CHILD MAKES CLEARLY RECOGNIZABLE ARM MOVEMENTS DURING THE TEACHING EPISODE. (CLAPPING, REACHING, WAVING, POUNDING, POINTING, PUSHING AWAY).		
56. CHILD VOCALIZES WHILE LOOKING AT TASK MATERIALS.		
57. CHILD SMILES OR LAUGHS DURING THE EPISODE.		
58. CHILD GRIMACES OR FROWNS DURING THE TEACHING EPISODE.		
59. CHILD DISPLAYS POTENT DISENGAGEMENT CUES DURING THE TEACHING INTERACTION.		
60. CHILD DISPLAYS SUBTLE DISENGAGEMENT CUES DURING THE TEACHING INTERACTION.		
SUBSCALE TOTAL (NO. OF YES ANSWERS)		
VI. RESPONSIVENESS TO PARENT		
61. CHILD GAZES AT PARENT'S FACE OR TASK MATERIALS AFTER PARENT HAS SHOWN VERBAL OR NONVERBAL ALERTING BEHAVIOR.		
62. CHILD ATTEMPTS TO ENGAGE PARENT IN EYE-TO-EYE CONTACT.		
63. THE CHILD LOOKS AT THE PARENT'S FACE OR EYES WHEN PARENT ATTEMPTS TO ESTABLISH EYE-TO-EYE CONTACT.		
64. CHILD VOCALIZES OR BABBLES WITHIN 5 SECONDS AFTER PARENT'S VERBALIZATION.		
65. CHILD VOCALIZES OR BABBLES WITHIN 5 SECONDS AFTER PARENT'S GESTURES, TOUCHING OR CHANGING FACIAL EXPRESSION.		
66. CHILD SMILES AT PARENT WITHIN 5 SECONDS AFTER PARENT'S VERBALIZATION.		
67. CHILD SMILES AT PARENT WITHIN 5 SECONDS AFTER PARENT'S GESTURE, TOUCH, OR FACIAL EXPRESSION CHANGES.		
68. WHEN PARENT MOVES CLOSER THAN 8 INCHES FROM THE CHILD'S FACE—THE CHILD SHOWS SUBTLE AND/OR POTENT DISENGAGEMENT CUES.		
69. CHILD SHOWS SUBTLE AND/OR POTENT DISENGAGEMENT CUES WITHIN 5 SECONDS AFTER PARENT CHANGES FACIAL EXPRESSION OR BODY MOVEMENTS.		
70. CHILD SHOWS SUBTLE AND/OR POTENT DISENGAGEMENT CUES WITHIN 5 SECONDS AFTER PARENT'S VERBALIZATION.		
71. THE CHILD SHOWS SUBTLE AND/OR POTENT DISENGAGEMENT CUES WHEN PARENT ATTEMPTS TO INTRUDE PHYSICALLY IN THE CHILD'S USE OF THE TASK MATERIAL.		
72. CHILD PHYSICALLY RESISTS OR RESPONDS AGGRESSIVELY WHEN PARENT ATTEMPTS TO INTRUDE PHYSICALLY IN CHILD'S USE OF THE TASK MATERIAL.		
73. THE CHILD STOPS DISPLAYING DISTRESS CUES WITHIN 15 SECONDS AFTER PARENT'S SOOTHING ATTEMPTS.		
SUBSCALE TOTAL (NO. OF YES ANSWERS)		

ENTER TOTALS FOR EACH CATEGORY:	
SENSITIVITY TO CUES	
RESPONSE TO DISTRESS	
SOCIAL-EMOTIONAL GROWTH FOSTERING	
COGNITIVE GROWTH FOSTERING	
CLARITY OF CUES	
RESPONSIVENESS TO PARENT	
TOTAL (NO. OF YES ANSWERS)	

1. WERE YOU UNCOMFORTABLE DURING ANY PART OF THE TEACHING DUE TO MY PRESENCE?

   A. YES B. NO

   IF YES, WHY?

