MOTHER AND INFANT PATTERNS OF INTERACTION:

DEVELOPMENTAL RELATIONSHIPS

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Abstract

This investigation explored the relationship between a mother's pattern of interaction with her infant and her infant's intellectual development and security of attachment. The sample consisted of 73 mother-infant dyads varying in quality of parenting. Seventeen of the infants were known to have been abused, twenty-one were severely neglected, twenty-two were marginally maltreated, and thirteen had not been maltreated at all. Each dyad was seen for a three-minute videotaped interaction and a Bayley developmental assessment. Forty-six of the children were seen in the strange situation for the assessment of infant attachment to the mother.

Maternal pattern of interaction was found to be related to quality of parenting (the infant's status as a maltreated child) and to the infant's pattern of interaction. The infant's pattern was found to change when the quality of the adult interactant's pattern changed. Quality of parenting was related to the infant's mental developmental quotient on the Bayley Scales of Infant Development. Both maternal pattern of interaction and quality of parenting were related to the infant's pattern of attachment. Those children who were most severely maltreated were found to show an unusual combination of responses in the strange situation which was proposed as a possible new pattern of attachment. In general the most negative effects were found in severely neglected children. Abused children had the next most

detrimental outcomes with marginally maltreated children performing better and non-maltreated children the best.

To Alice

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INTRODUCTION

Rationale

As the techniques of micro-analysis of mother-infant interaction have become widely used, attention has begun to shift from a focus on discovering and describing the process of interaction to an interest in the relationship of interaction to other aspects of the infant's development. This has resulted, in part, from an interest in observed individual differences in styles of interaction. Thus, one issue has become the effect of qualitative differences in interactional experience on infant development. This investigation tested the adequacy of one method of assessing qualitative differences in interaction and related these differences to differences in infant intellectual and socio-emotional development.

The major variables under consideration were quality of parenting, maternal pattern of interaction, infant pattern of interaction, infant intellectual development, infant pattern of attachment, and infant stability of interaction pattern across different interactants. The subjects were lower class mother-infant dyads known to differ in the quality of their parenting; some were receiving protective service for abuse and/or neglect of their infants, whereas others were known to be adequate. On the basis of these variables, the relationships of maternal pattern of interaction with both quality of parenting and several aspects of infant development were examined.

Review of the Literature

This investigation touches on several different bodies of literature. They are discussed in the following order: (1) studies of interaction, first in normal dyads and then in dyads in which the infants are abused or neglected; (2) the relationship between interaction and both infant intellectual development and infant pattern of attachment; (3) the issue of the impact of each partner's style of interaction on the other; and finally, (4) the methodological issues of stability and continuity of style of interaction and of the choice of variables and level of analysis.

Interaction in normal dyads. Studies of mother-infant interaction have usually focused on infants at a single age (most often below six months) and on a sequence analysis of a specified group of developmentally relevant behaviors. However, the reported significance of these studies has not been in terms of specific behaviors or behavior sequences. Instead investigators have consistently reported the importance of process variables. These variables appear to underlie interactions at all ages although their specific behavioral display varies with the age of the infant. Among the frequently reported process variables are rhythmic cycles, turn-taking, timing, intensity regulation, and, for adults, infant-elicited behaviors. Because most investigators have emphasized some combination of these variables, they, rather than discrete behaviors, will be considered in the discussion which follows.

The alternating sequence of infant attention and withdrawal was one of the first process variables to receive attention. Infants were observed to become alert and increasingly active and, then, to withdraw and decrease activity in brief alternating cycles. This was true both when they were interacting with their mothers (Brazelton et al., 1974; Stern, 1974b) and when they were responding to tape recorded human voices (Condon & Sander, 1974). This finding was replicated by Fogel (1977) and expanded to include neonatal sucking patterns by Kaye (1977). Kaye concluded that brief, rhythmic burst-pause patterns, or on-off cycling, of infant activity and attention were basic to the infant's neurological structure. Fogel supported this and enlarged the idea to include adults. However, he stated that, while both mother and infant respond to internal rhythms, the infant was the more rigid and predictable and the mother more flexible. Thus the mother initially modified her own behavior to create a dialogue out of her infant's burst-pause pattern. Later the pattern became increasingly reciprocal (Bruner & Sherwood, 1976; Stern, 1974b). Bullowa (1979) concluded from these and similar findings that to be in communication a dyad had to be sharing rhythm.

A number of investigators have noted that the rhythmic patterning of interaction occurs on many levels (Brazelton et al., 1974; Condon & Sander, 1974; Kaye, 1977; Stern, 1974a, 1977). Fogel (1977) referred to this phenomenon as "framing" because most mothers watched their infants almost

continuously and were therefore attentive both before and after their infant's bouts of interaction. Maternal availability and attention "framed" infant activity. At a broader level mothers framed infant exploratory behavior. Attached one year olds were observed to use their mothers as a secure base from which to explore; the mother's function was more to be attentive and available for interaction than to be involved in the infant's activity (Ainsworth, Bell, & Stayton, 1972). Similarly, Carr, Dabbs, & Carr (1975) found that two year old children played with toys more when their mothers faced the toys (and them) than when they did not. When the mother's back was to the toys, the children were more likely to leave the toys and move into her field of vision. It appeared that it was more important for the mother to be attentive and available for contact than that she be involved in the interaction.

The process of turn-taking has been investigated in some detail. Kaye (1977) noticed that mothers only jiggled their nursing infants during the pauses in infant sucking and that the jiggles served both to delay the onset of the sucking bout until the end of the jiggling and to increase the probability that the bout would begin promptly upon the cessation of the jiggling. Fogel (1977) found a similar trend during face-to-face interaction. Mothers tended to use facial and vocal activity during their infant's pauses in an effort to encourage further activity. However, the infants tended to remain quiet and withdrawn until their mothers

became still. Then they turned back and participated in the interaction once more.

This alternating method of turn-taking was described by Stern (Note 1) in 3½ month old infants. He also identified a second pattern, that of simultaneous vocalization. He suggested it served an emotion releasing purpose. Schaffer, Collis, and Parsons (1977) studied vocal overlaps in 1 and 2 year old infants and found that many overlaps resulted from warnings, distress signals, joint laughter, and chorusing. Only a portion of the overlaps resulted from true turn-taking failures and these instances were extremely brief. It could be concluded that overlaps in the form of interruptions are infrequent and very brief while overlaps expressing joint excitement of pleasure function smoothly within the interaction.

The importance of early turn-taking sequences has been viewed primarily in terms of the development of mutual expectations and the rule-governed nature of interaction. It is only in the context of mutually regulated turn-taking (that is attention to your partner's behavior followed by his attention to yours) that pre-verbal assignment of meaning (shared understandings), ritual games such as peek-a-boo, and, later, impromptu, dyad-originated games can occur (Bateson, 1979; Bruner, 1975; Bruner and Sherwood, 1976; Newson, 1979). The two major outcomes of the development of turn-taking appear to be skill in creating a dialogue (or proto-conversation) and the opportunity to learn to antici-

pate change in a partner's behavior (Kaye, 1979).

Many investigators have noted that mothers interact with infants differently than they interact with adults. In early infancy the "infant-elicited" (i.e., infant-relevant vs. adult-relevant) maternal behaviors included slowing down maternal speech, exaggerating the normal rhythmic quality of speech, exaggerating facial expressions, imitating the infant's behavior, and repeatedly offering similar but, slightly varied, combinations of the same behaviors (Brazelton et al., 1974; Stern, 1974a, 1974b). While the use of these "super"-natural stimuli appears to peak at about 4 months of age, it is clear that traces of them remain well into the actual development of linguistic communication. Mothers of children learning their first words speak slowly, use brief communications, are highly repetitive in their word choice, and repeat infant utterances both exactly and with slight variation (Clark & Clark, 1977; Dale, 1976). Thus, while there is change in the mother's actual behavior as her infant develops, there is continuity in her ability to simplify, repeat, and vary her behavior such that her infant can process it.

The emphasis in most studies has not been on the specific choice of behaviors, but instead on the timing and intensity of the behavior. Newson (1977) interpreted the mother's behavior as an attempt to make interaction meaningful in terms of the process of synchronous alternation rather than in terms of specific content. The importance of sensitive

maternal timing was discussed by almost all investigators. Brazelton concluded that, when mothers adjusted their rhythm to their infants, they facilitated the interaction, but, when they intensified their behavior during the infant's pauses or when they attempted to establish their own rhythm, they reduced the amount of satisfying interaction. The point is that, at any age, the mother's behavior encouraged interaction when it was sensitively responsive to the infant's condition; the particular behaviors used to express that sensitivity were less important than their timing, intensity, and complexity (relative to the infant's ability to process them).

Underlying each of the interactive processes discussed above is the concept that interaction is not static, neither during a given interaction sequence, nor across the developmental span of infancy (Bateson, 1979; Chappell & Sander, 1979). On the contrary, each of these processes points to the conclusion that interaction is successful to the extent that it accommodates change and is best interpreted, not in terms of specific behaviors, but in terms of adaptive processes.

Qualitative differences in interactions. Each of the various aspects of mother-infant interaction which have been discussed (rhythmic cycles, framing, turn-taking, rule learning, exaggerated maternal behaviors, and timing) combine in the process of an on-going interaction. The degree of success of the dyad in producing meshing complementary behavior

patterns produces qualitative differences in interactions. To the extent that the process, or any part of it, deviates from the expectable range of normal mother-infant behavior, the interaction will be less satisfying to both partners. Brazelton et al. (1974) put the emphasis on maternal timing and intensity of behavior. Stern (1974a) felt that mothers with a limited range of affective interactional behavior understimulated their infants and could not maintain optimal arousal of the infant. At the other extreme mothers who used very intense or complicated behavior styles overwhelmed their infants causing them to withdraw from the interaction.

In a case study, Stern (1971) described the interaction of one mother with each of her twin boys. The interaction styles were very different. The less satisfying of the two interactions involved an infant who did not maintain either contact or withdrawal easily. With this son the mother intensified her activity during the phase of her son's gaze aversion. The infant's short burst-pause pattern and inability to cease attending during gaze aversion and the mother's attempts at control seemed to make this interaction unsuccessful. Tatum and Murray (1977) reported that 8-week-old infants failed to communicate with their mothers when their mothers offered no response or a paradoxical response (e.g., when the mother responded to a third person who was not visible to the infant). The infants became distressed, looked away, cried, or became dejetected. This emphasized the importance of contingent maternal responding. Stern

(1974b) reported that when mothers gazed impassively at their infants, the infants became disturbed and when the mothers were asked to use the exaggerated facial and vocal behaviors without their infants' attention, the mothers were unable to do so. Both an appropriate context and contingent responses to behavior appear to be necessary for smooth interactional functioning. Blehar, Lieberman, and Ainsworth (1977) concluded similarly: high quality interactions involved mothers who were contingently responsive and infants who were responsive. Poorer interactions involved less sensitively responsive mothers and infants who were both less responsive and more negative in the interaction.

The issue of normally expectable patterns of behavior is highlighted in studies of atypical dyads. While many of the studies cited above have emphasized the impact of the mother's behavior on the infant, studies of atypical infants interacting with normal mothers demonstrate the effect of highly deviant, ethologically "unexpected", infant behavior upon the mother. Moreover, where intervention has been reported, they emphasize further the importance of process variables over behavioral ones. Jones (1977) compared the interactions of normal dyads with those of dyads in which the infant had Down's Syndrome. He found few differences in the frequencies of infant behaviors. The Down's Syndrome infants used eye contact less often as a referential cue and vocalization less often in a dialogue with the mother than the normal infants. There was significantly less relation-

ship in the Down's Syndrome infants' behavior to either the preceding or subsequent behavior. Consequently, the burden of keeping the interaction flowing was placed on the mother. The mothers of Down's infants seemed to direct the interaction whereas mothers of normal infants tended to respond more to infant cues.

Kubicek (Note 2) compared one mother's interactions with each of her twins. One twin was a normal male infant; the other was a male who was later diagnosed as autistic. Two differences in infant behavior were identified: 1) the autistic infant primarily showed those behaviors which would limit social contact and 2) he did not vary the intensity of those behaviors. Thus, while the mother and normal twin had an interaction pattern based on mutual exchange in game formats, the mother and autistic twin had a pattern of maternal approach followed by infant avoidance. This infant's use of cues and negative responses seemed to prevent the mother from responding to subtle cues and, thereby, to cause her to stimulate him further until he offered clear and overt cues of avoidance. However, Kubicek pointed out that this pattern of interaction was not random; in fact it was well organized and predictable, as was the interaction with the normal infant. Moreover, the autistic infant used as wide a range of modalities, e.g., visual, auditory, tactile, as his brother although he used fewer behaviors within each modality.

