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Assessing communicative intents in maltreated toddlers

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ASSESSING COMMUNICATIVE INTENTS IN MALTREATED TODDLERS

A Dissertation Presented

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ABSTRACT

ASSESSING COMMUNICATIVE INTENTS IN MALTREATED TODDLERS

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There is evidence that maltreated school-aged children have an elevated incidence of expressive language delay, which is often attributed to the cumulative effects of maltreatment. Younger children and toddlers do not consistently demonstrate this delay. There is some ambiguity whether language delays can be observed in toddlers since language is not well developed at this age. However, if gestural communication is also studied as part of language development, a broader sample of behavior becomes available. Intentional communication includes the use of words and gestures to express a child's intent or desire. Examining maltreated toddlers' intentional communication provides an opportunity to study how language develops under less than optimal conditions.

This study examines communicative intents in maltreated and nonmaltreated toddlers (ages 22 to 31 months) and the caregiving interactions of their mothers. The sample is composed of thirty-nine mother-toddler dyads from a Mid-Western city. Maternal maltreatment was documented on thirteen lower class toddlers, who were matched on sex, age, race and SES. Ten middle class dyads composed another comparison group. The lower class toddlers were given the Bayley Scales of Infant Development (BSID) as part of a larger study.

Videotapes of a play session between mother-toddler dyads were coded using The Parent/Caregiver Interaction Scale to rate maternal behaviors plus two child communication inventories to code Intentional Communication and Negotiation of Failed Messages.

Competency scores were computed for all toddlers on Intentional Communication and Developmental Competence was compared on the lower class toddlers. Two scores compared maternal appropriateness to toddler reactivity and communication competence.

Results showed that maltreatment was not related to child Intentional Communication, except that maltreated toddlers acknowledged their mothers' messages more frequently. Social class accounted for differences on most maternal and some toddler variables. Developmental Competence accounted for significant differences in lower class toddlers' Intentional Communication and Social Competence. Patterns of high maternal verbal interaction and control over child's activities were related to toddler's competence in Intentional Communication, suggesting that mothers who are more verbal and appropriate in their control have more competent toddlers.

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CHAPTER I

STATEMENT OF THE PROBELM AND REVIEW OF THE LITERATURE

The parent-child relationship exerts a powerful influence on the development of the young child (Belsky, 1984; Clarke-Stewart, 1973; Erickson, Sroufe, & Egeland, 1985; Fraiberg, 1980; Main, Kaplan, & Cassidy, 1985; Matas, Arend, & Sroufe, 1978; Stern, 1985). For over twenty-five years, research has focused on the development of particular child competencies, such as language or intelligence, and has linked outcomes in these areas with the quality of parent-child relationships (Bee, Barnard, Eyres, Gray, Hammond, Spietz, Snyder, & Clark, 1982; Bloom, 1970; Bradley, & Caldwell, 1980; Clarke-Stewart, 1973; Gersten, Coster, Schneider-Rosen, Carlson, Cicchetti, 1986; Tamis-LeMonda & Bornstein, 1990; Vygotsky, 1962; Werner & Kaplan, 1963). This research has found a strong relation between a positive parent-child relationship and optimal development of expressive language.

Research has also been done with clinical populations, with the rationale that these populations are more apt to be disrupted in their development or at risk for delayed development, thus better delineating the interplay between parent-child relationship and child competencies. For example, researchers have studied the parent-child relationship with maltreated toddlers (Bousha & Twentyman, 1984; Burgess & Conger, 1978; Cicchetti & Schneider-Rosen, 1986) and toddlers with less than adequate mothers (Crittenden, 1981), toddlers who were born prematurely (Crnic, Rogozin, Greenberg, Robinson, & Basham, 1983), children at risk for developmental delays (Erickson, Sroufe, & Egeland, 1985), adolescent parents (Osofsky & Osofsky, 1970; Schamess, 1989), and parents with depression (Gaensbauer, 1984). Studies using clinical samples and comparing them to control groups from comparable socio-economic levels optimize the chance of discovering significant deviation from normal development. Studies such as these are helpful in determining what features of maternal interaction provide the underlying supports in a

parent-child relationship that promote continued growth in the areas of social awareness, emotion, language and cognition. However, in clinical samples, it is uncertain what combination of maternal and child attributes significantly affects the development of language.

Bates and her colleagues (1982, cited in Cicchetti & Beeghly, 1987) have researched the development of language for several decades. She suggests that most mothers and children 'fit' together so well that all mothers do what is necessary to get communication underway, despite attachment status. This hypothesis has been tested in a smaller body of literature that has compared the development of expressive language with parent-child interaction using middle class mothers (Bates, Bretherton, Beeghly-Smith, & McNew, 1982; Bates, Thal, Whitesell, Fenson, & Oakes, 1989; Bee, et al., 1982). Other studies have used the maltreated population to study socio-emotional and language development (Blager & Martin, 1976; Braunwald, 1983; Cicchetti, 1989; Cicchetti & Beeghly, 1986; Coster, Gersten, Beeghly, & Cicchetti, 1989; Westerman & Havstad, 1982). This research has examined which features in the environment support the development of language. A number of studies with maltreated children have suggested that maltreated children are generally delayed in their expressive speech (Blager & Martin, 1976) and that their cognitive competencies are usually lower than their non-maltreated peers (Brassard & Hart, 1989).

Interestingly, however, maltreated children's receptive language, that is, their ability to understand words, does not show the same difference when compared with their non-maltreated peers. One explanation for this difference is offered by Cicchetti (1989). He suggests that expressive speech is one of the products of the attachment-individuation process between the child and his or her caretaker. When this process is disrupted by abuse or other conditions affecting the relationship between child and caregiver, the development of the child's sense of self is disrupted. According to Bowlby (1988) and attachment

theory in general, a child's sense of self is built on real life experience of day-to-day interactions between the child and his or her parents. The dyadic relationship between the parent and child provides a structured experience through which the child learns to differentiate self from other, from relative undifferentiation and globality to one that becomes increasingly differentiated and hierarchical (Cicchetti, 1989). This structure of joint reference between mother and child is thought to provide the cognitive structure necessary for the development of language, among other things (Cicchetti, 1989; Vygotsky, 1978). However, for a child whose attachment process is disrupted by maltreatment or neglect, the formation of a safe and predictable dyadic relationship is obstructed "through defensive exclusion of discrepant experience and information" (Bowlby, 1988, p. 130). This disruption affects the give and take between mother and child that provides the cognitive structure necessary for the development of language. Thus, the maltreated child's language development is delayed, and in particular, the development of expressive speech appears most often affected.

The Contribution of Social Relationships on Language

When researchers have tested this hypothesis, the results have been inconsistent. One descriptive case study, done by Braunwald (1983), found that differences existed in the development of expressive language based on attachment status. Braunwald worked with two preschoolers who had been severely abused and were under court-mandated foster care. One boy was 20-months-old at the beginning of her work with him, and the other boy was 18-months-old.

One boy, Alan, had been hospitalized for non-accidental trauma to the head and a fractured leg. There was organic damage to the left hemisphere of his brain and he was diagnosed as having expressive aphasia. The other boy, Brian, was hospitalized for a knife slash to his face. He had experienced extreme environmental deprivation for the fist

14 months of his life, since his retarded father had taken over his care when his drug-addicted mother abandoned him. It was possible that this child had been born addicted, but no record of this existed. Brian was diagnosed as having an emotional disturbance.

Braunwald worked with the children in a language intervention program. She assumed that their delayed communication was related to pathology in the infant-caregiver relationship, and therefore, one of the ways she worked toward her therapeutic goal was to approximate a normal process of mother-child interaction. She responded to their needs as she perceived a mother would have done (she changed their diapers, cuddled them when they were sad, taught them many skills from eating with a spoon to riding a tricycle and tolerated their moods). Gradually, she extended the scope of their cognitive and linguistic experiences, recording all of their brief verbal responses.

After about one year, Alan, with expressive aphasia, was able to become positively attached, while Brian was more fearful and had an ambivalent attachment to Braunwald. The child with organic damage (Alan) was able to respond positively to Braunwald at a follow-up visit one year later, but he had been unable to achieve the pragmatic skill of language. Alan wanted to communicate, and did so with gesture and by understanding the sequence of turn-taking in discourse. However, although he was able to understand this social aspect of communication, he had not been able to continue with language development even though he had negotiated a postive attachment. He had not been able to master symbolic communication.

Brian, the child with no organic damage but limited social experience, was able to develop symbolic communication after learning to maintain social contact in treatment, between 19 and 24 months of age. Braunwald listed the sequence of Alan's achievements in the pre-linguistic tasks leading up to symbolic communication: (a) establishment of social contact, (b) reciprocity, (c) intentionality, (d)

internalization of social rituals, (e) internalization of functional meanings, and (f) transition to language. Once this child received a minimal amount of experiential and linguistic input, he began in five months to develop meaningful speech.