2. OBSERVER'S COMMENTS:

NURSING CHILD ASSESSMENT SATELLITE TRAINING
UNIVERSITY OF WASHINGTON
SCHOOL OF NURSING, WJ–10
SEATTLE, WASHINGTON 98195
USA
(206) 543–8528

APPENDIX E

PROHIBITION CODING SCHEME

PROHIBITION

MATERNAL- CHILD PROFILES

Subject #_____
Age_____
Taping Date_____
Coding Date_____
Coder_____

CHILD	Persist	Autonomy	Inhibit	Follow
MOTHER	Direct power assertions: Commands / Physical		Distract	Reasoning	Responsiveness

Child Classifications		Maternal Classifications	
Disengaged autonomous	❐	Redirective	❐
Autonomous-compliant	❐	Authoritative	❐
Persistent-compliant	❐	Authoritarian	❐
Persistent	❐	Inconsistent	❐

Comments and notes:

Adapted from Medvin and Spieker, 1985, by Houck and LeCuyer, 1994

APPENDIX F

INFANT'S SENSE OF SELF AND OTHER: SELF AND MOTHER RECOGNITION TASKS

AGENCY TASKS

Subject #_____
Age_____
Taping Date_____
Coding Date_____
Coder_____

Tasks Modeled

	Infant	**Mother**
I. Agency		
A. Actor		
Overall	_____	_____
1. Feeds Cheerio		
Infant	_____	_____
Mother	_____	_____
2. Comments_____		
B. Passive Agent		
1. Bottle		
Overall	_____	_____
Infant	_____	_____
Mother	_____	_____
No response	_____	_____
2. Glass		
Overall	_____	_____
Infant	_____	_____
Mother	_____	_____
No response	_____	_____
3. Spoon/Plate		
Overall	_____	_____
Infant	_____	_____
Mother	_____	_____
No response	_____	_____
4. Comments_____		

WP: spoon to mouth without touching plate
P: spoon to plate and then to mouth

Tasks Modeled

	Infant	Mother
C. Active Agent--corner		
Overall	_____	_____
1. No response	_____	_____
2. Goes to corner		
Infant	_____	_____
3. Feeds X in corner	_____	_____
Passive Feed -- Spoon to mouth (Score WP or P)		
Infant	_____	_____
Mother	_____	_____
Active Feed -- S: "I'm hungry" (smack lips) or O: "Eat X"		
Infant	_____	_____
Mother	_____	_____
4. Feeds X at table		
Passive Feed -- Spoon to Mouth (Score WP or P)		
Infant	_____	_____
Mother	_____	_____
Active Feed -- S: "I'm hungry" (or smack lips) or O: "Eat X"		
Infant	_____	_____
Mother	_____	_____

5. Comments_____
_____
_____
_____

WP: spoon to mouth without touching plate
P: spoon to plate and then to mouth

Tasks Modeled

	Infant	Mother
D. Active Agent--Table		
Overall	_____	_____
1. No response	_____	_____
2. Goes/takes X to corner	_____	_____
Infant	_____	_____
Mother	_____	_____
3. Goes/takes X to table	_____	_____
Infant	_____	_____
Mother	_____	_____
4. Feeds X in corner	_____	_____
Passive Feed -- Spoon to mouth (Score WP or P)		
Infant	_____	_____
Mother	_____	_____
Active Feed -- S: "I'm hungry" (smack lips) or Other : "Eat X"		
Infant	_____	_____
Mother	_____	_____
5. Feeds X at table		
Passive Feed -- Spoon to Mouth (Score WP or P)		
Infant	_____	_____
Mother	_____	_____
Active Feed -- S: "I'm hungry" (or smack lips) or O: "Eat X"		
Infant	_____	_____
Mother	_____	_____

6. Comments_____
_____
_____
_____

General Comments about Agency Tasks _____
_____
_____
_____

WP: spoon to mouth without touching plate
P: spoon to plate and then to mouth

Tasks Modeled

	Infant	Mother
II. Feature Tasks		
A. Rouge tasks		
Overall	_____	_____
1. No response	_____	_____
2. Stares at rouge	_____	_____
directly	_____	_____
through mirror	_____	_____
3. Touches rouge	_____	_____
after noticing it	_____	_____
without noticing it	_____	_____
4. Vocalizes about rouge (specify)	_____	_____
5. Positive affect	_____	_____
6. Negative affect	_____	_____
7. Looks in back of mirror	_____	_____

8. Touches own nose with rouge on it after rouge has been applied to mother's nose _____

9. Touches mother's nose with rouge on it after rouge has been detected on own nose _____

10. Comments _____

_____

_____

B. "Who's That?"		
Overall	_____	_____
1. No response	_____	_____
2. Says X's proper name	_____	_____
3. Says word indicating X that is not proper name (specify)	_____	_____
4. Positive affect	_____	_____
5. Negative affect	_____	_____