Fraiberg (1974) reported that blind infants gave increasingly deviant interactional cues with increasing age and

that they did not respond appropriately to maternal cues (especially cues that could only be picked up through vision). She found that the mothers became very frustrated by their infants and felt closed out of the interaction by them. However, by teaching the mothers to notice and interpret their infant's body cues and to ignore the lack of eye-to-eye contact and atypical facial expression, Fraiberg was able to help them to establish cooperative interactions. The key to successful interaction lay in the mother's adaptability rather than in the use of the visual modality. Expressive behaviors appeared interchangeable while reciprocity seemed essential.

These studies of atypical infants suggest that highly deviant styles of interaction may affect the partner's ability to interact normally. Moreover, they reinforce the organizational nature of qualitative differences. It is not specifically what the partners do, nor the frequency of those actions, which is important, rather it is the relationship of each partner's behavior to the other's which determines the overall quality of the interaction.

Interactions with maltreating parents. At the opposite end of the spectrum are those dyads in which the parent's behavior is highly deviant. As with infants this group would include handicapped mothers; however, no studies on such samples have been reported. More to the point of this investigation are studies of abusing and neglecting mothers and their infants. Unfortunately, there are no published

studies of micro-analysis of the interaction of maltreated infants and their mothers. There is, however, a large body of medical and social research on maltreating parents' personality. In addition, there are a few psychological studies of interaction between maltreating parents and their children. The great majority of the literature, however, investigates abuse alone. Only the studies by Polansky (e.g., 1972; 1976) clearly refer to neglecting mothers.

The idea that parents who abuse their children (for whatever reason) interact differently with their infants than other parents has existed for some time. The concept has a basis in the clinical descriptions of the child abuser's personality and the descriptions of the characteristics of the abused child. If the abusing mother/abused infant dyad interacts in a deviant manner, it may not only be possible to identify at risk dyads more readily, but it may also be possible to explain the non-physical effects of abuse more completely. This is relevant when one realizes that an actual episode of abuse is a brief occurrence in an infant's life. The great bulk of the infant's time is spent in apparently "normal" daily activities in the care of his mother. However, if the interaction with his mother is also deviant, then it becomes clear that even without the outburst of physical violence, there will be undesirable effects on development. This is the main thrust of a report by the Child Abuse Project of the Education Commission of the States

(1976) stating that the complex parent-child interaction system affects the abused child's physical, social, emotional, and cognitive growth.

This interactional approach can be applied to dyads whose infants are at risk for neglect also. Polansky's description of neglecting mothers as apathetic, futile, and depressed suggests logical counterparts in the interaction of mother and infant (Polansky, Borgman, & De Saix, 1972). Abusers have been described as a) having severely frustrated dependency needs (Melnick & Hurley, 1969), b) disregard of their infant's needs (Gregg, 1968; Helfer & Pollock, 1967), c) aggressive impulses (Kempe, et al., 1962; Steele & Pollock, 1968; Wasserman, 1967), d) inappropriate expectations of their children (Greene, 1976; Steele & Pollock, 1968) and e) the belief that irritating infant behavior is intentionally hostile or neglecting (Galston, 1965). In addition a number of investigators have described the mother's relationship to the infant to be one of reversed roles with the dependent mother making demands for nurturance from her infant (DeLozier, Note 3; Galston, 1965; Greene, Gaines, & Sangrund, 1974; Morris & Gould, 1963; Thompson et al., 1970). Others have described abusive parents as immature, self-centered, punitive, overcontrolling, and impulse-ridden (Cochrane, 1965; Delaney, 1966; Serrano et al., 1979; Ten Bensel & Raile, 1963). Three studies which have attempted to consider a number of personality traits at once have defined three separate "abusive" personality types: 1) individuals

characterized by pervasive hostility and aggressiveness, 2) rigid, compulsive individuals who lack warmth, reasonableness, and pliability of thinking; and 3) individuals with strong feelings of passivity and dependence (Desordo, 1963; Merrill, 1962; Zalba, 1967). However, in spite of the seeming consistency of these findings, most reviewers agree that the research is methodologically poor and often tautological in its conclusions (Belsky, 1978; Parke and Collmer, 1975; Spinetta and Rigler, 1972). Nevertheless, these studies suggest counterparts in maternal interactional behavior.

Patterns of attachment. Ainsworth has identified three major types of attachment relationships formed by infants to their mothers (Ainsworth, Blehar, Waters and Wall, 1978). These patterns are based on observations of infant behavior in a structured laboratory situation, the Strange Situation. During the Strange Situation the mother leaves the child in a playroom first with a stranger and then, after her return, alone. A total of 8 episodes (to be described below in the Methods section) over a period of 20 minutes are involved. The patterns of attachment derived from the Strange Situation are secure, anxious/avoidant, and anxious/ambivalent.

Secure attachments are the most common and are considered the normative type of attachment. In the Strange Situation securely attached infants (also referred to as Group B infants) show some distress as a result of their mother's departure and clear relief as a result of her return.

In the reunion episodes they show both proximity and contact seeking. Their mothers function as a secure base from which they can explore their environment when they are not stressed and to which they can retreat for comfort when stressed. They show neither anger nor avoidance of their mothers.

Anxious/avoidant babies (Group A) display less overt concern about their mother's presence in the Strange Situation. Particularly in the reunion episodes, they show clear avoidance of proximity or contact with their mothers. Main's investigations of this group of infants have led to the interpretation of these children as persistently angry with their mothers (Main, 1979). Their use of the avoidant response is best understood as a "cut-off" behavior used to quell the child's rising aggressive tendencies when these are in conflict with strongly activated attachment behavior.

Anxious/ambivalent (Group C) babies are also angry with their mothers, however, they respond in one of two ways. C_1 babies express their anxiety by increasing their demands upon the attachment figure and, at the same time, resisting many of her overtures. C_2 babies, on the other hand, combine resistance and passivity; they clearly want their mother and yet they make no active effort to seek her.

Not all infants can be placed easily into the three categories described above. As Ainsworth has pointed out, it is unlikely that a sample of 56 normal, white, middle class infants would exhaust the possible patterns (Ainsworth,

personal communication). Both Main and Weston (1981) and Egland and Sroufe (1981) have found it necessary either to "force" a classification or to create an unclassified group for some cases. It seems highly probable that a sample of maltreated infants would contain cases that could not be classified in the three main patterns. The discussion of the specific classification problems will be deferred, however, until the results section of this dissertation.

Attachment and interaction. The relationship of these patterns of attachment to the daily process of interaction in the home is important if one is to intervene to improve both the interaction and the quality of attachment. The longitudinal work of Ainsworth (Ainsworth, et al., 1978) indicated that children who later developed secure attachments had had mothers who were sensitively responsive to infant cues during the first year of the infant's life. Five contexts of interaction were particularly relevant to later attachment. These were crying, close bodily contact, face-to-face interaction, feeding, and behavior with the mother as compared to a stranger. Mothers of secure babies tended to respond promptly to crying and to ignore very few episodes of crying. They handled their infants tenderly and carefully and expressed affection when in close bodily contact. They used contingent pacing in face-to-face interaction. They used infant signals to regulate the feeding situation. Their babies showed a differential response to the visitor/observer. As their children grew older, their

were fewer problems with discipline and obedience.

Although babies who would later display different patterns of attachment did not appear to differ initially in terms of behavior or temperament, the mothers of babies who later showed anxious attachment did differ. Mothers of anxious babies responded less promptly to crying than mothers of secure babies, they displayed less tender careful holding and mothers of A babies in particular had a strong aversion to physical contact (Ainsworth, et al., 1978). They tended to carry out feedings without reference to infant cues, and to respond less contingently in face-to-face interaction. Mothers of A babies as a group were less emotionally expressive, more rigid and compulsive, and more angry and rejecting than mothers of C babies.

By the end of the first year, anxious babies differed from secure babies in several ways. A-type babies followed their mothers more at home, avoided them after brief separations in the "strange situation" and were not easily comforted when picked up, and showed frequent angry behavior at home.

Mothers of C babies were not rejecting or avoidant; they were haphazard in their response to their infants. Sometimes they responded promptly, at other times they delayed for long periods. Their behavior was often insensitive and unpredictable. Their children obeyed fewer commands than secure babies, followed the least both at home and in the "strange situation," and were the least contented with their mother's

interventions. They seemed never to get enough time or satisfaction out of interaction with their mothers. The result was anxiety about obtaining sufficient attention and frustration about its inappropriateness when it came.

Defenses and strategies. The descriptions of mother-infant interaction presented above make it very clear that there are a number of very different interpersonal environments with which individual infants must cope. When these environments are considered sub-optimal and the infant's response deviant in some way, the infant's behavior may sometimes reflect defensive processes in response to unpleasant conditions. Both Bowlby (1981) and Main (1979) discuss such defensive behavior. However, not all responses to adverse conditions are "defensive" in the sense of depending upon repression or cognitive disconnection. Here I would like to propose that all the patterns of behavior described above be considered strategies for coping with the world that are based upon one's cumulative experience with that world. Those strategies labeled "defensive" would be only those which interfere with one's ability to process and respond appropriately to incoming information. In these cases, some classes of information, particularly those which usually result in the activation of the attachment system, are excluded from further processing before reaching the level of conscious recognition.

Using this approach, one would see the securely attached infant's behavior as a strategy serving both the attachment

and exploratory systems of behavior. Based on his past experiences, this child learns to communicate his feelings and desires clearly (and without extreme intensity), to cooperate with his mother, to explore his environment in her presence, and to seek her when he is stressed. This pattern of responding, or strategy for coping with the environment, is based on his cumulative previous experience that his mother will be sensitively responsive to him and that an alliance with her will allow him to balance attachment and exploratory behavior.

The anxious/avoidant baby has a quite different environment to manage. His mother is often unresponsive and angry (her anger, however, is often repressed rather than openly displayed). Low intensity communications are not readily responded to, but neither are high intensity ones. Instead, overly insistent demands often result in greater maternal anger. The normative response pattern of the secure baby will not function well in this situation. In fact requests for proximity and contact are likely to further annoy or anger mothers of anxious/avoidant infants. A different response strategy is needed, one which, ideally, will still permit the infant to obtain the advantages of proximity to an attachment figure and of exploring the environment. To the extent that the child finds such a strategy, his behavior is adaptive. As Main (1979) has pointed out, an avoidant response may be adaptive in many such cases because it allows the child to explore, to remain near his mother, and to

avoid potentially angry encounters.

Anxious/ambivalent infants use a different strategy in response to a different set of conditions. Their mothers' responsiveness is not easily predictable. However, their mothers are not generally angry or uncomfortable with close bodily contact. Their strategy seems to be to increase the intensity of their demands, to express directly their angry feelings, and to seek proximity to and contact with their mothers. In fact, because their mothers are so unresponsive and unpredictable but not generally angry, these infants devote considerable effort to maintaining the proximity or contact and less to exploration. After all their mothers' responsiveness cannot be depended upon as a component of her physical presence. It takes active effort on the baby's part to maintain the mother's responsiveness.

The relationship of maternal style of interaction to infant style of interaction. The issue here is basically one of direction of effects. Is it the mother or the infant who exerts the greater control over the other's behavior? Numerous studies could be marshalled to support either position. However, a judicious consideration of such studies strongly suggests that neither infant, nor parent, has complete control or is totally without effect. A model in which each individual behaves in a manner which tends to match the species' expectable behavior for the partner seems more useful. In this model unexpected behavior is countered by behavior from the partner intended to adjust the unex-

pected behavior back into the normal range (Ainsworth, 1979; Bell & Harper, 1977). The result, for most dyads, is to maintain a dynamic balance between the partners; each is constantly adjusting to the other and at the same time influencing the other. For most mother-infant pairs this means that the interaction will be smooth and reciprocal; adaptation will occur well within the range of expectable behaviors and a single or predominant direction of effects is not a meaningful concept.

This is less true when one of the partners is clearly not behaving in the expectable manner. Handicapped infants provide one natural test of the influence of deviant infant behavior upon maternal behavior. In this case it seems clear that mothers both work hard to accommodate the infant's behavior (Jones, 1977) and that they can be strongly, negatively, and persistently affected by the absence of the expected behavior on the part of the infant (Fraiberg, 1979; Kubicek, Note 2). In these cases infant behavior is so far out of the normal expectable range that either buffering is not possible or normal patterns of interaction are possible only if the mother changes her manner of interaction.

The case of abusing and neglecting mothers is far more complex. While the maternal behavior is certainly highly deviant, the cause of that deviance has not been determined. A number of investigators attribute at least a portion of the problem to initial infant deviance. These investigators note that not all siblings are abused (Lynch, 1976), that premature

infants whose behavioral repertoire is atypical are often abused (Hunter, Kilstrom, Kraybill, & Loda, 1978) and that handicapped infants are more often abused than normal infants. My own pilot investigation of infants' patterns of interaction with abusing and neglecting mothers could be construed as supporting a position of infant deviance influencing mothers; however, the fact that infant patterns improved when mothers improved as a result of intervention suggests the opposite direction of effects (Crittenden, Note 4). Likewise consistent infant avoidance of one parent may seem to be a response to infant characteristics, however, when that infant is seen to approach the other parent, it becomes less likely that the infant is expressing a basic temperamental quality of his own (Main, 1979; Main & Weston, 1981).