However, the interesting aspect of this child's development was that he was much weaker in the pragmatic use of language, that is, knowing when and how to speak, compared to his competence in symbolic use of language. For a child to understand the pragmatics of speech, he or she must understand that the contents of his mind are not known to the other (Braunwald, 1983). Intentional communication depends upon this understanding by the infant. It is linked to the infant's development in social play with the caretaker and solitary play with objects (Bates, Camaioni and Volterra, 1975). Bruner (1975) suggested that this capacity for shared attention and reference between mother and child develops through social play and becomes the foundation for all verbal dialogue.

In Braunwald's research, this linkage became clear when the second toddler, Brian, began to acquire language when he experienced a minimal sense of self in relationship to other people. Once this sense of self had developed, he was able to combine words to communicate. In contrast, Alan, with expressive aphasia, was able to develop the motivation to communicate since he was able to differentiate self from other, but since he had organic damage to his brain, he was never able to progress beyond the pre-linguistic stage of single words and gesturing.

With Brian, it was clear that unresolved emotional issues interfered with the development of symbolic communication. Braunwald stated that, throughout the period of transition between pre-linguistic to linguistic communication, abused children like Brian would:

> unpredictably backtrack to work through issues related to the definition of the interpersonal relationship per se. When this happened, the content of the interaction was the negotiation of

> the relationship. At those times, the interpersonal relationship did not function as a context for the more developmentally appropriate task of communicating on a topic. The focus of the interaction was on **whether** to communicate rather than on **what** to say. (1983, p. 251, emphasis as in the original)

In summary, this research points out the importance of social interaction in the development of language competence, particularly in the establishment of social contact with a caretaker. Through this social contact, the child is able to differentiate between self and other and begin to develop the foundation for intentional communication. Alan was able to achieve this communication because he was able to make a secure attachment with the his foster mother and with the therapist, while Brian, with his history of severe neglect and abuse and insecure attachment, had trouble with this aspect of development. However, organic damamge prevented Alan from progressing to language production, while Brian was eventually able to develop language after wotking through his emotional issues.

Another study examined the expressive language of a group of twenty 23-month-old toddlers (Gersten, Coster, Schneider-Rosen, Carlson, & Cicchetti, 1986), fifteen of whom found had been named in reports of abuse or neglect. Four others had been identified as being a sibling of an abused child and one had received treatment when a parent asked for help with abuse/neglect issues. There were no observable differences in mean length of utterance (MLU), productive vocabulary development or in twelve categories of pragmatic functioning of these twenty toddlers when compared to the language of twenty of their nonmaltreated peers, who were matched on SES, and had no documented abuse in the family.

However, when twenty older maltreated toddlers (31-months-old) were compared to twenty of their non-maltreated peers (Coster, Gersten, Beeghly, & Cicchetti, 1989), differences in expressive speech were found. Maltreatment status was confirmed through legal records and

interviews with the family's caseworker; control families were recruited through a welfare office and had no records of abuse. In this study, maltreated children showed significantly more repetitive speech and used more fillers in conversation. They used fewer descriptive utterances about themselves and about objects, requested more information and made fewer references to persons outside the here and now. The explanation offered for the differences in study findings was attributed to maturation, that is, the older toddlers had more opportunity to develop and use expressive language. Consequently, the researchers stated that maltreatment had more opportunity to have an effect on this aspect of development and differences were observed.

A third study of maltreatment and communication examined the linguistic performance of a 48-month-old maltreated child while communicating with her foster mother and then with her abusive biological mother (Westerman & Havstad, 1982). The study examined the linguistic performance of a 48-month-old maltreated girl in a puzzle solving task with her foster mother and with her maltreating biological mother. With continued help from her foster mother, the child was able to communicate her needs and intents clearly. The same child was less able to communicate with her biological mother in a similar situation, partly due to the mother's inability to provide clarification of the child's intents. In fact, if the child had only been observed with her abusive parent, Westerman and Havstad conclude that her speech and behavior would have been regarded as highly deficient.

These researchers point out that the major difference between the two caretakers , the foster mother and the biological mother, was in their ability to establish a common ground between themselves and the child. In the observations, the foster mother was much more able to maintain the relatedness of the conversation, to seek clarification from the child and to move discourse forward. Thus, the reseachers conclude that an important contribution of the caretaker to the child's

linguistic competence is to structure a common ground through which continual negotiation can be enacted.

A review of these studies examining social relationships suggests several avenues to explore with the language of maltreated children. One approach is to explore development related to age specific skills as Coster and her colleagues have done. A second approach might be to explore the contribution of the caregiver in structuring language as Braunwald has done. A third way to approach the examination of the development of language with this population might be to examine the precursors of expressive language in maltreated and nonmaltreated toddlers. In this case, the communicative attempts of younger toddlers could be examined since the production of language would not be the only measure. An investigation of preverbal gestures and communication attempts would help to determine if differences exist at a younger age in the area of language related skills alone or if symbolic capacities are influenced by abuse across each stage of development.

History of Language Research

Although there is some controversy about which precursors of language are most strongly related to expressive speech, there is general agreement now that gesture and pre-verbalizations develop from a similar cognitive base as expressive speech. Historically, there has been some disagreement about this assumption. The historical viewpoints can be grouped into two general classes based on their assumptions concerning both what is learned in acquiring a language, and how it is learned (Petitto, 1986).

One view, represented by the interaction-based models, sees language as part of the child's general cognitive capacity. This viewpoint argues that the child's non-linguistic knowledge of relations among objects and events in the world provides the root of language development and linguistic structures are built up out of pre-

established forms of knowledge, based on the child's interactions with the environment.

The second view, represented by the child-based models, sees language as developing from an innate knowledge of structures specific to language. Rather than seeing the child's interaction with the world as providing the essential base of language, the child is assumed to possess a biologically-given knowledge of the possible forms of human languages. The child must then infer the structure of the particular language to which he or she is exposed.

Piaget (1929, 1955) is perhaps the most well-known proponent of the interaction-based view. He proposed that language grew out of sensory-motor intelligence. Language developed like all other cognitive processes through inter- action and maturation. Chomsky (1957, 1965) directly challenged this view by proposing the stunning argument for the autonomy of knowledge about language structure. This biologically-based model so dominated research on language acquisition that for a time it appeared that the role of general cognition in child language had been abandoned (Petitto, 1986).

In recent years much research has been conducted to provide a rebuttal to the deterministic view of language proposed by Chomsky and his followers. This research has sought to re-establish the role of cognitive and semantic factors in language development (Bates, 1976; Bloom, 1970; Bruner, 1975; Greenfield & Smith, 1976; Macnamara, 1972). This shift has focused on the "natural way in which grammatical structures are built up from cognitive, pragmatic, and social inter-actions with the environment" (Petitto, 1966, p. 3) and marked a return to interaction-based models similar to Piaget's original proposal.

In general, the controversy about gesture and preverbalizations within the interaction model have focused on the way language develops. Some theorists think that language and gesture develop simultaneously when the cognitive structure is ready to support it. Others suggest

that the processes are somehow linked but that all cognitive structures are not linked to language development. For example, some researchers have noted that gestural use and the beginning of language are likely to be connected to the same cognitive structure since gesture and language emerge during the same period (10 – 12 months of age) (Bates, Benigni, Bretherton, Camaioni, & Volterra, 1979; Bates, Snyder, Bretherton & Volterra, 1979; Bretherton, Bates, McNew, Shore, Williamson & Beeghly-Smith, 1981). These theorists maintain that brief action schemes observed at this age, such as holding a toy telephone up to the ear, show a beginning recognition of the object. This beginning recognition is seen as the crucial component to the development of language when the child learns that objects have names (Bates, Snyder, Bretherton & Volterra, 1979). Inhelder, Lezine, Sinclaire, and Stembak (1979) first referred to these action schemes as 'symbolic play' (cited in Bates, Thal, Whitesell, Fenson, & Oakes, 1989). The gestures have also been called 'enactive names' (Escalona, 1973) and 'gestural depiction' (Werner & Kaplan, 1963).

Because these recognitory gestures share so many features of symbolic representation, researchers have predicted that these gestures would correlate strongly with the emergence of vocal naming. The correlation between vocal naming and gesture has been the source of some theoretical controversy, however. The argument centers around the idea developed by Piaget (1926) and Werner & Kaplan (1963) that development of vocal naming and gesture proceed on a parallel course and both depend on an underlying capacity to form a symbolic representation. In earlier research, Bates, Snyder, Bretherton and Volterra (1979) were able to demonstrate that this principle seemed to be operating.