6. Comments _____

_____

_____

Tasks Modeled

	Infant	Mother
C. "Where's X?" **Overall**	_____	_____
1. No response	_____	_____
2. Points to mirror image	_____	_____
3. Points to real person	_____	_____
4. Says "here" or "there"	_____	_____
5. Hugs X	_____	_____
6. Says X's name	_____	_____
7. Comments _____		
D. "Where's your Y?" **Overall** (2 out of 3)	_____	_____
1. Nose	_____	_____
non-verbal/points	_____	_____
verbal/e.g., "here"	_____	_____
no response	_____	_____
2. Tummy	_____	_____
non-verbal/points	_____	_____
verbal/e.g., "here"	_____	_____
no response	_____	_____
3. Hand	_____	_____
non-verbal/points	_____	_____
verbal/e.g., "here"	_____	_____
no response	_____	_____
4. Comments _____		

Tasks Modeled

	Infant	Mother
E. "What's this?"		
Overall (2 out of 3)	_____	_____
1. Nose	_____	_____
non-verbal/points	_____	_____
verbal/ "nose"	_____	_____
other vocalization	_____	_____
no response	_____	_____
2. Tummy	_____	_____
non-verbal/points	_____	_____
verbal/ "tummy"	_____	_____
other vocalization	_____	_____
no response	_____	_____
3. Hand	_____	_____
non-verbal/points	_____	_____
verbal/ "hand"	_____	_____
other vocalization	_____	_____
no response	_____	_____

4. Comments _____

_____

_____

F. Sticker tasks		
Overall (2 out of 3)	_____	_____
1. Remove stickers from		
nose	_____	_____
tummy	_____	_____
hand	_____	_____

2. Comments _____

_____

G. Possession -- Shoe		
Overall	_____	_____
1. No response	_____	_____
2. Points to shoe	_____	_____
3. Points to owner	_____	_____
4. Says proper name	_____	_____
5. Says "Mine", "Hers"	_____	_____

6. Comments _____

_____

Tasks Modeled

	Infant	Mother
H. Possession -- Person		
Overall	_____	_____
1. No response	_____	_____
2. Points to person	_____	_____
3. Points to owner	_____	_____
4. Says proper name	_____	_____
5. Says "Mine", "Hers"	_____	_____

6. Comments _____
_____
_____

	Infant	Mother
I. Gender		
Overall		
1. No response	_____	_____
2. Points to self	_____	_____
3. Points to mother	_____	_____
4. Says proper gender	_____	_____

5. Comments _____
_____
_____

General Comments About Feature Tasks

_____
_____
_____
_____

APPENDIX G

RECRUITMENT SCRIPT

OREGON
HEALTH SCIENCES UNIVERSITY
3183 S.W. Sam Jackson Park Road, Portland, Oregon, 97201-3098
(503) 494-7827, Fax (503) 494-3691
School of Nursing, Department of Mental Health Nursing

Hello, my name is _____ and I am calling from the School of Nursing at The Oregon Health Sciences University. I am calling because we are in the process of inviting mothers with infants to participate in a research study called "Mother-child Interactions and Adaptation of Toddlers". I am calling to ask if you would be interested in hearing about the study and to see if you might be eligible to participate.

First I need to ask you some questions to see if you would be eligible to participate. We need mothers who are either African American or Caucasian? Is your infant 6-9 months of age? Is your infant without developmental disabilities or birth complications? And I need to ask your approximate annual income level---is it less than 5,000 or more than 5,000.... etc. [Use income level chart attached] And is your infant male or female?

[As subjects are enlisted, may need to say something like. "At this time we are looking for mothers who are African American who have female infants at an income level below $5.000/year."]

You are eligible to participate. The purpose of the study is to gain information about what it takes for mothers to raise a child during toddlerhood. Of interest is how mothers and children relate to each other and how mothers deal with the challenge of toddlerhood. Information from this study is needed to increase our understanding about how nurses and other professionals may be helpful to mothers faced with the challenges of raising a toddler.

Participation in the study would involve four separate visits to the OHSU School of Nursing over a two year period. Each visit will last no more than 1 1/2 hours.

We will pay you $10.00 for your participation in the intake interview and $30.00 for your participation in each laboratory obvservation. If you attend all visits, then, the total will be $100.00. Finally, we will provide you with a copy of the videotaped sessions of you and your child. We will make avery effort to provide you with bus vouchers or parking for your visits and schedule them at your convenience. Someone on the research staff will be available to provide child care for other children you may bring with you.

We hope you would like to participate in the study. If you would like to participate, or if you would like to ask more questions about it first, we will schedule an appointment. Your part in helping us understand what it is like to raise a young child is very important. We look forward to meeting with you!