However, there is as yet only scattered and conflicting retrospective evidence for the majority of abused or neglected infants that at the infant's birth either the mother or the infant exhibited atypical behavior. Moreover, a prospective approach would be very difficult given the low incidence of abuse and neglect and our current inability to predict it at birth. Another approach is to look at the behavioral adaptability of one or both parents. If either can be shown to exhibit normal behavior when interacting with a normal partner, there is some reason to conclude that that individual was not primarily responsible for the partner's deviant behavior. However, once the matching atypical

patterns have evolved, both partners may influence the maintenance of such patterns. Thus the abusive mother by her highly insensitive interaction may influence her baby in such a way that in interaction with her he seems very difficult. His very difficultness could then further reinforce his mother's insensitive behavior. This could occur in spite of the infant's potential for appropriate interaction with another, more sensitive, partner.

It is this situation which will be considered in this study. Following Kaye's (1979) suggestion, infants will be temporarily observed with a second adult and a second videotape of the infant's pattern of interaction obtained. If abused and neglected infants do not show increased cooperativeness when given sensitive patterns, it will be assumed that either maternal behavior has strong and lasting impact very early in the infant's life or that the infant is constitutionally atypical. Neither of these is expected to be the case.

Stability and continuity. The assessment of mother-infant interaction being proposed for this investigation will be used to predict individual differences over a wide age range (1-24 months). Therefore, it is essential to know if there is stability of individual differences within a given time period and if there is continuity of the dimensions used to differentiate among the individuals across the whole time period (Emmerich, 1968; Lerner, 1976).

Two arguments may be offered in support of stability of individual differences. One is based on actual measures of the stability of various behaviors. The other is based on an inference from relationships between the behaviors in question and other measures. Qualitative ratings of differences in maternal interactive behavior (e.g., contingent pacing, liveliness of stimulation, routine manner, etc.) have been found to be stable across the period from 6 to 15 weeks, whereas infant behaviors (e.g., smiling, fussing, and vocalizing) were not (Blehar et al., 1977). Dunn and Richards (1977) found that neither maternal nor infant behavior was stable within the first 10 days post-partum, but Dunn (1977) using the same sample, did find stability of maternal behavioral style within the 1 to 14 month period. The relative difference in the duration of the face-to-face position of two infants at 3, 6, 9, and 14 months remained stable even though the absolute duration varied widely (Stern, 1971). Kaye (Note 5), in a 5 year longitudinal study of 100 dyads, had hypothesized that "microanalysis would yield measures of individual mothers' and infants' interaction with one another... These measures should do a better job of longitudinal prediction than more global observational measures... We shall report that the study produced no evidence in support of that argument. In fact, the absence of such evidence is so striking (in view of the number of different kinds of variables we analyzed) as to amount almost to supporting the contrary view." (p. 1-2). However, in this

study Kaye did find that when the expectable developmental changes in infant behavior did not occur, mothers described their infant as "dumb" even when they could not verbalize their basis for such a judgement. Within brief (one week) time periods, stability of the frequency of maternal behavior has been found, but even in that short a period, infant behavior varied greatly (Crittenden and Snell, Note 6). Stability of both maternal and infant patterns of interaction was found across a three-week period (Crittenden, Note 4), but, significantly, both maternal and infant patterns showed flexibility following intervention.

These studies suggest two conclusions. First, infant behavior is highly unstable across the first two years of life and maternal behavior shows only limited stability. Considering the rapid and extensive development of the infant during this period, this is only what one would expect. Second, global judgements of dimensions of behavior or behavioral style show more stability. Kaye (1979) suggested resolving this problem by replacing response categories with functional categories. In a similar vein, Bateson (1979) argues that the needed measure of interactional quality is not one based on the extremely evanescent behaviors of the dyad at any one developmental point, but rather a measure reflecting the ability of the dyad to accommodate to change.

The second argument in support of stability was that individual differences in interaction must be stable because they consistently correlate with other stable measures (i.e.,

D.Q., attachment pattern). The important point here is to consider the types of interaction measures used. Within a single age range response categories may be predictive, but in the studies reported above most predictive relationships were based on ratings of qualitative dimensions of behavior or on patterns of functional behavior. Thus, it seems likely that there is stability of individual differences but that the behaviors in question are not discrete response categories but rather functional categories. These categories will be considered in terms of continuities.

In order to study mother-infant dyads over a broad age range as is being proposed here, it is essential to develop measures which are appropriate across the extensive developmental changes represented. The preceding discussion points to functional categories as variables which may both distinguish individual differences among dyads and provide continuity of measurement. The literature reviewed above suggests a number of such categories. For mothers, they would include her response to the infant's rhythms, her facial, vocal, and affectionate expression, her handling of close body contact, her ability or willingness to create a turn-taking dialogue, and her responsiveness and sensitivity to infant cues. Each of these can be defined in functional terms (rather than as discrete behavioral frequencies) and each is basically a process variable which measures how the interaction is proceeding and how it responds to change. It is predicted that this type of maternal variable will

best differentiate dyads across a broad age range.

To measure infant behavior variables clearly need to be stated so that infants of any age can be assessed on them. This means that they cannot hinge on the use of a specific discrete behavior. Instead two types of variables seem to be important to a mother's perception of her infant's behavior. One is the clarity and frequency of his signals. The other is the reinforcement value of his signals. These properties have been incorporated in the coding system; however, they have not been tested except on my own two samples (Crittenden, 1981).

Methodological issues. The proposed investigation will be based primarily on two dependent assessment procedures which I have developed. However, it is important to consider the various alternatives and the choices which were ultimately made. Four issues seem most relevant. The first is the choice of behavior categories. Because this has been considered in detail in the previous section, that discussion will not be repeated here. The second is the choice of tool (i.e., time-sampling, micro-analysis, rating system, checklist). The third is the choice of a length of observation period. And the fourth, and final, issue is the means of reducing the data to the dependent variables which will actually be analyzed.

Three types of observational tools have generally been used: sequential micro-analysis of videotaped interaction, rating systems, and in-home event- or time-sampling proce-

dures. Micro-analysis is extremely time consuming and, therefore, has the effect of reducing the number of dyads who can be observed. In addition, most micro-analytic studies have used discrete response categories. While these are appropriate within a single age range, they do not show stability across ages. It may be possible to specify behaviors functionally so that sequence analysis would be useful across age ranges, however, as Kaye (1979) points out the general functions may be lost in the process of breaking the behavior down.

Another possibility is in-home continuous direct observation (i.e., event-sampling) or time-sampling. Event-sampling has been used by both Ainsworth and her colleagues and time-sampling by Burgess and Conger (1978). These methods have several advantages. The sample size can be relatively large, the observation period quite long, and often more than one visit can be made. However, the fine details of interaction are easily lost and, moreover, in time-sampling studies, they cannot be recalled (as in the case of videotape) should the investigator wish to obtain new measures. Additionally, it can be quite difficult to check observer agreement when the observations are made in the subject's homes. If functional categories were to be used and qualitative distinctions were made, problems of agreement would be tied into the raw data.

Rating systems have been used by Ainsworth and have provided some of the most useful measures. Such systems

allow the investigator to identify the underlying dimensions of the interaction rather than focusing on discrete behaviors. For the purpose of this investigation, there are two primary objections to the use of rating systems. The first is that observers can too easily be swayed by a single outstanding behavior which then influences their judgment. Second, not all of the dimensions which would differentiate abusive, neglecting, and sensitive mothers are linear in nature. Frequently, abuse and neglect both appear at the low end of the spectrum, however, they are represented behaviorally in very different ways. For example, both abusing and neglecting mothers are unresponsive to infant signals but neglecting mothers are unresponsive due to lack of involvement in the interaction while abusive mothers are interfering.

The choice of a detailed checklist was made for this investigation as a result of an attempt to combine as many of the desirable features of the other methods as possible. Functional categories could easily be created and examples of age appropriate behavioral indicators could be given. When applied to videotapes observer agreement could be tested at any time. In addition, some of the detail of the micro-analytic studies could be obtained. This was essential to a full understanding of the process of interaction. Moreover, it permitted the rather fine and difficult-to-observe discriminations characteristic of abusive mothers to be made. By forcing observers to make judgments regarding many differ-

ent behaviors, the coding device reduced the impact that any one behavior would have on the observer's judgment. Finally, this system of gathering data permits the observation of more dyads than can usually be accommodated using micro-analytic techniques.

Tied to the choice of observation tool is the choice of length of observation. Micro-analytic studies have frequently used a minute or less of interaction, whereas time-sampling studies generally use many hours of observation. The detail of the observational methods, the consistency of the observation setting from one subject to the next, and the opportunity for the observer to view the situation a number of times all are factors influencing the length of observation. In this investigation, the advantages of videotape overweighed the advantages of a longer observation period. Consequently, a period of three minutes of at home videotape was chosen. This made it necessary to standardize the situation and to make the coding device sensitive to a brief sample of behavior. These adjustments will be discussed in detail in the method section.

Lastly, there is the choice of the level of analysis. A large number of individual behavioral items will be coded and a categorical classification will be made on the basis of these items. The question is whether the results should be analyzed in terms of the items or in terms of the categorical classification. Several points are relevant. First, no single behavioral item is essential to a categorical

classification. Together, a preponderance of related items defines a category, but no one is essential to it. Therefore, the category, is a better unit for analysis than the items associated with it. Second, the categories were developed because it was observed that a number of functionally similar behaviors tended to covary and as a pattern were predictive although no one was singly. While this distinction between individual behaviors and patterns of behavior has only been shown for patterns of interaction in my own preliminary study, it has been well documented for the patterns of infant attachment (Ainsworth, 1979; Coates, Anderson, & Hartup, 1972; Maccoby & Feldman, 1972; Main, Note 7; Waters, 1978). Third, it is difficult to know what meaning to attribute to a dyad's being scored on any given set of behaviors. On the other hand, it makes both intuitive and statistical sense to say that an individual's pattern of behavior resembles that of abusing, neglecting, problematic or adequate mothers. For these reasons, the categorical pattern assigned to each individual's interaction will be the dependent variable used in this investigation.

HYPOTHESES

Replication Hypotheses

Hypothesis 1. It was expected that the mother's pattern of interaction (abusive, neglecting, inept, and sensitive) would be related to her quality of parenting (abusing, depressed neglecting, disorganized neglecting, and adequate) as determined from welfare department ratings. This relationship specifically predicted that abusing mothers would have an abusive pattern of interaction, that neglecting mothers would have a neglecting pattern of interaction, that disorganized neglecting mothers would have an inept pattern of interaction, and that adequate mothers would have a sensitive pattern of interaction.

Hypothesis 2. It was expected that, when the mother's pattern of interaction was deviant, the infant's pattern of interaction would also be deviant. Specifically, it was expected that the abusive maternal pattern would predict the difficult infant pattern, that the neglecting maternal pattern would predict the passive infant pattern, and that both the inept and sensitive maternal patterns would predict the co-operative infant pattern. The effect for abusive and neglecting mothers was expected to be stronger than the effect for inept and sensitive mothers because the more highly deviant maternal behavior would tend to reduce individual differences in infant behavior.

Hypothesis 3. It was expected that maternal pattern of interaction would predict infant D.Q. A monotonic trend in mean

D.Q.'s was expected for infants whose mothers show the following (ordered) patterns of interaction: neglecting, abusive, inept, and sensitive. The neglecting pattern was expected to be associated with lower D.Q.'s than the abusive pattern because, although both patterns show insensitivity to infant cues, the depressed neglecting mother offers almost no stimulation of any kind while the abusive mother does offer sufficient stimulation (however inappropriate).

Exploratory Hypotheses

Hypothesis 4. It was expected that the mother's pattern of interaction would be related to the infant's pattern of attachment as assessed in the Strange Situation. Here the prediction was that sensitive mothers would have securely attached (B Group) infants, that abusive and neglecting mothers would have anxiously attached (Groups A & C) infants, and that inept mothers would have infants showing a variety of borderline patterns (i.e., A_2, B_1, B_2, B_4 and C_1).

Hypothesis 5. It was expected that infants would respond to changes in the pattern of interaction of adult interactants. This was tested by having each infant interact with both his mother and a second adult. It was expected that when the two adults showed the same pattern, the infant would show the same infant pattern in the two interactions. However, when the adults showed different patterns, the infant would also show different patterns in the two interactions.