Bates and her colleagues (1979) worked with mothers and 13-month-old infants to assess their ability to understand the use of increasingly abstract objects in play scripts. For example, one script involved putting a "sleepy " doll to bed. At first, a realistic doll

was used; then a tiny doll model was used; and finally, a placeholder object (a plain wooden cylinder) was used in the script. The infant experienced various levels of contextual support from the examiner while he or she was asked to perform the play script. For example, the examiner might have visually displayed the selected objects and used gestures to describe what to do with them, such as putting the "doll to bed". Analysis showed that as the amount of examiner contextual support for the symbolic act decreased, the strength of the correlation with language production increased. Thus, as the gestures about the objects became more symbolic, abstract and 'distant' from their referents, the more like vocal naming it became. Therefore, they concluded that it was likely that the infant's ability to understand these gestures came from a cognitive process like vocal naming, perhaps rooted in a more general symbolic/representation capacity, as suggested by Piaget and Werner and Kaplan.

However, the data did not support the link among the development of all cognitive processes and the use of gesture. They found that, while some nonlinguistic components did correlate with the emergence of naming, such as means-end behavior and tool use, other cognitive domains, such as spatial cognition and object permanence, appeared to be completely separate from naming capacities (Bates, et al., 1989). In addition, children did not show an equal level of gestural use and word use, which might be expected if an underlying lexical, symbolic capacity were supporting both productions equally. Later research has argued that there is not a single developmental process going on, but that separate and somewhat parallel processes emerge (Bates, et al., 1989; Tamis-LeMonda & Bornstein, 1990).

This is an area of research which is ripe for investigation with maltreated children. If their representational capacities are affected by the maltreatment, it would seem that gestural and vocal communication among maltreated toddlers would be less frequent and less robust than

controls. Theoretically, if differences in expressive language are observed between maltreated toddlers and their nonmaltreated peers at 31 months (Coster, Gersten, Beeghly, & Cicchetti, 1989), it seems likely that differences exist in pre-verbal communicative skills among toddlers during their sensorimotor period of development.

This developmental period has been of special interest to several researchers trying to show the continuity between nonlinguistic and verbal communication (Carpenter, Mastergeorge, & Coggins, 1983). Dore (1975) and Carpenter and his colleagues (1983) have identified a series of communicative intents (requesting, commenting and answering) that were present at the beginning of speech but which seemed to have a previous development in gesture. Bates and her colleagues (1975) have called these gestural depecitions "proto-imperatives" and "proto-declaratives" because they saw these communications as clear precursors to the verbal expression of imperative and declarative sentences.

So, intentional communication involves both the use of gesture and speech. For purposes of this project, intention is used to refer to "the deliberate pursuit of a goal by means of instrumental behaviors subordinated to that goal" (Dore, 1975, p. 36). Behaviors can include both gesture, gestural/vocal signals and verbal signals. Research has focused on nonmaltreated samples to examine the use of gesture and preverbal communication with infants and toddlers. There have been no studies done on the use of gesture and intentional communication with maltreated toddlers. Therefore, to make this study clearer, the literature on intentional communication with infants and toddlers will be reviewed here, and then the studies relating to intentional communication and maltreatment will be reviewed.

Studies of Intentional Communication

Intentional communication of infants was perhaps first studied by Bates, Camaioni and Volterra (1975). They found the joint activity of social play with a parent and object play with a toy to mark the

beginning of intentional communication. At about the age of 9 months, most researchers agree that social and solitary play with objects are joined successfully (Bates, Camaioni, & Volterra, 1975; Trevarthen, 1980; Trevarthen & Hubley, 1979). Bates and her colleagues found that the child's use of communication to obtain a desired goal suggests an 'a priori' awareness on the part of the child that his or her communicated message will have an effect on the other person. Such an awareness marks the beginning of the child's developing sense of self, a self who is differentiated from a caregiver and who can communicate a message from that separate self to another person.

For example, Bates, Camaioni and Volterra (1975) have described an interaction between a 9-month-old girl and her father that demonstrates this awareness of communication:

> Marta is unable to open a small purse, and places it in front of her father's hand (which is resting on the floor). Father does nothing, so Marta (M) puts the purse in his hand and utters a series of small sounds, looking at Father (F). F still does not react, and M insists, pointing to the purse and whining. F asks "What do I have to do ?" M again points to the purse, looks at F, and makes a series of small sounds. Finally, F touches the purse clasp and simultaneously says, "Should I open it ?" Marta nods sharply. (p. 219)

In this case, the child's intent to communicate a scheme involving the father and the purse indicates that she possesses what Bates called 'a certain theory of mind' (1979). This theory suggests that the child is able to unite two separate objects (wanting the purse open and getting father to open purse) in a scheme to produce the desired result.

This joint capacity to have an intention and know that the self can communicate it is an important developmental milestone. The child must hold two separate thoughts and be able to evaluate them. Moving on to possess the intent to communicate is the next developmental step.

Once the child can hold the intention and the communication of the intention together and then signal the message to another person, it indicates that the cognitive base for communication and language production is in place (Bretherton & Beeghly, 1982).

As was discussed before, an infant's relationship to a caregiver depends upon the experience of day-to-day interactions. These joint interchanges provide the setting for generating mutual understandings between the infant and a caregiver. Parents and other adults often help the infant to understand interchanges by scaffolding the experience for them using standard action formats, such as action plays like "Sooo big", "Bye-bye" and "All gone". These acts combining gestures and words involve the joint attention of an infant and social partner. They are referred to as 'conventionalized acts' or 'ritualized acts'. These action formats help the infant to both maintain joint attention to a referent and allow time for the infant to communicate appropriately with the scheme (Bakeman & Adamson, 1986).

Study 1: Bakeman and Adamson

A study of such conventionalized acts, or acts combining a gesture or word with joint attention with a parent, was conducted by Bakeman and Adamson (1986). They examined communicative behaviors in three conditions; when the infant was alone, with mother and with a peer. This study documented when infants were most likely to produce their first gestures and words. Twenty-eight infants and their middle class mothers were videotaped at home in play under the three conditions. Fourteen infants were filmed at 6, 12 and 15 months, and 14 were filmed at 9, 12, 15, and 18 months.

Conventionalized acts were coded for a number of sharing conditions, such as pointing, showing/offering, ritualized requests (such as palm up, arm extended), referential words, regulative gestures (head shake or wave), and regulative words ("mine", "boy"). Coders

recorded onset time and type of act for each discrete act they observed. Instances of jargon and babbling were included so that occurrences for these nonconventionalized acts and occurrences for the conventionalized acts described in the previous paragraph could be compared.

Engagement states were also coded when the infant was engaged with objects or people. Six scales were used, as follows: unengaged, onlooking, person engagement, object engagement, passive joint engagement and coordinated joint engagement. Bakeman and Adamson considered that three states of engagement would impact on the performance of conventionalized acts: (a) object engagement: infant is engaged with an object alone, while the other person (mother or peer) is not engaged with that object; (b) person engagement: infant is engaged with the other person, objects are not involved; and (c) joint engagement: both infant and the other person are jointly engaged with the same object.

One pair of coders coded all of the videotapes, with a second pair independently coding 51 randomly selected conditions (around 15% of the total tapes). Coders achieved high reliabilities on coding conventionalized acts, using Kappas $\underline{X}$, an agreement statistic that corrects for chance (see Cohen, 1960). Reliabilities ranged from .90 to .99 for ratings of conventionalized acts and .81 for engagement states.

The results of the study showed that all infants had developed the use of gesture by 15 months and 25 also used words by that age. Most often conventionalized acts occurred when infants were jointly engaged with mothers rather than with peers or when the infant played alone.

Joint engagement increased with age and was more common with mothers than with peers. For example, most 15-month-old infants spent 35% of their time jointly engaged with their mothers while 9-month-olds spent 19% of their time jointly engaged. However, during this engagement time with their mothers, the 15-month-olds demonstrated 83% of their pointing gestures, 73% of their show/offers, and 62% of their referential words. The first conventionalized act fostered by joint

engagement was show/offers at 9 months of age when with mothers and at 12 months when with peers. Generally, during engagement with objects, the number of conventionalized acts was small, as expected.

These results lend support to the observation that the presence of an attentive comprehending partner, joint attention toward an object with the partner, and the enactment of an action scheme all facilitate early communication. In addition, the researchers found that acts first facilitated by adult scaffolding became increasingly freed of this support. For example, one 15-month-old infant performed the ritual of book-reading complete with pointing to pictures, while playing alone.

In addition, when mothers were attentive, infants produced more gestures and words. Infants produced fewer gestures and words when mothers were inattentive, when playing alone or when playing with a peer. Periods when infants and their mothers attended to objects together seemed most conducive to the production of gestures and words, particularly at 15 months. Playing with peers seemed to provoke more babbling and positive affective displays. This data suggests that showing/offering may be the earliest ways infant peers attempt to communicate. Results of this study show that, within the context of shared interchanges or rituals and joint engagement, adults may assist infants to use socially mediated communicative acts.