Gail M. Houck, RN, PhD
Principal Investigator
Mother-Child Project
494-3896

APPENDIX H

CONSENT FORMS

9/22/93

OREGON HEALTH SCIENCES UNIVERSITY
SCHOOL OF NURSING

CONSENT FORM: PARENT

Purpose and Benefits

Dr. Gail Houck is conducting a study about mothers and their children entitled "Mother-Child Interactions and Adaptation of Toddlers." The purpose of this study is to gain information about what it takes for mothers to raise a child during toddlerhood. Of interest is how mothers and children interact with each other and how mothers deal with the challenge of toddlerhood.

Procedures

The study involves four separate visits to the OHSU School of Nursing. The visits will last no more than 1 1/2 hours.

At the child's age of 8 months, you will be brought into the OHSU School of Nursing for an intake assessment. Project staff will ask you about your occupation and similar background information, and you will complete questionnaires to assess depression, parenting control orientation, conceptualization of development, perception of infant temperament, and developmental abilities. You will be familiarized with the observational setting and procedures to be used in future visits.

At the child's age of 12, 24, and 36 months, questionnaires will be mailed to you to assess depression, control orientation, conceptualization of development, perceptions of your child's temperament, and developmental abilities before the visit. Two behavioral checklists will be included for you to report about your child's behavior. Mailing the questionnaires will allow you to complete them at leisure and ask any questions at the laboratory visit. The questionnaires can be returned at this visit; if they have not been completed, this can be done during the visit. This should not extend the visits unnecessarily.

You and your child will come to the OHSU School of Nursing for videotaped assessments. After a brief rest in the waiting room, you will enter the observational laboratory for the following: a limit-setting session, a child play period (with you in the room), a mother-child free-play period, a snack period, a mother-child teaching episode, and a child play task administered by the researcher.

Risks

The risks involved are minimal. You or your child may feel temporary discomfort during observations. You may feel that some questionnaires invade your privacy but you may choose not to answer any question, or may terminate your association with the project and not lose benefits to which you are otherwise entitled. Some infants cry in the laboratory playroom procedure. You are free to end any sessions at any time, and the laboratory situations will be curtailed if the infant cries.

Confidentiality

Neither your name or your identity will be used for publication or publicity purposes. The information you provide will remain confidential and will be seen only by the research staff. The investigator, as a professional nurse, will be obligated to report abuse.

When reports about this research are written, summary information will be provided and it will not be possible to identify any individual or family. The videotapes will be kept in a locked cabinet accessible only to research project staff an used only for research purposes.

Your participation in the study is voluntary, and you are free to withdraw at any time from the study without penalty, and may do so by contacting Gail Houck at (503) 494-3896.

Other Information

You are free to ask further questions before consenting. You will receive a copy of the consent form. You may refuse to answer any questions during the interview or on the questionnaires. We will pay you $10 for your participation at the completion of the intake interview session. We will pay you $30 for your participation in each laboratory observation. The total reimbursement, if you attend all visits, will be $100.00. You will also receive a videotape of you and your child during the observation sessions at the conclusion of the study.

Oregon Health Sciences University, as an agency of the State, is covered by the State Liability Fund. If you suffer any injury from the research project, compensation would be available to you only if you establish that the injury occurred through the fault of the University, its officers or employees. If you have further questions, please call Dr. Michael Baird at (503) 494-8014.

PARENTS STATEMENT

The study described herein has been explained to me, and I voluntarily consent to participate in the interview session. I understand that I may refuse to participate or withdraw from this study at any time without affecting my relationship with or treatment at the Oregon Health Sciences University and the Family Practice Clinic. I have had an opportunity to ask questions. I understand that future questions I may have about the research or subjects' rights will be answered by Dr. Houck. I have read the foregoing and agree to participate in this study. I have received a copy of this consent form.

_____ Date

_____ Signature of Mother

I voluntarily consent to have my child participate in the study. We have had the opportunity to ask questions.

_____ Date

_____ Signature of Mother

_____ Date

_____ Signature of Investigator

Gail M. Houck, RN, PhD
Investigator
Mother-Child Study
Oregon Health Sciences University
ORDU
Portland, OR 97201-3098
(503)494-3896

Information about new questionnaire:

You have been asked to fill out another one-page questionnaire, which is part of another study similar to the one you are currently participating in. This new study is also about how mothers deal with the challenge of toddlerhood, and also looks at things which may help moms as they raise toddlers. The questionnaire will ask you how much each item is like or unlike your mother and your father, as you remember them during the first sixteen years of your life. Findings from this study will assist nurses and other professionals to be more aware of what challenges moms face while raising toddlers, and to help them with these tasks. If you decide not to participate, it will not in any way affect your participation in the Mother-Toddler Study or your relationship with Oregon Health Sciences University.