METHOD

Subjects

The subjects were 73 mother-infant dyads referred by the Infant Development Project of the Charlottesville-Albemarle Association for Retarded Citizens or welfare departments. Sixty of the families were receiving protective services from a welfare department; the remaining 13 families were presumably functioning adequately although most had come to the attention of some service agency. All of the dyads were from low income homes and displayed demographic "risk" in terms of limited paternal education, single parent status, and/or a teenage mother. There were 17 dyads in the abuse group, 21 in the depressed neglect group, 22 in the disorganized neglecting group, and 13 in the adequate group.

The infants ranged in age from 2 to 24 months with a mean age of 13.7 months. Their ages were fairly evenly distributed over the 8 quarters of the first two years of life such that there were 9-13 children in each quarter except the first in which there were only 3 children and the last in which there were 15. An analysis of variance indicated that the ages of the infants in the four groups (Table 1) did not differ significantly ($F_{3,69} = 1.87$, p .05). Neither were there group differences in infant birth weight ($F_{3,69} = 13$, p .05). The mean weight in all groups was normal and approximately half of the infants in each group were female (Table 1).

The mothers ranged in age from 13 to 35 years with a mean age of 22 years. Again, there were no differences in maternal age by welfare service group ($F_{3,69} = 1.46$, p .05,

Table 1

Sample Characteristics

Characteristic	Full Sample	Quality of Parenting			
		Abuse	Depressed Neglecting	Disorganized Neglecting	Adequate
Mean Infant Age in months	13.70	14.94	10.86	14.91	14.62
Mean Infant Birth Weight in pounds	6.82	6.69	6.79	6.92	6.87
% Female Infants	55%	41%	62%	55%	62%
Mean Maternal Age in years	22.23	22.82	21.95	20.95	22.69
% White Mothers	52%	59%	38%	34%	46%
% Single Mothers	52%	53%	57%	59%	33%
Mean Sum of Maternal and Infant Abnormalities per Dyad	.74	.76	.71	.82	.62
Sample Size	73	17	21	22	13

see Table 1). Thirty-three of the mothers were black, 39 were white, and one was Oriental. Thirty-four of the mothers were married; 39 were single, divorced, separated, or living with a boyfriend. There were no group differences in either race or marital status ($\chi^2_3 = 5.47$, $p > .05$ and $\chi^2_3 = 2.91$, $p > .05$, respectively).

Because both maternal and infant abnormalities have been implicated in the etiology of maltreatment, the following data were gathered for each dyad. Infant abnormalities included such things as low birth weight, twin status, failure to thrive, birth by Caesarian section, pneumonia at birth, hip dislocation, microcephaly, deafness, and heart-function anomalies. Maternal abnormalities included low I.Q., speech impediments, previous hospitalization for mental disturbances, hearing deficits, blindness, epilepsy, age of 15 or less, alcoholism, and physical handicaps. Abnormalities were summed for each dyad. A total of 54 abnormal conditions were identified in the 73 dyads; no differences were found in their distribution across welfare service groups ($F_{3,69} = 15$, $p > .05$, see Table 1).

Variables and Assessments

Five procedures were used for adults and/or infants. One categorized patterns of adult behavior during interaction with an infant. Another categorized patterns of infant behavior during interaction with an adult. The third measured infant development. The fourth categorized the

pattern of the infant's attachment to the mother. The fifth categorized the quality of the mother's parenting.

The maternal coding device developed by the investigator was used to assess the quality of adult interaction with infants (Appendix 1). The assessment device was made up of three types of items: abuse-related items, neglect-related items, and sensitive-related items. These three types of items were used to define four categories: abusive, neglecting, inept, and sensitive. The interactions were placed in that category having 75% of the marked items. In cases where no category had 75% of the items and 25% or more of the items were related to the sensitive pattern, the interaction was categorized as inept. If fewer than 25% of the items were sensitive related and less than 75% were in either the abuse or neglect related categories, the interaction was assigned to the pattern having the highest percentage of checked items. This device was used to assess the patterns of interaction of both the mothers and the second adults.

The infant coding device developed in the previous study was used to categorize the infants' patterns of interaction (Appendix 1). Items associated with three patterns (passive, co-operative, and difficult) were coded. The pattern having the most checked items was the category to which that infant's interaction was assigned. Ties between the co-operative pattern and either of the other patterns were resolved in favor of co-operative; ties between difficult and passive

were resolved in favor of difficult. Infant interactions with the mother and the second adult were categorized separately in these patterns.

Infant development was measured by the Bayley Mental Scale of Infant Development. In all cases where the infant was born prematurely, the infant's age was adjusted before deriving the developmental quotient.

The quality of the infant's attachment to his mother was assessed in Ainsworth's strange situation. This procedure involves bringing the infant and mother to a laboratory where the infant's behavior when with a stranger, when alone, and when the mother returns from a brief absence can be observed and videotaped for later rating and classification. The observation is divided into 8 highly structured episodes designed gradually to increase the intensity of activation of attachment behavior. Later the videotapes were examined and the infant's proximity-seeking, contact-maintaining, resistant, and avoidant behaviors scored. These scores were then considered in terms of three major patterns of attachment (each of which has several sub-patterns) and a categorical judgment was made. Infants were judged to be securely attached, anxious/ambivalent, or anxious/avoidant. The secure babies (B babies) showed strong proximity seeking and contact maintaining behavior and little or no resistance and avoidance. They missed the mother when she was absent and were comforted by her return. The anxious/ambivalent babies (C babies) showed strong proximity seeking and con-

tact maintaining behavior and strong resistance to the mother upon her return. They showed little or no avoidance. They appeared upset by the mother's departure, but unsure of her responsiveness to their need to be comforted upon her return. The anxious/avoidant babies (A babies) showed little or no proximity seeking or contact maintaining, little resistance, and strong avoidance of the mother upon her return. They appeared to cover up their distress over their mothers' departure and to use avoidance upon her return to control their anger and proximity-seeking behavior. Although sub-categories exist within each of these patterns, only the general pattern (A, B, or C) was used in the data analysis for this study because of the limited number of subjects. Consequently, the inept pattern was deleted from the analyses.

The quality of the mother's parenting was determined by the welfare department's and/or the Infant Development Project's response to a questionnaire (Appendix 2). In the previous study it had been possible to use welfare service status (protective service for abuse, protective service for neglect, family service for problems less severe than abuse and neglect, and no service) as a direct measure of the quality of parenting. However, that was less feasible in this study. At least 6 welfare departments were involved and they differed greatly in funding for services, staff to population ratio, community standards of acceptable parenting, and training of staff. Under these conditions there was no reason to expect that a direct measure of service status

would mean the same thing in each locality. Consequently a questionnaire asking about specific incidents or reports of abuse and neglect as well as general parenting problems of less severity than abuse or neglect was used to derive a more uniform equivalent of welfare service status. This had the added advantage of identifying those families experiencing significant problems who had not come to the attention of the welfare department or who had sought help from other agencies. On the basis of the behavior reported on the questionnaire, mothers were assigned to one of four categories: abusing, depressed neglecting, disorganized neglecting, and adequate.

The various assessments outlined above were obtained independently. The infant developmental assessment was completed by the IDP evaluator who was not involved in any other of the measures. The interaction videotapes were made by the IDP teacher but were coded by trained research assistants. Maternal and infant patterns were coded by different coders as were the first and second tapes of each infant. The Strange Situation was conducted and scored by a third set of research assistants. The questionnaire about parenting quality was completed by the welfare department in cases where the family was receiving welfare service. In other cases the IDP teacher filled in the questionnaire.

A total of 7 different assessments were derived from the 5 procedures used. The Bayley Scale yielded a mental developmental quotient. The videotaped interactions yielded

a maternal pattern of interaction, a teacher pattern of interaction, an infant pattern of interaction with the mother, and an infant pattern of interaction with the teacher. The Strange Situation gave a classification of infant pattern of attachment to the mother and the questionnaire yielded a categorical judgment of the quality of the mother's parenting.

Procedures

Each infant was visited at home and given the Bayley by the IDP Evaluator. The results were reported to the investigator. Administering the Bayley at home had a number of advantages. Most important the infant was tested in the environment in which he was most at ease. Second, it tested his performance under the realistic conditions of his home. And, third, from the staff's point of view, it was the only economical means of accomplishing the assessments.

The interaction videotapes were also completed at the infant's home. The IDP teacher brought portable video equipment to the home and taped the mother interacting with her infant and, then, had the mother tape the teacher interacting with the infant. The interaction took place on a small (44 x 44 inch) blanket spread on the floor with a standardized set of toys available. The directions to the mother were simply "Please play with your baby over there." In addition she was told that she could use the toys or not as she pleased and that she should not worry about facing the

camera - she should play naturally with the baby and the camera could be moved if necessary. The mother was not told how to position herself or how to play with her baby. The mother-infant tape was always taken first in order to obtain the mother's own spontaneous interpretation of the task. If the teacher-infant tape had been taken first, it might be expected that some of the mothers would use the teacher (who presumably was skilled at interacting with infants) as a model. This would invalidate the test of the first hypothesis.

Only those infants 11 months old or older were seen in the strange situation. This procedure was completed in a University of Virginia laboratory setting. IDP interns brought the families in and returned them home. A trained student was the stranger and, whenever possible, the infant and stranger were of the same race. Another student operated the camera behind one-way vision glass. The investigator instructed the mother and managed the procedure.

The questionnaire was sent to the IDP teacher as soon as it was determined that a family was definitely to be included in the study. The IDP teacher either forwarded the form to the appropriate welfare service worker or completed it herself.

The various assessment procedures (Bayley, interaction videotapes, Strange Situation, and the questionnaire) were all completed within a one month period for each dyad. Because of the service constraints of the IDP staff and the

circumstances of many of the parents, it was not possible to specify the order of the various assessments. This was not expected to affect any outcomes, however, as the assessments were being completed by different individuals. Neither was it expected that any one procedure would affect the mother's or infant's performance on any later one. Each procedure which involved the family was completed with at least a one week interval between it and any other procedure and it was not expected that any of the procedures would have more than a very immediate impact. (The Strange Situation was carried out in an unfamiliar locale and with special staff, thus, reducing its impact on any other procedure). Although it was not specifically planned, the effect was to randomize the order of the procedures.

The Codings

The videotapes of the interactions at home and of the strange situation were coded by trained student observers. Separate groups of observers were trained to code the maternal and teacher patterns of interaction, the infant patterns of interaction, and the strange situations. All observers were trained to 85% interobserver agreement on videotapes of other dyads not included in this study. All of the observers were blind to the mother's quality of parenting classification and to all other information about the family. The observers trained to code maternal patterns of interaction each coded some mother and some teacher tapes,

but never both with the same infant. Likewise, the infant coders each coded infants with mothers and infants with teachers but never both tapes of the same infant.

Each tape was coded or scored separately by two observers. When both were satisfied with their coding (or scores of the Strange Situation variables), a joint coding (or scoring) was made. The original codings and scores were kept unchanged for the measurement of observer agreement. The joint coding or scoring was the result of consultation between the observers and was used in the data analysis. The individual codings and scores were compared to the joint coding for one measure of observer agreement. A second measure of observer agreement resulted from a comparison of the joint coding or scores of two different pairs of observers. Observers did not know which of their codings or scores were used for comparison. Eighty-five percent agreement was considered acceptable.

There were seven maternal interaction coders, eight infant interaction coders, and eight Strange Situation coders. Only categorical agreement was compared for the Strange Situation coders. The percents of agreement are shown in Table 2 and are all above the proposed acceptable minimum of 85%.

Table 2

Mean Percent of Coder Agreement

	Mother Codings		Infant Codings		Strange Situation Codings	
	Within Pairs	Between Pairs	Within Pairs	Between Pairs	Within Pairs	Between Pairs
Item-by-Item Agreement (range)	91% (89-98)	87% (83-94)	89% (82-95)	86% (80-92)	-	-
Categorical Agreement (range)	93% (87-100)	91% (86-100)	99% (95-100)	99% (95-100)	91% (82-100)	90% (82-100)

RESULTS

Hypothesis 1

The first hypothesis was that the mother's pattern of interaction would match her actual welfare service status. Because the issue here is the accuracy of a coding device, the results are presented two ways. First, Table 3 shows the data using the codings of those coders who had the highest percentage of intercoder agreement. In other words, these are the data of the "best" coders. It is not, however, the choice of the "best" coding in each case. Rather the coders were listed in order of percent of agreement and codings given priority on the basis of that ranking. Second, Table 4 shows the data using the least accurate coding given by any coder. No reference was made in this case to the skill of the coder; instead the coding chosen for this analysis was that which gave the least support to the hypothesis. The attempt here was to determine the minimum level of agreement.

Both sets of data were analyzed using Cohen's Kappa (Bishop, Fienberg, & Holland, 1975). This statistic measures the extent of agreement between two means of classifying the same individuals. In this case, coder's classifications of mother's interactions was compared to social worker's classifications of the mothers. The statistic is appropriate because it uses the chance rate of agreement as the base rate and measures the extent of improvement over chance. K varies between 1.0 (complete agreement) and - (less than

chance agreement).