Study 2: Carpenter, Mastergeorge and Coggins

The second study to be reviewed examined the sequence of communicative acts by following six preverbal infants from ages 8 months to 15 months of age. Carpenter, Mastergeorge, and Coggins (1983) videotaped the infants for one hour at monthly intervals as they interacted with their middle class mothers in a free play situation.

Seven categories were used to classify the infants' intentional communication behaviors. Adapted from the Communicative Intention Inventory described by Coggins and Carpenter (1981), their rating scale included the following categories.

1. Comment on Action: Direction of the listener's attention to some observable referent. This comment is an intentional behavior that appears to call the listener's attention to the movement of some object rather than the object itself.

2. Comment on Object: Direction of the listen's attention to some observable referent. This comment is an intentional behavior that appears to call the listener's attention to some object identified by the child.

3. Request for Action: Solicitation of services from a listener where child awaits a response. This request is an intentional behavior that directs the listener to act upon some object in order to make the object move. The child's interest appears to be in the action of the object rather than in the object itself.

4. Request for Object: Solicitation of services from a listener where the child awaits a response. This request is an intentional behavior that directs the listener to provide some object for the child; the object is usually out of reach due to some physical or spatial barrier.

5. Request for Information: Solicitation of services from a listener where child awaits a response. This request is an intentional behavior that directs the listener to provide information about an object, action or location.

6. Acknowledging: Providing notice that a previous gesture or utterance was received.

7. Answering: Responding to a request for information with the semantically appropriate data.

8. Protesting: Expressing disapproval of the speaker's action of utterance.

All categories include behavioral descriptions for gestural, gestural/vocal and verbally encoded intentions.

Five of these categories classify what children intend by their messages irrespective of what another speaker says in the conversation. These intentions include: Comments on Action and Object, Request for Action and Object, and Protesting. The remaining two categories, Request for Information and Answering, take into account both the child's intention and how that intention appears to function in relation to other's utterances.

Intentional communication was coded when the mother and infant were engaged in joint play. The mother-child dyad was considered to be jointly participating if one or more of the following conditions existed: (a) close physical proximity; (b) recent physical proximity; (c) recent gestural/vocal or verbal contact between mother and child; (d) child gazes toward mother within three seconds of a communicative interaction. Once behaviors could be placed in these sharing situations, intentional communication was coded.

Intercoder agreement for 25 selected behaviors across subject and time was computed. Intra-judge reliability was obtained for each month and ranged from .88 to 1.00.

While collating the results, Request for Information was dropped because it did not appear for any of the subjects. A rank order measure was computed across subjects (Kendall coefficient of concordance, Siegel, 1956 as cited in Carpenter, Mastergeorge & Coggins, 1983). In this procedure, the degree to which subjects acquire communicative intentions in a different order reduces the coefficient accordingly, with a 1.00 indicating a perfect agreement in the order of variables across subjects. The obtained coefficient was .73, $p < 0.01$ suggesting that the six infants had the following predictable sequence of communicative intents: (a) Protesting, (b) Request for Action, (c) Request for Object, (d) Comment on Action, (e) Comment on Object, and (f) Answering. All infants demonstrated all of these categories by the age of 15 months.

Charting the modes of presentation of the communicative intents showed that gestural and gestural-vocal modes were used most frequently by subjects from 8 to 12 months of age; after 10 months, the gestural mode began to decline with age, while vocalizations began to accompany most gestural sequences. However, the gestural/vocal mode continued to serve as the most frequent vehicle for expression even at 15 months.

Study 3: Acredolo and Goodwyn

A third study, done by Acredolo and Goodwyn (1988) in two parts, demonstrated that symbolic gestures tended to develop in tandem with children's early words. The first part was done by interviewing 38 middle class mothers who had infants aged 16 months of age. Recordings of the infant's nonverbal behaviors were done in hone observations. In the analysis, four types of infant nonverbal communication were coded as follows: signing or gesturing for an object, requests, attributions, replies and events. An estimate by the mother of the child's current vocabulary was also made at the time of the interview.

Results showed that first born females produced more signs than their male peers regardless of birth order. First born infants in general produced more object signing than all other infants. Object signs in general correlated to mother's estimate of the infant's vocabulary.

This study was followed by a longitudinal study by the same authors of 16 toddlers of middle class families, who were followed from the age of 11 months to 24 months. Mothers kept weekly diaries of their child's nonverbal and verbal communication behaviors. At 17 months, the infants were seen in the studio to measure how well they could imitate an adult's gestures. At 17 and 24 months, a formal estimate of the child's vocabulary was made during observational sessions. In addition, at 24 months, the child was given the Bayley Scales of Infant Development (BSID, Bayley, 1969).

Results indicated that again, females exhibited significantly more total gestures and more requests, although there was no significant difference in the use of object signs. When conditions for the use of gesture were examined, 32% of object gestures were identified as arising within games or interactive routines with mothers in the second, or longitudinal study. In the first, or interview study, 59% of the object gestures occurred within interactive sequences with mothers. In contrast, 68% of the object gestures in the longitudinal study, compared to 41% in the interview study, were identified as having arisen outside of interactive routines. Outside of these structured interactive play scenes, children substituted an imitation of the action used with a toy to symbolize the toy (45% of total gestures). Part of the remainder of the total gestures was composed of imitations of actions inherent in the objects (13% of the total) and 10% were depictions of some perceptual quality of the object.

When the child's use of object signs was compared with maternal estimates of vocabulary, Acredolo and Goodwyn found that 80% of all gestural schemes appeared before the child obtained a vocabulary of 25 words. Furthermore, the use of gestural schemes tended to fall away as the child's use of words began to build. The researchers reported a mild correlation between the number of object gestures used by the child and the child's age when he or she could say 10 words ($\underline{r} = -.48$, $\underline{p} = < .10$). Acredolo and Goodwyn thought that this comparison should have been stronger and commented that the lack of significance was an issue of power, that is, due to the limited number of subjects in the longitudinal study. A further comparison showed that the children's scores on the Bayley at 24 months correlated positively to the child's vocabulary and mean length of utterance (MLU) at 24 months.

These results support the hypothesis that word and gesture are linked in development and develop sequentially. In the sequence of object signs reported in the two studies, infants used gestures more

often in interactive schemes with someone else and then, with maturity, used gestures as signs for objects. This supports Werner and Kaplan's (1963) original prediction that the infant's discovery of the symbolic function would proceed from actions on objects to actions in the service of representing objects. The use of symbolic gesture indicates that 'a certain theroy of mind' has developed so that a gesture can represent an object. From this cognitive development, then, language can grow.

Of major interest for purposes of this paper is the support that Acredolo and Goodwyn give to the premise that the degree or kind of mother/child interaction plays an important role in the facilitation of the child's use of gesturing. They speculate that this factor may be responsible for the differences observed in first borns and girls, as mothers may have more time or more inclination to spend time with these infants.

Study 4: Golinkoff

Another researcher, Golinkoff (1986) has focused on the interactive episodes between infant and mother, coding for intentional communicative behavior of the infant to the mother. However, unlike Acredolo and Goodwyn, who separated out independent communications from those that were interactive with another person, Golinkoff studied these interactive episodes, referring to them as negotiation episodes. Each episode was composed of a number of turns taken by the infant to send or clear up a signal to their mothers. Golinkoff videotaped 3 infants three times between the ages of 12 to 19 months during lunch with their mothers. Each session lasted about 1/2 hour and were separated by about 8 weeks.

She coded for eye gaze, infant/mother signals and mother response for each turn. Episodes were only coded for those initiated by the infant. In order to be coded, the infant had to use an unprompted communicative signal directed to the mother which the mother failed to understand. Negotiation episodes contained four components: initial

signal, mother comprehension failure, infant repairs and final outcome. Mixed attempts were coded when mother did not understand infant and infant did not signal again. Successes were coded when mother understood the infant's signal the first time. Interrator reliability for the various categories ranged from .79 to .95.

A mean of 49% of all communicative interactions were negotiated episodes. An average of 5 turns was found for each episode. More communicative failures occurred than either missed attempts or immediate successes. Golinkoff reports that this was an unexpected number of negotiations, and not a finding that other literature had discovered. She suggests that preverbal infants have an strong ability to persevere to a perceived goal with their limited communication skills, one that had not been noted before.

Golinkoff also found that mothers were assisted in their efforts to comprehend their infants' signals when the infant looked at them and leaned towards the desired object. These results also support the importance of shared attention as an enhancer of communication. When the infant can show in some way what is desired by maintaining eye-contact and leaning toward the object, more successful communication takes place.