One advantage of this measure is that it does not depend upon identical marginal probabilities; only the total N need be fixed. This measure is defined as:

$$K = \frac{\sum_i Pii - \sum_j Pi.P.j}{1 - \sum_i Pi.P.j}$$

Using an estimate of the variance a Z score can be computed to test the null hypothesis that $\underline{K} = 0$.

Both analyses of the data showed that there was a significant relationship between the two methods of classification. However, there was a distinct improvement in the accuracy of classification when the most skilled coders were used (68% accuracy, $\underline{K} = .59$, $Z = 8.34$, $p < .001$) versus when the least accurate coding was used (56% accuracy, $\underline{K} = .37$, $Z = 2.64$, $p < .005$). In both cases, the majority of errors were between the inept and sensitive categories. This was in accord with previous use of this instrument (Crittenden, 1981). However, as Table 2 shows, when the least accurate coding was used, there was a greater problem of adequate mothers being coded as abusive.

Hypothesis 2

Hypothesis 2 predicted that the maternal abusing pattern of interaction would be associated with the infant difficult pattern of interaction, that the maternal neglecting pattern would be associated with the infant passive pattern, and that both the maternal sensitive and inept patterns would be

Table 3

The Relationship of Maternal Pattern of Interaction to Quality of Parenting (Using Highest Agreement Coders)

	Quality of Parenting			
Pattern of Interaction	Abusing	Depressed Neglecting	Disorganized Neglecting	Adequate
Abusive	<u>14</u>	1	2	0
Neglecting	0	<u>18</u>	2	0
Inept	2	1	<u>15</u>	10
Sensitive	1	1	3	<u>3</u>
N =	17	21	22	13

Predicted association is indicated by underlining.

Table 4

The Relationship of Maternal Pattern of Interaction to Quality of Parenting (Using the Maximum Instances of Coding Errors)

Maternal Pattern of Interaction	Quality of Parenting: Abusing	Depressed Neglecting	Disorganized Neglecting	Adequate
Abusive	9	1	4	4
Neglecting	2	17	1	0
Inept	3	2	12	7
Sensitive	3	1	5	2
N =	17	21	22	13

Predicted association is indicated by underlining.

associated with the infant co-operative pattern. The p (PRE) statistic (Hildebrand, Laing, & Rosenthal, 1977) was used to measure the degree of uncertainty about one variable reduced by knowledge of the other variable. In this case the mother's pattern of interaction was used to reduce uncertainty about the infant's pattern of interaction. The PRE statistic was chosen because the raw error rate is adjusted for the scope (the proportion of observations which could possibly be in error) and precision (the expected number of errors when there is no prediction from one classification to another) of the prediction. The advantages of this measure in terms of design objectives are that:

1. It yields a measure that is custom-designed for each particular proposition under investigation;
2. It can evaluate a prediction regardless of its scope, precision, and differentiation;
3. It is operationally interpretable within the context of a particular research problem;
4. It is relatively insensitive to minor perturbations of the probability structure.

The basic computational formual for p is:

$$p = 1 - \frac{\sum_i \sum_j w_{ij} P_{ij}}{\sum_i \sum_j w_{ij} P_{i.} P_{.j}}$$

where P_{ij} = the observed proportion in each individual cell and w_{ij} is the error cell indicator and equal 1 for each error cell and 0 otherwise.

Table 5 presents the data relevant to Hypothesis 2. The

Table 5

The Relationship of Maternal Pattern of Interaction to Infant Pattern of Interaction

Maternal Pattern of Interaction	Infant Pattern of Interaction		
	Difficult	Passive	Co-operative
Abusive	<u>11</u>	1	4
Neglecting	3	<u>12</u>	5
Inept	4	3	<u>23</u>
Sensitive	1	1	<u>5</u>

Predicted association is indicated by underlining.

proposed relationships were supported both for the full hypothesis and for each of the individual predictions. Decomposition of the hypothesis into its component parts provided three separate PRE statistics. The PRE statistic for the abusive/difficult relationship was .62; for the neglecting/passive relationship it was .48; and for the sensitive or inept/co-operative relationship it was .56. For the full hypothesis, the PRE statistic was .55 with a Z score of 6.11, $p < .001$.

Hypothesis 3

Hypothesis 3 proposed that maternal pattern of interaction would predict infant mental developmental quotients on the Bayley Scales of Infant Development. A linear trend in DQ's from neglecting to abusive, to inept, and to sensitive was predicted. As shown in Table 6, such a trend was not found. Rather the order of the inept and sensitive groups was reversed. This is best explained by the fact that 5 of the 8 sensitive codings were error codings, i.e., not codings of adequate mothers (see Table 3) and, thus, heavily skewed the mean of the sensitive group. Moreover, the remaining 10 adequate mothers whose pattern of interaction was expected to be sensitive were, in fact, coded inept. Thus, their infant's DQ data was grouped with that of the infants of disorganized neglecting mothers for this analysis. In other words, the errors in the maternal codings resulted in unexpected grouping of the children's DQ data for this analysis.

Table 6

The Relationship of Maternal Pattern of Interaction to Infant Mental Developmental Quotient on the Bayley Scales of Infant Development

Maternal Pattern of Interaction	Infant Developmental Quotient	
	Mean	Standard Deviation
Neglecting	.80	.18
Abusive	.84	.14
Inept	.95	.16
Sensitive	.88	.20

In an attempt to determine if the underlying proposition that quality of parenting was related to infant development was correct, the analysis was repeated using welfare service groups rather than maternal patterns of interaction groups. The results are shown in Table 7; the predicted linear trend was found ($F = 4.93$, $p = .004$).

Hypothesis 4

Hypothesis 4 stated that the mother's pattern of interaction would predict the infant's pattern of attachment. Specifically, if the mother were sensitive, it was expected that her infant would be secure; if the mother were abusing or neglecting it was expected that her infant would be anxious; and if the mother were inept, it was expected that her infant would show a borderline pattern of attachment (i.e., A_2, B_1, B_2, B_4, or C_1). Analysis of the data presented in Table 8 using the delta-PRE statistic supports the hypothesis ($\nabla p = .74$, $z = 2.23$, $p < .01$). Although the data for children of inept mothers could not be analyzed at the same time because the predicted subgroups crossed categories, it is nevertheless, clear that these data also supported the hypothesis (Table 8). The exact distribution of infant patterns of attachment by maternal pattern of interaction is shown in Table 9. Each of the subgroup patterns is shown as is the new avoidant/ambivalent (A/C) category which was given to 8 infants who had displayed the hallmark criteria of both the avoidant classification and the ambiva-

Table 7

The Relationship of Quality of Parenting to Infant Mental Developmental Quotient on the Bayley Scales of Infant Development

	Infant Developmental Quotient	
Quality of Parenting	Mean	Standard Deviation
Neglecting	.79	.19
Abusing	.83	.15
Disorganized neglecting	.90	.17
Adequate	1.00	.13

lent classification. While these data could have been forced into one standard classification (as in Table 8, where they were included in the anxious category), they represented infant behavior which was quite different from that included in the three standard categories. Not only did these infants display both avoidant and ambivalent behavior, but they also showed an extreme inability to cope with stress. All children classified as A/C showed maladaptive, stereotypic behaviors, all showed stress in the preseparation episodes, most showed approach behavior in addition to avoidance and ambivalence in the reunion episodes, and all failed to recover from the stress of separation either through their own coping strategies or with their mother's help.

In an attempt to understand more fully the relationship between maltreatment and pattern of attachment, the data were reorganized by quality of parenting (Table 10). When these changes are made, it becomes clear that relationships do exist between type of maltreatment and infant pattern of attachment. Abused babies generally showed an A/C pattern, babies of depressed neglecting mothers an A pattern (with three C_2's), and babies of adequate mothers a secure pattern of attachment (however there was only one B_3). An ex post facto test of this relationship was highly significant (∇ p = .83, χ = 45.79, p > .001). Again, data from infants of disorganized neglecting mothers were excluded from the analysis. However, it should be noted that they showed

Table 8

The Relationship of Maternal Pattern of Interaction to Infant Pattern of Attachment

	Infant Pattern of Attachment	
Maternal Pattern of Interaction	Anxious	Secure
Abusive	9	0
Neglecting	11	1
Inept	9	11
Sensitive	1	4

Table 9

The Relationship of Maternal Pattern of Interaction to Infant Pattern of Attachment Subgroups

	Anxious	Secure
Abusive	$A/C_1 = 2$	
	$A/C_2 = 3$	
	$A_1 = 1$	
	$C_1 = 3$	
Neglecting	$A/C_2 = 1$	$B_2 = 1$
	$A_1 = 4$	
	$A_2 = 2$	
	$C_1 = 1$	
	$C_2 = 3$	
Inept	$A/C_1 = 2$	$B_1 = 3$
	$A_1 = 2$	$B_2 = 5$
	$A_2 = 4$	$B_4 = 3$
	$C_1 = 1$	
Sensitive	$A/C_1 = 1$	$B_2 = 2$
		$B_3 = 1$
		$B_4 = 1$

Table 10

The Relationship of Quality of Parenting to Infant Pattern of Attachment

	Infant Pattern of Attachment				
Quality of Parenting	A/C	A	B	C_1	C_2
Abusing	6	1	0	3	0
Depressed Neglecting	2	6	0	0	3
Disorganized Neglecting	0	5	8	3	0
Adequate	0	1	8	0	0

a mixture of the borderline patterns. Considering the large number of cells, the small number of subjects, and the fact that the data in thd deleted Row 3 of Table 10 did fit the hypothesis of borderline outcomes, the results of this ex post facto analysis should be given serious consideration.

Hypothesis 5

Hypothesis 5 stated that infants would show different patterns of interaction when the adults interacting with them showed different patterns of interaction. Again, the PRE statistic was used to test the usefulness of knowing whether the adult patterns were different when predicting change in the infant's pattern. As shown in Table 11, infants did modify their pattern of interaction when the second adult (the teacher) interacting with them behaved differently from the first (the mother). The PRE statistic was .40 ($z = 4.00$, p .001).

Table 11

The Relationship of Change in Adult Pattern of Interaction to Change in Infant Pattern of Interaction

Infant Pattern with the Mother Compared to Infant Pattern with the Teacher	Maternal Pattern Compared to Teacher Pattern	
	Same	Different
Same	<u>27</u>	13
Different	9	<u>24</u>

Predicted association is indicated by underlining.

Note: The maternal inept and sensitive patterns were considered the same because both predict the infant co-operative pattern.

DISCUSSION

The Replication Hypotheses

Identifying characteristic differences in styles of interaction. The tests of the first two hypotheses lend support to the proposition that there are qualitative differences in styles of mother-infant interaction and that maltreating dyads can be differentiated on the basis of these differences. A description of the patterns of interaction of mothers and infants had already been presented in the introduction of this dissertation and in an earlier paper on their development (Crittenden, 1981). Here it is important only to reiterate that the patterns are intimately connected and reciprocal. Neither the mother's nor the infant's behavior can be fully understood outside of the context of the other's behavior. Furthermore, the behavior typifying each pattern is exactly that which would be expected to be associated with the matching pattern (i.e., the abusive pattern is associated with the difficult pattern, etc.). The issues relating the possibility of one pattern causing the other will be further discussed later.

Although the coding devices did differentiate the groups quite well, three problems remain. First, in the second sample and, again, in the sample drawn for the dissertation, there were a few cases of abusing mothers who displayed open, rather than covert, hostility to their infant. There is no indication on the maternal device of how this ought to be coded and coders resolved the problem in various ways.

Some saw the behavior as being consistent with abusiveness and coded it that way (in terms of facial expression, voice tone, and expression of affection) in spite of an obviously incorrect behavioral statement on the coding device. Others were more literal and deleted the behavior from consideration because it was not mentioned on the coding device. Obviously, the best solution is to modify the coding device to include references to open hostility in the abuse-related items.

The second problem is the differentiation of the abusive and sensitive patterns. Using the best coders the problem only appeared in terms of mistaking abusing mothers for sensitive ones. However, less skilled coders made the error in both directions. It is interesting to note that the percentage of sensitive items scored for adequate mothers classified as inept was either very high (very near a sensitive classification) or very low (very near an abusive classification) and that more were low than high. This was not true of disorganized neglecting mothers coded as inept; their percentages of sensitive items were spread evenly across the range from sensitive to abusive. In other words, there does seem to be considerable confusion between the sensitive and abusive patterns in a number of cases. While skilled coders usually make the correct judgments, the potential for error is clearly present.

This problem is compounded by two difficulties. One was that truly adequate mothers are probably relatively few in

an "at risk" sample. The other was that those designated as adequate by the referring agencies were only comparatively adequate in relation to clearly maltreating families. Thus, it is probable that the adequate sample is biased towards those who are marginally or comparatively adequate. This could be expected to reduce the likelihood of finding clearly sensitive mothers in the adequate group and consequently contribute to the confusion between the abusive and sensitive patterns.