Study 5: Zinober and Martlew

The final study of intentional communication to be reviewed examined the use of gesture and vocalization of two male infants, aged 10 to 21 months and was conducted by Zinober and Martlew (1985). In this study, 8 observations were made in the homes at 6 week intervals. Videotapes were made of the infant and mother playing in a free play situation and a book-reading session.

These researchers used a slightly different coding system that does not appear to be as sensitive to intentional communication as the other systems reviewed here. Rather than breaking down conventionalized acts into intentional behavior categories, Zinober and Martlew used 4

categories of gestures seen as 'acts': (a) instrumental, which serve to change the behavior of a partner, but did not include actions between partner and objects; (b) expressive, which express the child's feelings; (c) enactive, representing actions of people or actions on objects performed in an imaginary context (such as pretending to drink out of an empty cup); (d) deitic, gestures which isolate an object from its general context (pointing, showing).

Vocalizations were coded separately into five categories: (a) babbling was scored for random vocalizations; (b) proto-words indicated individual utterances with a stable phonetic structure but with no related word in adult language (the presence of gesture was not part of this category); (c) conventional single-word utterances were imitations of adult words; (d) multi-word utterances were coded for two or more words expressed within a single intonation pattern; and (e) unclear utterances, vocalizations occurring after the onset of conventional word usage that could not be understood by observer or mother. The average interrator agreement for categorizing both gestures and vocalizations was .92.

The instrumental category is similar to a requestive, coded in Acredolo and Goodwyn's study (1988). The categories used by these researchers are not associated with specific behaviors and so they appear broader than categories used by Carpenter and his collegagues. Therefore, the results of this study are more general than the others reviewed here. In addition, the small number of subjects in the Zinober and Martlew's study (two infants) make it more like a case description, and this makes their conclusions somewhat weaker than the other four studies reviewed.

Like the other researchers, Zinober and Martlew found that gestures preceeded the use of words, from instrumental signs to deitic signs. Since these two categories are more like the ones represented in the other studies reviewed here, it is interesting to note that gestures

in these two categories were more predictable and more frequently observed. The gestures coded in the expressive and enactive categories showed a more inconsistent pattern. This predictability is shown in the case of one infant, with whom enactive gestures were only observed 3 times and expressive gestures 9 times in the free play situation and even less frequently in the book-reading session. In comparison, the same child averaged 16 instrumental gestures and 10 dietic gestures in the same condition. The other infant had more gestures in each category, but the observed number of gestures followed a similar pattern, with instrumental and dietic gestures more frequent.

Vocalizations were found to follow the predicted pattern as well. However, because gestures were not coded as part of the vocalizations, their use as communicative devises was not assessed. Zinober and Martlew do observe that proto-words are generally accompanied by gestures. This description would have been a helpful addition to the literature, and the failure to account for gestures is due to the type of coding system they used.

It is clear from the five studies reviewed here that coding for intentional communication shows that changes in communication are observable over time. These changes follow a robust, predictable pattern in infants aged 10 to 24 months. In addition, mother's ability to scaffold experiences for her infant and to act as a sensitive listener are important parental characteristics for successful infant communication. Infants' ability to persist and send clear communicative signals, augmented by ability to maintain eye gaze and postural lean, also represent important functions of intentional communication.

In the following section, two studies that examine expressive communication in maltreated toddlers will be reviewed. These studies use a different coding system for communication, and were not designed to study intentional communication as such. However, since they are the

only two existing studies of expressive communication done with the maltreated population, they are important studies to review.

Studies of Expressive Communication and Maltreated Children

Study 6: Gersten, Coster, Schneider-Rosen, Carlson, & Cicchetti

This study was designed to compare the attachment classification of maltreated children with their communicative competence. The subjects were two groups of 25-month-old toddlers and their mothers, an experimental group of maltreated children (10 girls, 10 boys, 17 White and 3 Black) and a comparison group of non-maltreated children (8 girls, 12 boys, 18 White and 2 Black). Members of all groups were lower class as determined by household prestige ratings (Nock & Rossi, 1979). Maltreatment was determined by protective services. Four children had not experienced direct abuse in this group but had siblings who had. Eleven children experienced more than one type of maltreatment.

Four laboratory assessments were made. The mothers and children were observed in the Ainsworth Strange Situation, at the age of 20 months. A month later, they were observed in a 30-minute free play session. Then, the children were administered the Bayley Scales of Infant Development (Bayley, 1969), followed by a 20-minute unstructured free play situation with mother.

Attachment classifications were found to be consistent with predictions from the literature, with 60% of the maltreated sample categorized as insecurely attached to their caregiver, compared with 30% of the nonmaltreated group. The difference between secure and insecure categories between the two groups was significant ($p < .05$).

Then, the number of words the children strung together was coded (length of utterance) and this was averaged into a mean length of utterance (MLU) for each child. A measure of productive vocabulary was computed, comparing the total number of words used to the number of different words used. Communicative functioning was coded according to

a checklist devised by the authors. This checklist examined thirteen categories of functional communication.

1. Imitation, partial or complete repetitions of mother's immediately prior communication, which did not add new information.

2. Self-repetition, exact repetition of prior communication, either spontaneous or in response to clarification request.

3. Conversational devises, words and phrases serving primarily to mark conversational boundaries or maintain conversational flow without adding to the discourse, such as "yeah", "OK".

4. Exchange, utterances that accompany acts of giving and receiving objects, such as "Dis for you".

5. Attentional, utterances that elicit the mother's attention, usually by specifying the attentional object, such as "Lookit", "See that".

6. Routines and Social speech, ritualized or stereotyped expressions and verbal games, such as "Thank you".

7. Action Requestives, attempts to regulate the behavior of a person or plaything, such as "Do this', Gimme that".

8. Information Requests, attempts to solicit specific verbal responses, including requests for labels or for permission, and questions seeking explanations or descriptions, such as "What's that?", "Want more?".

9. Naming, statements referring to an object or person by name.

10. Description, statements that encode relationships of qualification or specification about objects, persons or events.

11. Discusses Others, statements that describe the psychological states (thoughts, feelings, actions) of others, including pretend animate beings.

12. Discusses Self Action, utterances describing an act the child is performing.

13. Internal Report, utterances that express sentiments, emotions, intents and other internal states, such as "Can't do it", "gotta go".

These categories can be compared to those used in intentional communication studies, in which comments and requestives are associated with actions or objects. Using the categories from the intentional communication literature may be more descriptive and may provide a better source of comparison in language. For example, items coded Attentional would correspond to Request for Action in the coding set up by Carpenter, Mastergeorge and Coggins (1983). Information Requestives would be broken down into two categories in their intentional behavior coding, according to whether information was being sought about an object or an action. Likewise, Action Requestives would be broken down according to request about actions or objects. Description and Discusses Others would be grouped together under Comment on Object. Self-repetition may be picked up as a more informative item in the intentional communication coding, as it may signal a negotiation episode. Although these intentional communication categories are not exactly similar to those used in the maltreatment study, it is interesting to note that some of the categories can be compared to categories used in intentional communication studies.

The language ratings obtained in the study by Gersten and her colleagues (1986) were compared to attachment ratings. The results of this language/attachment analysis showed that, in many categories, language competency was linked to secure attachment. For example, MLU, total different words used, and a number of functional acts (language used to accompany acts of giving and receiving, descriptions of objects, and use of fillers in conversation) were all significantly related to secure attachment categories ($p < .01$). However, when the data were analyzed to find the relationship between the existence of maltreatment and language competence, no significant differences were found.

These results were surprising to the investigators. However, they felt that significant differences might be found if older children were studied for their social aspects of language. The researchers did not consider that the quality of caregiving might have been the factor that affected language development, rather than the existence of maltreatment. Instead, Coster and her colleagues tested the hypothesis suggested by Blager and Martin (1976) that the type of maltreatment (i.e., neglect versus physically abused) would affect language competence. This comparison also showed no significant differences, although Gersten and her colleagues expressed doubt that the two types of maltreatment could be systematically separated. In addition, the numbers of subjects for each group were quite small.

When these results are compared to the categories used by those studying intentional communication, some interesting data is found. In the categories of speech acts most like categories of intentional communication, several statistically significant corelations were found when compared to MLU: Information Requests (r = .47); Discuss Actions (r = .68); Description (r = .51); and Discusses Other (r = .51). When these categories are compared to the categories used to code intentional communication, it can be seen that they are a combination of both earlier developing categories (Request for Action and Object) and later developing categories of communication (Comment on Action and Object). This suggests that the correlation between intentional communication and MLU is a strong one and one that appears to be consistent through the early development of language.

The researchers state that MLU was taken as an index of the structural complexity of language. Results of a two-way ANOVA showed that, although there were no group differences based on maltreatment status and MLU, securely attached toddlers used significantly more complex langauge than insecure toddlers (mean MLU: Secure= 1.83, Insecure = 1.50) $p < .01$. The fact that these categories correlate as

highly as .68 with the MLU suggest that they are strongly related to children's intentional communication and their attachment status. Secure attachment predicts toddlers who are using more complex language, while insecure attachment predicts toddlers with less complex language at 31 months.

Although this study did not find the expected differences in language according to maltreatment status, Gersten and her colleagues suggest the following interpretation. Research by Bates and her colleagues (1982, cited in Cicchetti & Beeghly, 1987) suggests that mothers and children 'fit' together so well that all mothers do what is necessary to get communication underway, despite attachment status. However, Cicchetti and Beeghly point out that investigations with older children may show the anticipated differences in language development. They suggest that the:

> influence of maltreatment on communicative behavior may become more apparent as the child attempts to achieve autonomy during the third or fourth years. At that time, certain patterns of communicative behavior may emerge that reflect coping mechanisms used to deal with the maltreating environment. (1986, p. 56)

Therefore, they suggest that language research be done with older maltreated toddlers.

Study 7: Coster, Gersten, Beeghly, and Cicchetti

This study by Coster, Gersten, Beeghly, & Cicchetti (1989) attempted to take some of the considerations suggested by Gerten's research into account. These subjects were older (31-months compared to 25-months) and an outcome measure for the mothers was taken. The form of the project was similar to the previous study (Gersten, Coster, Schneider-Rosen, Carlson, & Cicchetti, 1986). The children and mothers were from a low SES background, determined by household prestige ratings. The maltreated group was composed of 9 girls and 11 boys, 17 White and 3 Black. The comparison group was composed of 8 girls and 12

boys, 19 White and 1 Black. Maltreatment status was determined by legal record at the Department of Social Services.

The laboratory play session assessments were similar to the first study. However, no attachment classification task was undertaken. In addition, the children were given the Peabody Picture Vocabulary Test-Revised (Dunn, 1975) instead of the Bayley. The child outcome measures were similar, with the addition of a classification for the child's communicative functioning as 'here and now' or 'decontextualized', and a conversational relevance measure.

The new maternal outcome measures included a coding for mother's type of questioning (did mother use questions that required a simple "yes-no" answer or did her questions require more complex answers) and a measure of her attention. They also measured her discourse relatedness and categorized her speech on the same twelve variables as the child.

The results of the analysis of the expressive language measure (MLU) showed that maltreated children scored lower than their non-maltreated peers ($p < .008$). Maltreated toddlers used significantly fewer utterances about others, about self and about peopel and events in the past or future. A main effect for sex was found, with all girls having longer MLU's than boys in each group, but no between group differences based on sex were found. In receptive language (PPVT-R), no significant differences were found between groups.

When the two groups, maltreated versus nonmaltreated, were compared in the twelve categories of functional communication, several significant differences were found. These differences were transformed using arcsine square roots and are reported as proportions in parentheses after the category, with M = maltreated group, C = comparison group. These differences were in the following areas: (a) decontextualized speech (M = 25.7, C = 43.0, $p < .03$); (b) use of fillers (M = 0.25, C = 0.17, $p < .007$); (c) describes objects, persons

or events (M = 0.08, C = 0.11, $p < .002$); and (d) and discusses self (M = 0.05, C = 0.09, $p < .003$).

No significant differences were found between the groups on the maternal measures. However, in the maltreating group, the child's self-related utterances (fewer than the comparison group) were significantly related to two features of the mother's conversation: her proportion of eliciting utterances ($r = .44$, $p < .05$) and proportion of utterances discussing the psychological states of others ($r = .52$, $p < .02$). In the non-maltreating group, the relationships between these factors were smaller and did not reach significance.

In discussion of these differences, Coster and her colleagues suggest that the maltreated children's greater use of fillers (words or phrases serving to mark conversational turn-taking, such as "OK"), demonstrates a less mature form of conversation. The children's less frequent use of descriptive terms is thought to stem from a similar pattern of less well developed speech characteristic of a younger child.

Comparing these results to the intentional communication literature provides an opportunity to view the findings through this discipline. As children progress through the intentional communication sequence, the frequency of descriptive words about objects and people, coded 'Comment on Object' by Carpenter, Mastergeorge, and Coggins (1983) comes near the end of the developmental sequence predicted by their study. Therefore, the finding that maltreated children used fewer descriptive words about objects and people appears to be like the speech of a younger child.

In general, it is expected that as 30-month-old children use increasingly longer utterances, the topic relatedness of their conversation will increase. One of the ways to measure topic relatedness is to use a measure called the mean length of episode (MLE). This measure was devised by Brown (1980, cited in Coster, et al., 1989) as a measure of the average number of connected, conversationally

relevant acts a child can produce during interaction with an adult. A child does not have to respond in a complex way to the adult for the response to be conversationally relevant. For example, a "yes" or "no" answer to a simple question is considered conversationally relevant. Brown found that the length of a child's utterances was highly correlated to their conversationally relevant discourse (r = .73, p < .001). When this measure was applied to the two groups of children, only the non-maltreated children showed the expected correlation. Nonmaltreated children's conversational relatedness and length of episode of related conversation correlated fairly well (r =.59 and .56) to their length of utterance. However, for the maltreated sample, this correlation did not hold, suggesting that maltreated children were less conversationally relevant, and the length of their conversations did not help them to become more relevant.

When this lack of conversationally relevant communication is examined, Greenspan's description of the maladaptive youngster seems relevant. Greenspan described a maltreated toddler as one who might say the word "eat" as a signal that he is hungry, followed by "dog' or "horse' as he points to play objects around the room (1981, p. 126). Here we do not necessarily see a picture of a younger child. Instead, we see a child who is unfamiliar with transforming his or her perceptions to the symbolic mode, or one who is disordered in symbolic processes. Interestingly, the two other language differences found between maltreated and nonmaltreated toddlers (in decontextualized speech and in the discussion of self), have roots in the area of symbolic, self-related concepts. Previous research had stated that development of these concepts may specifically be affected by environmental variation (Bates, Bretherton, Beeghly-Smith, & McNew, 1982; Greenspan, 1981).

The data from this study has been examined further by other researchers and their analysis has shown that these children "produced

significantly fewer different labels for internal states than did non-maltreated toddlers, even in contexts designed to elicit language about internal states" (Cicchetti, Beeghly, Carlson, & Toth, in press, cited in Coster, et al., 1989, p. 1025).

The maltreated 31-month-old children in this study used fewer utterances about others, about self and fewer comments on objects and experiences in the past or future. Therefore, it seems possible that these differences can be attributed to early problems in self-other differentiation, and that these problems become manifested later in representational tasks.

Summary

Although the two sets of studies reviewed here, those on intentional communication and those on expressive language of maltreated toddlers, have not used the same coding systems to evaluate expressive speech, it appears that the studies may be assessing similar features of language development. To summarize the intentional communication literature, several studies have emphasized (a) the role of the parent's supportive presence in the development of language (Acredolo & Goodwyn, 1988; Bakeman & Adamson, 1986), (b) that language appears to develop in a complimentary way with gesture (Acredolo & Goodwyn, 1988; Carpenter, Mastergeorge, & Coggins, 1983), (c) that children go through a predicatable sequence of communicative intents (Carpenter, Mastergeorge, & Coggins, 1983), (d) that joint attention toward an object with a partner and the enactment of an action scheme are factors in an infant's successful communication (Bakeman & Adamson, 1986). Golinkoff (1986) has examined the role of interactional sequences in which the infant negotiates with the mother for a desired goal and has found that this process does not go smoothly.

The studies of the language of maltreated toddlers do not deviate widely from these findings, and although the results of the two studies reviewed here do not correspond exactly with the intentional

communication literature, several points appear to coincide. First, the fact that an attentive supportive partner appears to help in the child's communication efforts is supported by both sets of studies (Coster, Gersten, Beeghly, Cicchetti, 1989; Gersten, Coster, Schneider-Rosen, CArlson, & Cicchetti, 1986).

Secondly, the observed differences among maltreated toddlers appear to be in an area of expressive language that mix both toddler requests and comments. The intentional communication literature sees requests as coming developmentally before comments, and has found robust differences in their use among toddlers aged 10 - 21 months (cf. also Zinober & Martlew, 1985). Therefore, the fact that both toddler requests and comments show differences suggests that language is affected over a certain course of development. Using an intentional communication rating scale to evaluate these categories of communication in maltreated toddlers may provide more specific categories in which differences may appear.

Third, both the intentional communication literature and the research on the language of maltreated toddlers support a maternal contributing factor to the child's success at communication, both as a model (Coster, Gersten, Beeghly, & Cicchetti, 1989), and as a shaper of the child's nonverbal response (Acredolo & Goodwyn, 1988).