The third problem is the classification of families who both abuse and neglect their children. Such cases exist and although they are a minority of maltreatment cases, they have appeared in all three samples tested with the devices. They have been placed arbitrarily in the abusing welfare service classification. Not surprisingly the codings of their interactions often show high numbers of both abuse and neglect related items without having the requisite 75% in a single category. In this, and the previous study, if 75% of the items were either abuse or neglect related, the coding was classified in the category with the most items. However, it seems appropriate at this point to recognize these differences and treat them as their own category, abuse-and-neglect, in terms of both quality of parenting and pattern of interaction.

Finally, any discussion of the patterns must include reference to the role and importance of the coders. The coding devices as constructed require the coder not merely

to observe behavior but, more importantly, to interpret the meaning of behavior in a specific dyadic context. Furthermore, half of that behavior is infant behavior. This means that the previous experience of coders is very relevant to their ability to interpret behavior. In this study, the coders were undergraduates who were not themselves mothers and who usually had had very little recent contact with infants. Training them meant training them to interpret behavior they rarely saw and essentially never used. They required very long training periods.

Coders, of course, varied in the level of agreement they ultimately achieved and those with higher percents of agreement tended to produce more accurate codings. All coders, however, tended to show observer drift over time (Taplin & Reid, 1973). As the time since training increased, the agreement of working pairs of coders with each other increased while their agreement with other coders decreased. This is not an unexpected or unusual finding, but it does have important implications for the conduct of research and for any clinical use of these coding methods. In this study, coders were periodically retrained, however, in retrospect not as frequently as one might have wished.

The infant codings. The infant patterns have been discussed elsewhere. Only two points need to be made here. First, there seems to be a general tendency for babies, regardless of the quality of their caretakers, to be co-operative. Second, there is a clear resistance on the part of

coders to classifying a baby as difficult or passive. This is particularly true if the coder feels the mother's behavior is insensitive. This bias on the part of coders, of course, tends to increase the likelihood that babies will be seen as co-operative. It could, in fact, account for the effect observed. However, in the investigator's judgment, even when a very rigorous standard is applied to maltreated infants, a significant number of such babies still appear unusually accommodating and can only be classified as co-operative.

These babies pose some very interesting questions. Why are these children co-operative when their experience with their mother should provoke a passive or difficult response? And why do so many of them seem concurrently ill at ease? Most of the 16 maltreated babies showing the co-operative pattern (5 of whom were also coded passive or difficult by another coder) showed some negative affect. Seven seemed distinctly anxious to please their mother (this seemed to override their own interest in the toys). One cried violently until his mother put him down and then was superficially co-operative while still subtly ignoring as many of her overtures as possible. Five others seemed both ecstatic at and terrified by their mothers' vigorous teasing, kissing, and roughhousing. Only one seemed to be comfortably enjoying her mother's attention.

This behavior seems to demand an explanation. The data offer three clues as to what it might be. First, the maltreated children showing the co-operative pattern were not

evenly spread over the age range of the maltreated sample. Instead, there were two 2 month olds in the group and the remainder clustered around 18 months. There were no 3-9 month old children and only three between 10 and 15 months. On the other hand the 22 children showing the passive and difficult patterns clustered almost exclusively (with only two exceptions) between 3 and 15 months old. Possibly the very young infants did not yet have enough experience with their mothers to consistently respond negatively and the older infants had too much experience to feel it wise to respond that way.

Another possibility is that the co-operative maltreated children were more or less severely maltreated than the others. This fit the data fairly well with the co-operative children being those who were more severely mistreated except in the age range around 9-12 months. Some very severely mistreated children of this age behave in a very passive or difficult manner.

A final clue as to what differentiates the co-operative children was the prevalence of major mother-infant separations in this group. Nine of the children were known to have been placed in foster care, left with relatives, hospitalized, or separated from a hospitalized mother.

None of these explanations completely satisfied the data and all of them were post hoc attempts to understand an unexpected finding. However, they all suggest that increased stress and helplessness may result in anxious co-

operation. Older children who may earlier have tried responding directly to their mothers (in the 3-15 month age range) seem to have given up. They have experienced maltreatment longer, possibly recognize its dangers better, and have not found a way to change it. They are anxious to please, resentful, and fearful. They try not to make themselves the focus of their mother's anger. They appear grateful for any tidbits of affection, however distressing its manner of delivery.

Severely maltreated children have more reason to fear the consequences of a passive or difficult response. A passive response will leave a neglected child in isolation; a difficult or passive response may anger an abusive mother by making her feel rejected. A co-operative response maximizes the possibility of obtaining the mother's attention and goodwill. The anxiety seen in the interaction of these children is easily understood in terms of the danger inherent in a relationship with their mother and their inability to modify her behavior through direct signals.

The separated children also have learned that the relationship with their maltreating mothers is beyond their control. It can be disrupted at any time. They have not only the negative consequences of daily experience with a maltreating parent, but also the traumatic experience of a major separation.

All that remains unexplained, then, is why the hypothesis of negative infant patterns of interaction can be

supported at all and why it is especially accurate as the child approaches 8-12 months of age. An interaction between stress and development is proposed. Mild to moderate stress will produce negative responses in the infant which accurately reflect his attitude toward his mother's behavior. Stress is increased by cumulative experiences of maltreatment, traumatic experiences, and experiences which teach the child that he/she is helpless. On the other hand, the ability to organize one's behavior so as to communicate to another individual increases particularly in the second half of the first year. It is in this period that the infant develops the capacity to remember past experiences, to combine those experiences into mental representations, to comprehend simple causal relationships, and to organize his behavior to achieve predicted ends. That such a child should put together an accurate mental representation of his mother and respond to her with direct information about his feelings is not unlikely. Only later will severely maltreated children come to understand that their needs are best met by a more circumspect approach. Furthermore, the one year old's increasing motor skills and mobility permit him to be more independent of his mother as he becomes capable of carrying out many of his own desires and wishes.

Infant mental developmental quotients. The mean DQ's of the welfare service groups support the notion that maltreated children show developmental deficits. The results of using the Bayley Scales of Infant Development are highly

consistent with those reported in the investigator's thesis. These results are congruent with, but do not "prove", the idea that less sensitive mothers provide fewer experiences supporting the cognitive and communicative development of their infants. Both the depressed neglecting mothers' absence of activity, and the abusing mothers' use of conflicting signals and non-contingent behavior would seem to make for such delay.

The Exploratory Hypotheses

Infant attachment. The relationship between maternal sensitivity and infant pattern of attachment to the mother which was found by Ainsworth (Ainsworth et al., 1978) leads naturally to the expectation that infants of maltreating mothers would show anxious patterns of attachment. An exact prediction of which patterns would be associated with abuse and which with neglect was less obvious. In fact, the actual behavior of maltreated children in the Strange Situation suggested that the three main Ainsworth categories were insufficient to account for the full range of disturbed behavior which was used by the maltreated children. To account for the extent of this deviance, a new classification, A/C, was created. In the second analysis of the attachment data, this category was found to be associated with the abusing welfare service group. However, as has been discussed earlier, some of the dyads in this group would be better classified as abusing-and-neglecting. When this quality of

parenting classification is used, it appears that all abused-and-neglected infants show an A/C pattern as do a few who are only abused and also a few who only neglected. Furthermore, A/C babies in the abuse group show an A/C_1 pattern and A/C babies in the neglect group show an A/C_2 pattern. This is consistent with the clustering of C_1's in the abuse group and C_2's in the neglect group. In other words, two hypothese can be formed on the basis of this data. First, abused-and-neglected children will show a highly deviant A/C pattern of interaction. Second, the C_1 and C_2 patterns will differentiate between intrusive, non-contingent, controlling mothers and extremely unresponsive mothers, respectively. Furthermore, this is consistent with the appearance of C_1's in the disorganized neglecting group.

Others have found it difficult to classify all babies with the Ainsworth A, B, C system, but, the issue has been discussed in detail only by Main and Weston (1981). They found 18 of 172 cases to be unclassifiable as A's, B's, or C's. Further, they presented five justifications for the unclassifiable category, i.e. five types of behavior which did not fit the standard categories. These were "behaves to parent in reunion episode as a secure infant, but behaves identically to stranger; extreme avoidance is combined with extreme distress throughout the situation; behaves in one reunion episode as an avoidant infant but in another as an ambivalent infant; physical behavior is that of a secure infant - approach, clinging - but infant is affectless with

signs of depression; there is no evidence that the infant and parent have a relationship" (Main & Weston, 1981, pp. 934-5). Of the 18 such cases, 12 were given the alternate classification of B and the remainder A.

Only two of the reasons given above, the second and fifth, fit cases in this study. The second is a possible description of the A/C_1 classification as used here. The fifth accurately describes one baby classified as an A in this study. It is not surprising, however, that the overlap with Main and Weston's sample is not greater. Their sample was not chosen to be deviant and most of the unclassifiable infants had an alternate B classification. The unclassifiable babies in the present study all came from extremely disturbed families and were considered extreme A's. The fact that their behavior represents new combinations of three of the four main variables implicit in the original Ainsworth classifications, i.e., proximity/contact seeking, avoidance, and resistance, tends to confirm both the usefulness of those criteria and the appropriateness of the new categories.

In a prospective study of at risk infants, Egland & Sroufe (1981) presented findings which were surprisingly different from those reported here. The general direction of the difference between that study and the present investigation is in the direction of less severe outcomes for maltreated infants than those reported here. Thirty-one infants out of a total of 267 seen in a Public Health Clinic popula-

tion were classified as receiving inadequate care, i.e. abuse and/or neglect. They were seen in the strange situation first at 12 months of age and again at 18 months. At 12 months the 24 neglected babies were classified as secure (36%), avoidant (14%), and ambivalent (50%). The seven abused and abused-and-neglected infants were classified as secure (43%) and avoidant (57%). By 18 months both groups showed a substantial move toward secure attachments: of 23 neglected infants 47% were classified secure, 37% avoidant, and 16% ambivalent; of eight abused and abused-and-neglected infants 75% were secure and 25% avoidant.

The major discrepancy between these data and those presented here is the large number of securely attached maltreated infants. In the present sample there was only one such case (in the abuse group). One probable reason for this difference is that maltreatment is defined differently in the two studies. In the Egland and Sroufe study the rate of maltreatment was reported to be 1-2% of the Public Health population. The 31 mothers identified as "seriously neglecting or abusing" represent 12% of the Public Health sample. Examples of behavior leading to an abuse or neglect classification included "(1) untreated wounds, infections, or serious ailments; (2) no place for the child to sleep; (3) routine exposure of the child to hazards; (4) persistent failure to change diapers or clothing; and (5) leaving the infant without arranging for its care" (Egland & Sroufe, 1981, p. 45). Only eleven of the 31 families were identified

as abusing or neglecting by child protection agencies.

A quite different picture of maltreatment is presented by the children in the present sample. The abused children all displayed parent-inflicted bruises, several had burns including one with permanently crippling burns over one quarter of her body, several were severely malnourished, one had been born with alcohol addiction, and several displayed chronic stress symptoms such as stereotypic hand or head gestures, hyperactivity, and gastro-intestinal disturbance. The neglected children had experienced an extreme lack of feeding and caretaking leading to serious illness in many cases and hospitalization and/or removal in 5 cases. All were receiving mandatory protective services. These children seem to have been more severely maltreated than many of those described by Egland and Sroufe.

Parental practices of the disorganized neglecting group, however, are described very well by the criteria provided by Egland and Sroufe. Their caretaking might be described as chaotic, irregular, and insufficient, but generally not life-threatening. Moreover, it was highly variable - at times quite good, at others unacceptable. These parents, too, were receiving protective services; however, service was voluntary because of the lesser severity of their situations. It is significant that the attachment classification given these children are similar to those in the maltreated sample seen by Egland and Sroufe: 43% secure versus

56%[1]; 36% avoidant versus 37%; and 21% ambivalent versus 11%.

Possibly the most perplexing finding by Egland and Sroufe is the high number of securely attached children who had experienced abuse or abuse-and-neglect. Six out of eight were classified as securely attached at 18 months. Using the behavior of the children in the present sample as a guide, it seems likely that the proximity-seeking which was noted as a part of the A/C pattern may be responsible for the B classification of Egland and Sroufe's six infants. This point is similar to that made by Main and Weston with reference to their unclassifiable infants. These infants, who, if forced into the A, B, C classifications, were classified as B's, were, in terms of external correlates, highly stressed. Main and Weston state that a forced classification can lead to error, especially when applied to an at risk sample. This might well be the best explanation of the Egland and Sroufe finding for abused children. Furthermore, it might explain the one instance in the present study of a B baby in the abuse group. Although this child displayed the criteria of a B_2 pattern without showing either avoidance or ambivalence, she did show stress-related stereotypic headcocking throughout the strange situation. This pervasive behavior, however, was the only clue to the extent of her stress.