Therefore, a study that examines the intentional communication of maltreated toddlers with the rating scales designed to measure toddler requests and comments along with a scale to measure maternal support and responsiveness may provide more information about differences in expressive conversational acts. In addition, examining the toddler's ability to negotiate with the mother is a new comparison that would provide additional information about how this interaction influences communicational competence. Therefore, a study proposing to examine these areas would make a significant contribution to the field of

language, especially as it relates to the factors acting in a supportive or constraining way on language development.

Purpose of the Study

This study will investigate the use of intentional communication in a group of 15 to 31-month-old lower class maltreated toddlers and their mothers. For purposes of evaluation, there are two comparison groups in this study. A carefully matched group of lower class Nonmaltreated toddlers and their mothers will comprise one comparison group, while a second comparison group is composed of middle class mothers and their toddlers of about the same age. Videotapes of all of the dyads were filmed in their homes performing a 15 minute structured learning task (a shape-sorting toy). The videotapes to be used in this study were collected as part of a larger research study funded by the National Council on Child Abuse and Neglect Brassard and Hart (1989) that was designed to develop and validate operationally defined measures of emotional maltreatment.

In this larger study, five subtypes of emotional maltreatment were found (i.e., spurning, exploiting/corrupting, isolating, and denying emotional responsiveness) that could be clearly differentiated from one another and appropriate parenting through the use of scaling procedures. In addition, the study developed two measures of emotional maltreatment based on the operational definitions and validated one of the measures, the Psychological Maltreatment Rating Scales (PMRS), by using them to assess caretaker behavior. This study also evaluated the potential use of the measures in legal proceedings by having them reviewed by Howard Davidson, Director of the Child Advocacy Unit of the American Bar Association.

This larger study developed measures that were sensitive to the subtypes of emotional maltreatment. In the results of the larger study, the video scales examining maternal characteristics predicted

maltreatment status of the infant/toddler sample with 100 percent accuracy. However, there were no differences found between lower class nonmaltreated and maltreated toddlers when various performance measures were compared, while clear differences were found with older children. When a measure of developmental competency was used to compare the toddler group, however, lower infant scores on the Bayley Scales of Infant Development (Bayley, 1969) were correlated to higher ratings of the mother on the emotional maltreatment scales.

Like most of the research on maltreated children, this larger study found differences between maltreated and nonmaltreated children as they matured. If one uses a developmental model, however, theoretically there should be differences that could be observed in younger children. This smaller study seeks to find if there are observable differences between maltreated and nonmaltreated toddlers in their early efforts at communication. Although the major research question in this smaller study focuses on the development of language in maltreated toddlers, the availability of videotapes of Middle Class subjects performing a similar task provides a unique opportunity to observe and rate middle class mothers and toddlers on these same measures. Although class differences on performance would be expected, the comparisons may also suggest supportive maternal qualities that are present in both middle and lower class dyads who are nonmaltreating.

For purposes of the current study, two primary features will be examined in the videotapes. The first feature relates to maternal characteristics that contribute to caretaking of the child, and the second feature examines child characteristics of intentional communication, socio-affective and developmental competence.

The maternal scores will be based on the rating of four caregiving behaviors coded on the Parent/Caregiver Involvement Scale (PCIS; Farren, Kasari, Comfort, & Jay, 1986). These behaviors include Physical Involvement, Verbal Involvement, Responsiveness to the Child, and

Control over the Child's Activities. Each of these behaviors is rated on three aspects: Amount, Quality and Appropriateness. Three final scores, the average score for Amount, Quality and Appropriateness, will be computed for each mother based on the PCIS. The second feature of the study will examine aspects of the toddler's intentional communication. A total of 12 scores from two rating scales will provide the data for intentional communication. Socio-affective and developmental competence will be determined from the child's performance on the Bayley Scales of Infant Development and the Infant Behavior Record (BSID and IBR, Bayley, 1969).

Comparisons will be made between these two features of maternal and child characteristics and their membership in one of two groups. There is one group of maltreated or nonmaltreated dyads, and there is a second group based on socio-economic status, either Lower or Middle Class. The results of these comparisons may provide information about which parenting behaviors help to develop communicational competence and how these behaviors are affected by social class and maltreatment status.

In addition to the two child variables coded from the videotapes, (i.e., a score for Intentional communication; and b) a score for Negotiation of Failed Communicational Episodes), there are also scores on the BSID for the lower class toddlers. These scores allow several other comparisons to be made, although these comparisons will only be available for the lower class children (see Table 2 for description of these scores).

Significance and Rationale

Over the past fifteen years, quite a few studies have documented the psychological consequences of maltreatment. Abused children have been found to have multiple social and emotional problems, including aggression, hostility, passivity, apathy and withdrawn behavior (Kempe & Kempe, 1978; Martin & Beezley, 1977). Research on attachment

relationships between caregiver and child has documented the disruption caused by less than optimal care (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1988; Burgess & Conger, 1978; Crittenden, 1981, 1985b, 1989; Egeland & Sroufe, 1981; Schneider-Rosen, Braunwald, Carlson, & Cicchetti, 1985). In these atypical populations, children are raised in social environments characterized by maladaptive social interactions between parent and child (Bousha & Twentyman, 1984; Coster, Gersten, Beeghly & Cicchetti, 1989; Egeland & Sroufe, 1981). These relationships often have low rates of verbal interaction, a low degree of mutuality and reciprocity, limited playful exchanges and increased negative and critical interactions (Burgess & Conger, 1978; Christopoulos, Bonvillian, & Crittenden, 1988; Clarke-Stewart, 1973; Crittenden, 1981; Egeland & Sroufe, 1981). Abusive mothers' behavior tends to be less contingent on their infants' vocal and nonvocal signals than does adequate mothers (Crittenden, 1981, 1985a). It has been found that maternal language input with neglected children is less accepting and more restricted than adequate or abusive mothers. This less accepting pattern typically requires children to respond in simple ways or with passive cooperation (Christopoulos, Bonvillian, & Crittenden, 1988).

Interestingly, however, research on maltreatment has typically been done with lower class populations, while research in language has been done with middle class populations. Historically, the selection of populations using social-economoic status as a group variable has often been an acceptable practice. Unfortunately, this selection process may sometimes blur cultural differences within classes. In this study, however, social class was used as a primary grouping variable and the effort to match the lower class sample on race attempted to deal with this concern. Future studies would do well to use a selection process that is more sensitive to cultural differences in child rearing practices. Using social class as a variable, however, allows the results of the study of the language of lower class maltreated toddlers

to be compared to a group from the middle class. This added comparison group gives a greater range to the variables and adds more descriptive data to any comparisons.

For purposes of studying intentional communication of maltreated toddlers, it appears that some of the behaviors coded by intentional communication inventories would also capture maltreating behaviors. For example, maltreating mothers' continual misreading of the infant's cues (Greenspan, 1981) is a factor that is coded in the negotiation episodes described by Golinkoff (1986). The child's negative or anxious relationship with his or her mother, and frustration with a task are characteristics of maltreated children described by Erickson, Egeland, and Pianta (1989). They are also behaviors that are measured in intentional communication inventories (Coggins & Carpenter, 1981). Low rates of verbal interaction would also be part of coding for child and parent interaction. Therefore, the rating scales to be used in the current study will examine a number of behaviors that occur in both the literature on maltreatment and the literature describing intentional communication.

In the maltreated population, research on language development has produced inconsistent results. However, if language is defined by using both gesture and vocalizations as well as verbalizations, a wider spectrum of behavior can be considered and differences might be observed more easily. The rating scales to be used in this study will be able to record this wider spectrum of language.

This leads to the development of nine hypotheses in three general areas.

1. Hypotheses related to intentional communication.

$H_0 1$ = Intentionally communicative behaviors will not be related to mother's style of assistance in the task.

$H_0 2$ = Intentionally communicative behaviors will not be related to mother's supportive presence.

$H_0$3 = Intentionally communicative behaviors will not be related to group membership (lower class nonmaltreated vs. lower class maltreated, lower class vs. middle class).

For purposes of these hypotheses, intentional communication is defined as the deliberate pursuit of a communicative goal by means of instrumental behaviors subordinated to that goal. Intentional Communication behaviors will be computed on two communication inventory scales, where individual scores for each variable will be counted. These scores will then be compared as separate variables based on their frequency scores. The Intentional Communication Inventory has eight individual communication behaviors (see Appendix B).

Secondly, a communication competence score will be computed for further comparisons (see Table 2 for a description). The hypotheses based on Intentional Communication will include members from the entire sample.

2. Hypotheses related to Negotiation of Failed Messages.

$H_0$4 = Number and length of child's negotiation episodes will not be related to group membership.

$H_0$5 = Number and length of child's negotiation episodes will not be related to mother's supportive presence.