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[1]Data for the full Egland and Sroufe inadequate care group at 18 months.

Defenses and strategies. Earlier I discussed the issue of defenses and strategies for coping. The response of maltreated infants to increasing stress brings the issue into sharper focus. Main (1979) has discussed the survival value of the seemingly anomalous avoidant response and demonstrated the advantages of such a pattern to abused children (Main, 1979). Although she did not attempt to apply her argument to neglected children, this study and the work of Egland and Sroufe (1981) demonstrate that neglected children also use avoidance. On the other hand, the data presented here suggest that, in the more severe cases, avoidance is no longer the predominant response to stress.

Main has explained this by suggesting that under sufficient stress (such as that experienced by maltreated infants), the child loses the "organizational capacity" for avoidance (Main and Weston, 1981). If by this she means that under sufficient stress, the maltreated child can no longer tolerate a separation, I would quite agree. The children in this study who received an A/C categorization were clearly very upset and unable to maintain the composure usually associated with the defensive response. If, however, Main further means to imply that the infant is no longer able to use an avoidant response (that it "breaks down") and that he/she is forced under the stress of the situation to revert to an approach response, I am less sure that her interpretation is correct.

The idea of strategies, becomes a salient one for me at this point. Would it be in the best interests of a severely maltreated child to remain avoidant under stress and angry or passive otherwise? I doubt it. When the instances of positive contact become few enough and the possible costs of an angry response too high, it behooves the child who intends to survive to make him/herself as pleasing and available as possible. It may be that the maltreated child could not be avoidant; it is also a better strategy in some cases not to be avoidant.

Pursuing the concept of strategies a bit further, it seems that the pseudo-co-operative, or compulsively co-operative, child demonstrates two well-known characteristics of some abused children. First, such a child is often an overachiever showing normal to advanced developmental progress as opposed to the more frequently predicted delay. Second, such a child easily becomes a caretaker of sorts for the parent. If placating the parent and remaining close to the parent are the child's primary goals, then it becomes easy to see how meeting a stressed parent's needs and expectations would be a successful strategy. True, it puts great burdens on the child and robs him or her of many aspects of childhood and is, therefore, often considered maladaptive. But, given the maltreated child's situation, it may be a very useful strategy, one that serves his or her needs well. It is, of course, a defense against a hostile environment but it is also a very sophisticated and adaptive one. Consider-

ing the effort it demands of a child, interpreting it as a break-down in organizational capacity may not be the most appropriate approach. I find myself more impressed by the maltreated child's ability to organize such a strategy when still so young and find myself fearing more for those who cannot than for those who do. If this argument is accepted and severely maltreated children are seen as modifying strategies as a result of changing situations and skills, it becomes relevant to learn whether they are capable of further adaptation as they mature, particularly as they, themselves, choose mates and become parents or whether the repression or cognitive disconnection implicit in these defensive strategies would severely handicap them in later relationships.

Infant pattern of interaction as a temperamental trait. The second exploratory hypothesis proposed that the infant patterns of interaction represented the infant's response to a particular interaction and not a trait of temperament or character. Passive and difficult babies were seen as normal(potentially co-operative) babies responding naturally to an unpleasant interaction. If this were true, two things should follow. First, if a formerly neglecting or abusive mother of a passive or difficult baby behaved appropriately, the baby should change his behavior and respond with positive co-operation. This is exactly what happened when a sample of maltreating mothers received intervention to improve their pattern of interaction. They learned to inter-

act more sensitively and their babies were coded as co-operative (Crittenden, Note 4). Second, if a difficult or passive baby is given a sensitive interactant, he should immediately revise his behavior and respond co-operatively. This idea was tested in the present study and supported. Most children do indeed have the capacity for co-operation and their use of passive or difficult responses is reserved for specific situations which call for these responses.

At the risk of pushing the technique of post hoc analysis of discrepant data to an extreme, it should be mentioned that the "errors" in this analysis support two interesting explanations. First, six of the nine instances of the two adults showing the same pattern and the infants showing different patterns represented inept mothers in the disorganized neglecting group with co-operative infants who show a difficult or passive pattern when given a sensitive interactant. None of these cases represented a sensitive mother and baby dyad. The ages of six infants ranged from 7 to 15 months. Possibly stranger anxiety is heightened in this group of children resulting in passive or difficult responses to less familiar adults. Second, nine of the thirteen cases of adults showing different patterns while the infant showed the same pattern were cases of co-operative infants of maltreating mothers who were also co-operative with the sensitive second interactant. These have already been discussed at some length and constitute a "predictable" error group.

CONCLUSIONS

> The message is familiar but profound nonetheless. Scientific discovery is not a one-way transfer of information from unambiguous nature to minds that are always open. It is a reciprocal interaction between a multifarious and confusing nature and a mind sufficiently receptive...to extract a weak but sensible pattern from the prevailing noise. There are no signs...that proclaim.
>
> Stephen Jay Gould

Some of the findings of this study were predicted. Others were unexpected but explainable. None was so unambiguous as to be universally apparent, without controversy, or easily replicable. Possibly the underlying question to be asked now is whether the pattern found is clear enough to add to our understanding or whether the signal has been garbled so as to lead in false directions.

The nature of maltreating samples. Many people have sought ways to identify potentially maltreating families. The method used has generally been to identify any detrimental characteristics common to maltreating individuals. In this study and in my thesis, I have argued that these characteristics identify lower class status not the presence of maltreatment. Many maltreating parents are poorly educated, mildly retarded, unmarried, handicapped, or non-white. Many, many adequate lower class parents also have these characteristics. Likewise many lower class babies have some abnormal physiological abnormality, however, most are not maltreated. Something else is needed to translate risk for

lower class status into risk for maltreatment. The basic proposition of this study is that something is the quality of the individual parent-child relationship.

The effects of stress on behavior. It seems fairly clear from the data presented here and in other studies (Burgess & Conger, 1978; Crittenden, 1981; Egland & Sroufe, 1981; George & Main, 1979) that both maltreated children and maltreating adults show atypical behavior. Furthermore, both parents and children appear to experience unusually great amounts of stress on a daily basis. This stress is seen as contributing to the anger, hostility, and/or withdrawal of the parents. Their children respond with negative signals, passivity, avoidance and/or resistance. At least this is how it appeared.

I would like to suggest now that under sufficiently greater stress all of the responses listed above, except extreme withdrawal, tend to break down and to be replaced by desperate, anxiety-ridden approximations of normal behavior. This is true for both mothers and infants. The most severely abusing mothers are not openly hostile; they are pseudo-sensitive. The most severely abused infants are not difficult; they are co-operative. The most severely neglected infants are either co-operative or passive/withdrawn. The most stressed children in the home show proximity seeking in the strange situation. Only the extremely depressed neglecting mother and her infant remain withdrawn, unable to contact one another.

Attachment theory proposed that the maintenance of affectional bonds, particularly the bonds between a mother and her young child, is essential to survival of the human species and a compelling individual need. The data from this study suggest that those people who are most at risk for destroying their love relationships altogether devote the most intense effort toward maintaining the semblance of bonds. Inept mothers and their infants scrap and feud; mildly abusing mothers and their infants are hostile and difficult. But severely abusing mothers and their children as well as some of the children of neglecting mothers do not dare challenge the durability of their relationships. Rather they struggle to hide from themselves and from each other the tenuous nature of their bonds. It is as though a challenge would not be a single dispute over a toy or a prohibition but rather would become an uncontrollable attack on the relationship. Such disasters cannot be risked often. So I would propose that the pseudo-sensitive behavior of maltreating mothers and the pseudo-co-operative behavior of maltreated children is not a false front offered to the prying observer, but rather an armed peace protecting the interactants from themselves. Only those who have completely given up, who are totally depressed, can withdraw from relationships entirely. These are the most tragic casualties a family can produce.

If this is so, procedures for assessing the quality of relationships need to be modified to include these more ex-

treme forms of behavior. I have already suggested changes in the maternal interaction coding device, the addition of an abuse-and-neglect category, and the creation of an A/C category for the strange situation. Other possible changes would include modification of the infant interaction coding device to differentiate a pseudo-co-operative pattern of interaction and the possibility of an extremely anxious, non-hesitant proximity-seeking category for the strange situation. This might be developed out of the present B_4 or B_2 category or might be an additional category.

Causal relationships. The etiology of maltreatment has generated much theory, many correlational findings, and very little rigorous data. The primary possible causes seem to lie with the parent, the child, some external stressor(s), or an interaction of these. This study can not possibly resolve the issue. However, some of the data do bear on the issue. Both child vulnerability and child temperament have been proposed as causal factors. The child vulnerability factors do not seem to differentiate among maltreated and non-maltreated lower class infants. This is in accord with the data reported by Starr and Dietrich (Note 8) in a far more extensive study of child vulnerability.

The idea that child behavior resulting from temperamental variables contributes to maltreatment is more complex. The difficult, passive, and co-operative patterns of interaction used in this study certainly do not represent inherent child traits. The intervention study in my thesis (Crittenden,

Note 4) showed that the patterns change over time in response to changes in maternal behavior. The present study demonstrates a lack of infant pattern stability across interactants. The key to the infant's pattern appears to be the specific quality of the interaction in question. This parallels the finding of Main and Weston (1981) who found that the infant's pattern of attachment varied with the quality of the relationship with each parent and was not a constant attribute of the infant.

On the other hand, it seems quite clear that the infant's behavior does influence his mother's and that once mutual patterns and expectations are established, each partner contributes to the maintenance of the status quo. It is possible that, while the infant is not responsible for the onset of maltreatment, his behavior may be partially responsible for its continuation.

Untouched by this study are the issues of the causes of the mother's behavior and external contributing factors. It seems reasonable to suppose that the mother has experienced in the past and continues to experience in the present other interpersonal relationships which affect her ability to nurture her infant. The quality of these other relationships (involving both affectional bonds and social networks) is an appropriate topic for further research. Likewise, the impact of external stress on family functioning needs to be assessed more fully. At present it only seems possible to say that child variables are probably not responsible for

child maltreatment and that an interaction between child and parent variables probably does explain some of the causation of maltreatment.

The use of the interactional coding devices. Three uses have been proposed for the maternal and infant coding devices: screening, research, and intervention. Many investigators are seeking a screening device to identify potentially maltreated infants so that preventive intervention may be undertaken. The maternal coding device used here performs as well as or better than other published devices. However, there are several important cautions to be considered. First, any screening device will provide some errors, but there is a particular problem of differentiating the abusing and sensitive patterns using this maternal device. Second, only experienced and carefully trained coders can accurately interpret interactive behavior using these devices. It seems particularly important that the coders' experience include both parenthood and relevant professional training in one of the professions which focuses on the systematic observation of human behavior (i.e., teaching, psychology, social work, nursing). Third, even skilled coders need periodic retraining to avoid increasing numbers of coding errors resulting from observer drift. Fourth, if the device is to be used as a screening tool, coders need feedback. That is, they need to know which of their codings ultimately were found accurate and which were not. Done systematically, this would allow coders not only to perfect their use of the device as

it currently exists, but also would permit them to adjust or modify the devices to fit local (possibly subcultural) conditions.

The concern here is with prediction errors. If the above cautions are heeded, the likelihood of large numbers of errors will be reduced. On the other hand, some of the discrepancies between the reported coding classifications and the "known" quality of parenting are less troublesome than they might initially appear to be. First, the largest single group of non-matches was between the sensitive and inept classifications. Because all three samples on which the maternal device has been used were composed only of lower class at risk dyads, it is quite possible that many of the interaction classifications were correct. (The finding of only one truly securely attached child in this group would corroborate this position.) Moreover, this "error" does not represent a target error, that is, an error in identifying maltreatment. The second bit of encouraging information is that when the interaction classification is considered with other readily available information about the dyad (i.e., demographic information, case histories, the infant's interaction classification, even clinical impressions) it becomes relatively easy to pick out the likely error codings. Particular attention can then be devoted to obtaining additional information before a clinical judgment or recommendation is made. Third, the emphasis of the devices on interactive behavior may facilitate the identification of families with

serious interpersonal difficulties (e.g., verbal or emotional abuse) in the absence of physical maltreatment or demographic risk. Help can then be offered to these families who might otherwise escape detection. Finally, it has been the investigator's experience, over four years of using the device, that when a presumably adequate mother is classified as maltreating and when other evidence suggests possible risk, that the original coding will later, perhaps 1 or 2 years later, be found to be correct. In other words, there is some evidence that the device can function prospectively. In conclusion, I would suggest that with appropriate care the coding devices may be useful as screening tools.

In addition, the coding procedure is also very useful as a research tool. It lacks some of the precision of other methods of assessment, but it has a great potential for describing the process of interaction and for suggesting relationships within and between interactions. It captures some of the valuable aspects of clinical observations while stating them in a testable manner. An expansion of the technique to adult interactions might be a useful step now.

Finally, the coding systems may have some use as the basis for intervention. They do provide a guide for assessing and interpreting interactions for the practitioner. Considering the relatively sparse information currently available, that may be a very useful contribution. Furthermore, they suggest focal points, although not strategies, for the intervention process by guiding professionals to those aspects of

interaction that are most distorted or distressing to the infant. As long as the urge to label families can be controlled and practitioners understand that untrained coders who have additional information about the interactants being coded cannot produce fully accurate codings (and, thus, cannot screen families), the devices could prove very useful.

Patterns of development. The original issue underlying all of the hypotheses of this study was the differentiation of several patterns of development. It was proposed that quality of parenting would define four groups (abusing, depressed, neglecting, disorganized neglecting, and adequate) which would show different patterns of development on the assessments used. This hypothesis is well substantiated for each of the measures.

As predicted, adequately reared lower class, high risk children develop normally on the basis of interaction, D.Q., and pattern of attachment. Children of disorganized neglecting mothers show vulnerability, but not severe abnormality. Their situation might be described as acceptable, but precarious - dependent upon the vicissitues of stress on their parents. Both abused and severely neglected children show clear developmental problems, however, as predicted, the two conditions are not identical. Even when the abused children have experienced severe or recurrent injuries, they perform better than the neglected children. Their mean D.Q. is higher, they show a fighting, difficult response to their mothers, and they show anger through avoidance and resistance when made anxious by

their mothers. Children who have lived with maternal depression, on the other hand, show the greated developmental delay and the least active response to their situation. They are passive in their interactions and avoidant or passive when under stress. None of them show the openly angry response characterized by the difficult or C_1 patterns. At their worst, these children appear to accept the inevitability of their plight. Their only defense is to close up against a rejecting world. They refuse to participate in a world that refuses to acknowledge them. It seems clear, insults to the psyche of an individual are more detrimental than attacks on his body.

APPENDIX 1

MATERNAL CODING DEVICE

Family # ___ Coder ___ CCA ___ A__N__S__ Category___

*Score on the basis of a single instance.

Facial Expression

__1. *Mutual smiling.
__2. Alert, or responsive, or attentive; appropriate for the type of stimulation and the baby's response.
__3. Inappropriately happy (pleased when the baby is displeased, steady smiling when the baby can't see the mother's face, too exaggerated for the situation, unchanging in spite of situational change). Fleeting expressions of disgust may appear on the mother's face when the baby does not co-operate.
__4. Blank, impassive, expressionless, or distant.
__5. *Looks away from baby and toys (and not to camera); looks at nothing.

Vocal Expression

__6. Slow, gentle, rhythmic voice tone; appropriate for the baby's age and mood.
__7. Flat voice tone or mother rarely speaks.
__8. Pseudo-appropriate voice tone; uses infant-elicited intonation and rhythm but is exaggerated, fast-paced, or artificial sounding. May be used to express rather sharp demands of the baby and usually does not match the baby's affect.
__9. Commands are behaviorally inconsistent (e.g. sweet voice and insistent hands, sharp voice matched with a disarming smile).
__10. Commands, when given, are consistent with the rest of the mother's behavior.

Position and Body Contact

__11. Sits so can't see the baby's face most of the time.
__12. Sits awkwardly or as though ready to leave; positions the baby awkwardly (suspended from the shoulders, on lap but away from mother's body, seated alone but unsteadily and unsupported).
__13. Holds baby comfortably or positions it comfortably on the floor with both toys and mother's face visually available.
__14. *Adjusts baby's body or the toy for baby's comfort and ease of toy play.
__15. *Manipulates baby to accomplish something mother wants.
__16. *Mother suddenly moves toys or her own face in close to the baby's producing a startle, wince, or withdrawal.

__17. Mother spends most of the interaction with her face 2 feet or more from her baby's or her body distant from a seated child's.

Expression of Affection

__18. Affectionate behavior: gentle talking, patting, stroking, or tickling (usually on the baby's body or outer parts of the face) and producing pleasure in the baby.
__19.*Pseudo-affectionate behavior: similar to affectionate behavior but irritating to the baby and more like jabbing, poking, pinching, or teasing (does not include nose cleaning) and produces a startle, wince, or withdrawal (may be done with an object).
__20.*Repeats pseudo-affectionate behavior.
__21. Expresses no affection (or pseudo-affection) to the baby.
__22.*Mother pulls back from, cuts short, avoids, or appears uneasy with physical or visual closeness initiated by the baby.

Pacing

__23. Contingent pacing: mother is sensitive to the baby's rhythms and signals; gives the baby time to respond before stimulating him further; clear effort by the mother to create a turn-taking dialogue.
__24. Non-contingent pacing: mother is involved and active but her pacing is not contingent on the baby's rhythms or cues; pacing is often, but not always, intense or fast-paced.
__25. Long, empty pauses between instances of stimulation--maternal involvement in the infant's play is only sporadic and does not involve turn-taking.

Control

__26. Initiates almost no activities.
__27. Leaves baby doing nothing during much of the interaction.
__28. Takes turns acting or vocalizing with the baby.
__29. Baby controls the play without the involvement of the mother (mother is either totally uninvolved or functions only to keep the infant playing with the toy; she is not playing with the baby) or no play occurs at all.
__30. Either mother or baby enjoys the activity; however, they are both clearly enjoying it and taking turns playing together.
__31. Mother controls the choice and duration of the activity in spite of clear signals that the activity is not liked by the infant, has been continued too long, or is too difficult.

__32. Responds positively to eye contact.
__33. Modifies her behavior when the baby expresses a preference or displeasure (the change must be an attempt to meet the baby's need, not just an attempt to stave off crying while still pursuing the mother's goals).
__34.*Interferes with the baby's play to change or correct an activity or to limit the baby's range of activity.
__35.*Does not respond to baby's initiation (offer, reach, eye contact, vocalization, point, etc.) in a way that furthers the interaction; either ignores it or passively accepts it without overt involvement (e.g. returns eye contact but doesn't add smile or vocalization).
__36.*Keeps an interesting toy just out of reach or takes away an object of baby's interest.
__37.*Makes baby wait and watch while mother performs an activity.
__38. Gives baby an opportunity to freely explore the toy or room and yet still maintains interest and attention.

Choice of Activity

__39. Chooses developmentally appropriate activities.
__40. Makes demands beyond the baby's developmental level.
__41. Offers stimulation below baby's developmental or interest level.
__42. Appears unable to think of things to do with the baby.

INFANT CODING DEVICE

Family #____ Coder_____ CCA ___ P__C__D__ Category___

Involvement with Mother and Activity

__43. Responds co-operatively to maternal requests (smiles, brightens, vocalizes, activates toy or body, carries out request, etc.)
__44. Repells mother or offered objects by wincing, arching back, pushing away with hands and feet, throwing out arms and legs, turning away. Usually does several of these at once.
__45. Refuses to let go of toys when mother reaches for them.
__46. Initiates little or no contact with mother or toys.
__47. Imitates mother or answers mother--infant's responses are clearly related to mother's behavior (imitates vocalization or hand movements, vocalizes in turn, plays give-and-take, etc.)
__48. Responds to mother's plan for the interaction with frustration, opposition, or conflict.
__49. Gives delayed responses or very low-key responses to maternal initiatives; often does not acknowledge maternal behavior.
__50. Seeks or maintains contact with the mother through any means (vocalization, eye contact, smiling, touching, give and take of toys, etc.)
__51. Makes little or no protest when left with nothing to do.
__52. Expresses anger either directly or through toy play (fisting hands, throwing toys, angry face, random hitting or banging of toys)

Facial Expression

__52. Attends visually to toys and/or mother; infrequent gaze aversion.
__53. Alternates grimaces with expressionless face (unlike the blank face described in the next item, in this case the eyes are alert but turned fully away from mother).
__54. Looks bored (vacant expression, eyes wide open but unseeing and unblinking or downcast and dull, minimal change of expression).
__55. Avoidance of eye contact by letting eyes drift just out of a direct gaze line; a subtle means of evasion in which the infant appears available and yet consistently eludes opportunities for contact.
__56. Shows playfullness (coy, teasing looks; pleased with outcome of activities, etc.)
__57. Actively avoids eye contact; turns head away fully from mother in response to disliked behavior.

__58. Displays brief expressions of hopelessness (shrug of shoulders, pursing of lips, dropping of eyes, etc.) in response to lack of activity rather than to disliked activity. Expressions are fleeting and generally not visible to or directed at mother.
__59. Responds to eye contact with a sustained look followed by brightening or smiling.

Vocal Expression

__60. Vocalizes with pleasure (coos, gurgles, crows, babbles, laughs, talks)
__61. Cries or protests more than uses pleasure vocalization.
__62. Sighs, makes uninterpretable sounds, or is silent.

Rhythmicity

__63. Changes behavior abruptly; does not make smooth transitions from one completed behavior to the beginning of another; activities seem cut off (may be due either to the infant's own jerky rhythm or to maternal intrusiveness.)
__64. Responds rapidly and negatively to mother's behavior.
__65. Moves lethargically and slowly; long gaps between activities or movements.
__66. Shows smooth transitions between activities; each activity is completed and the infant's interest drops before the next activity is begun.
__67. Changes facial expression in response to changes in interest in activity (usually bright-eyed and attentive with briefer expressions of surprise, pleasure, anticipation, displeasure, etc.)
__68. Gives multiple, related positive cues (reach, eye contact, smile, vocalize, etc.) Uses several signals together in a coordinated manner.
__69. Uses isolated cues which seem partial, tentative, or ambiguous (e.g. reaches for mother with hand but does look at her, smile, or vocalize.)

Body Tone and Co-ordination

__70. Responds to stimulation with rigidity and resistance. Whole body is involved in response.
__71. Moves smoothly involving only necessary parts of body (for developmental age); is neither rigid, nor lethargic.
__72. Minimal involvement of body parts in movement (e.g. fingers toy but does not use full hand or arm and shoulder).
__73. Slumped body posture, rag-doll response to being moved; flaccid, hypotonic muscle tone.
__74. Co-ordinates activity toward a goal.

Reaction to Physical Contact

__75. Struggles against awkward positioning.
__76. Resists maternal manipulation or adjustment of infant's body with whole body (arches back, kicks feet, refuses to bend, stiffens, etc.)
__77. Limply accepts maternal manipulation or adjustment of his body; limply leans against mother without either sinking in or pulling back.
__78. Assists mother when she manipulates or adjusts the infant's body; sinks in when held.
__79. Withdraws when body space is invaded (blink, throw head back, thrust arm and legs out, turn away, pull back, etc.)
__80. Remains impassive to maternal attention or closeness or does not have such contact.

APPENDIX 2

QUALITY OF PARENTING

Family # _____ Person Completing This Form _____

Check all appropriate blanks for person responsible for infant's care. If there has been a change, rate parent twice marking one "past"

1. Seriously Deficient: imminent danger to infant

___a. known to have seriously harmed the infant (requiring medical attention).
___b. known to have permitted serious harm to the infant.
___c. suspected of inflicting or permitting serious harm.
___d. known to have neglected the infant's essential needs such that medical attention was required or left infant unsupervised.
___e. failure to thrive infant.

Describe incidents briefly.

2. Deficient: cumulative or potential danger to the infant

___a. known to have caused frequent, mild, physical harm to the infant (e.g., bruises, etc.).
___b. known to permit frequent, mild, physical harm to the infant.
___c. suspected of inflicting or permitting mild physical harm.
___d. known to have generally neglected many of the infant's essential needs without actually endangering his life or health.
___e. verbal or emotional abuse of the infant.

Describe incidents briefly.

3. Problematic: present or potential detrimental effects to infant.

___a. inconsistent parenting.
___b. rigid parenting.
___c. brief or mild lapses of attention to the infant's needs.

Describe incidents briefly.

4. Improving: previously problematic, but with professional support is improving.

___a. provides for basic care of infant with prompts and support.

Describe incidents briefly.

5. Minimally adequate: professional help is not necessary and baby's essential needs are all met.

___a. meets all essential needs of infant without prompting, but little life situation is unstable.
___b. meets all estential needs of infant, but is not sensitive to social, emotional, and/or intellectual needs.

Describe incidents briefly.

6. Adequate: stable situation meeting baby's needs.

___a. meets all baby's essential needs and some social, emotional, and intellectual needs.
___b. meets all of baby's needs by combining well-chosen professional services and her own caretaking (includes parent initiated day care or infant stimulation).

Describe incidents briefly.

7. Very good.

___a. is sensitive to a wide range of infant's needs and responsive to them.
___b. really enjoys and is competent in the role of parent.

Describe incidents briefly.

8. Exceptional.

___a. is not only sensitive and responsive to own infant but shows ability to modify her behavior to fit other children.
___b. shows exceptional parenting in spite of serious problems.

Describe incidents briefly.

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