$H_0$6 = Number and length of child's negotiation episodes will not be related to quality of mother's assistance.

For purposes of these hypotheses, number and length of child's negotiation episodes will be composed of individual frequency scores on the Negotiation of Failed Messages scale (see Appendix C). Since this information is available from video ratings for all three SES groups, these hypotheses will draw from the entire sample.

3. Hypotheses related to overall affective experience of the child.

$H_0$7 = Overall affective experience of the child toward the mother will not be related to group membership.

$H_0$8 = Overall affective experience of the child will not be related to mother's supportive presence.

$H_0$9 = Overall affective experience of the child will not be related to mother's quality of assistance.

For purposes of these hypotheses, overall affective experience of the child will be determined from individual items on the Infant Behavior Record (see Table 2 for description of this score). Since this information is only available for the lower class groups, these hypotheses will only test the lower class sample (n = 29).

CHAPTER II

METHOD

Subjects

Thirty-nine mother-toddler dyads participated in this project (see Table 1). Fourteen lower class toddlers were identified as being physically maltreated or neglected by their mothers by a family support center. Maltreatment was determined by physical evidence of being abused, such as bruises, welts or cigarette burns. Neglect was determined by documenting situations in which lack of supervision lead to dangerous circumstances for a toddler, such as the availablity of items that a child could choke on. Fifteen comparison lower class nonmaltreated toddlers with no known histories of maltreatment were drawn from a well-baby clinic in the city and carefully matched on each of the following demographic characteristics: sex, age, race and socioeconomic status (SES; Hollingshead, 1975). The SES status of these dyads was from the lowest level on the scale. The ten mother child middle class dyads selected had no known history of maltreatment. All subjects resided in a large Mid-Western city. No infants with physical impairments were included. Such impairments included the failing of a hearing screening, premature delievery or brain injury.

The middle class mothers and toddlers were an opportunistically collected sample, who were recruited to provide a reliability sample for the Psychological Maltreatment Rating Scale, an instrument developed as part of the larger study. The sample of middle class toddlers included only two girls (see Table 2), which is different than the composition of the lower class groups. However, since girls tend to do better on language measures at this age than boys, it was determined that this sampling bias would not adversely affect the comparisons between groups based on SES, since large differences were expected between SES groups.

A total of 29 toddlers comprised the lower class group. Their average age was 22.1 months, with a standard deviation of 4.8 months.

Average age of the middle class toddlers was 23.2 months with a standard deviation of 5.2 months.

Procedures

Home Visit

Each of the families was visited in their home by a team of two research assistants (one male and one female), who were blind to maltreatment status at the point of entry. Videotapes were made of each mother and toddler dyad doing a shape sorting task. The lower class mothers were interviewed following the videotaping using a number of other instruments and were paid $40 for their participation. The entire procedure, including the videotaping, took about 3 hours.

The middle class subjects were filmed at their homes in time delayed sets, with one taping following the other by two to three weeks. The first task mother and toddlers did was the shape sorting turtle and the second was a peg sorting task. These mothers were paid $15 for their participation, and the task took about 30 minutes of their time. Although there were 10 middle class subjects, a total of 16 videotapes were available. Seven tapes were coded of the toddlers using the shape sorting turtle, and three were coded of toddlers using the peg grading board. Three were used as training tapes.

Clinical Assessments

The comparison lower class toddlers were selected from a well-baby clinic. Maltreated and comparison toddlers were administered the Bayley Scales of Infant Development (Bayley, 1969) in a clinic setting by a school psychology graduate student blind to maltreatment status of the children.

Instruments

Maternal Rating Scale

The Parent/Caregiver Involvement Scale (PCIS) was developed by Farren, Kasari, Comfort and Jay (1989, see Appendix A) as an

observational rating scale designed to describe caregiver behaviors in the context of interactive play with an infant or toddler. The value of the PCIS for research has already been established (Comfort & Farren, 1986; Farran, Kasari, & Comfort-Smith, 1985; Farren, Kasari, Comfort, & Jay, 1989). Interrator agreement on this scale has ranged from .77 to .89. The scale has been used with samples of wide economic diversity and research has found differences in quality and appropriateness of maternal interactions by SES levels and on mother's locus of control ratings (Farren, Comfort-Smith, & Kasari, 1985). This instrument has been chosen because it has been used in research with populations similar to the one in this study.

Four behaviors from the twelve available from the PCIS were selected to be examined in this study; they were Physical Involvement, Verbal Involvement, Responsiveness, and Control over Child's Activities. Each of these four behaviors is rated on three aspects of behavior: Amount, Quality and Appropriateness. Each aspect of the four behaviors is scored on a five point scale, with 1 being the lowest and 5 being the highest. For example, a mother who is able to construct a verbal envelope around her child by describing the child's activities and her own activities, would score a maximum of 15 points on the Verbal scale, five points for each of the three aspects or subscales. The maximum score for each behavior is 15 and the minimum is one (see Appendix A).

The aspects of Amount, Quality and Appropriateness comprise the three subscales for each maternal behavior. Each behavior is rated on these three aspects and a total score for all aspects is averaged across all four behaviors to give three final scores for each mother. The final score for each aspect of behavior ranges from one to five. Low scores are generally considered to be less desirable than high scores.

Four behavior scales were used to calculate the three final scores for each mother. The Physical Involvement scale rates both passive and active physical involvement of the caregiver. Passive support means

assisting the child in sitting or standing, while active involvement indicates active touching such as patting or moving the child's hand. Verbal Involvement refers to the amount of talking the caregiver does to the child, and how successfully the caretaker surrounds the child with conversation. Responsiveness examines the caregiver's reactions to the child's initiations, verbalizations, demands or distress. Control over the Child's Activities refers to how the caregiver organizes the child's activities during play and reflects how these decisions are made.

For purposes of this study, the aspects of behavior (i.e., Amount, Quality and Appropriateness) comprise the three final scores on the PCIS. Amount refers to the level of involvement of the caregiver in terms of each behavior. It simply denotes how much of a certain behavior is exhibited by the caregiver. The more behavior the caregiver shows, the higher the score will be. In this study, Amount refers to Amount of Interaction across all behaviors measured on the PCIS.

Quality of the interaction refers to the degree of warmth and acceptance shown by the caregiver. It is a measure of intensity of the caregiver's behavior, and shows how well the caregiver carries out the behavior. In this study, the Quality rating on the PCIS is taken as a measure of Quality of Support.

Appropriateness measures how appropriately the caregiver matches the developmental needs of the child, including the child's interest level and motoric capabilities. There is wide variety in caregivers' ability to match the level of their child. For example, some caregivers may be well intentioned and affectionate but may not provide the support their child needs to accomplish a task. For purposes of this study Appropriateness refers to the Appropriateness of mother's Style of Assistance to her child's developmental needs.

In addition, several scores were derived from the PCIS to determine competence in the areas of Verbal interaction and Control over Child's Activities (see Table 1). For Verbal competence, a

determination was made that mothers would have to score a three or more in each aspect of verbal behavior to be considered competent, producing a score of at least nine on this item. Mothers were assigned to two categories based on their total verbal scores, with one group set as low to moderate verbal input (scoring less than 10 points out of a possible 15 across the verbal scale) and moderate to high verbal input (scoring 10 to 15 points). Similarly, a competence level for control of child's activities was set at at the same high/low split, with low to moderate control scoring below ten points and high control set at ten points.

Child Communication Inventories

Two child communication inventories were used to code the videotapes and examined Intentional Communication and Negotiation of Failed Messages. The first inventory recorded intentional communication behaviors according to the categories set down by Carpenter, Mastergeorge and Coggins (1983, see Appendix B). This instrument has been adapted from the Intentional Communication Inventory described by Coggins and Carpenter (1981). The Inventory was designed to assess situational and child variables gleaned from the available literature on early communicative development (Bates, Camaioni, & Volterra, 1975; Dore, 1975; Greenfield & Smith, 1976) and through pilot studies (Carpenter, Mastergeorge & Coggins, 1983). The instrument was designed to be used in both unstructured activities and in elicitation tasks implemented by mother in their home. The conditions therefore are similar to the conditions of this study. The instrument has achieved interrator reliabilities from .88 to 1.00 when used with toddlers and preschool children in free play and structured situations (Carpenter, Mastergeorge & Coggins, 1983).

There are eight scorable categories of communicative behavior. They include: Protesting, Request for Action, Request for Object, Request for Information, Comment on Action, Comment on Object, Acknowledging, and Answering. Each category includes both gestural or

gestural/vocal and verbal ratings. The ratings go from the most simple gesture to the most mature use of language for each behavior listed. Each toddler was scored on this scale by tallying how frequently he or she demonstrated the behaviors. The gestural or gestural/vocal and verbal tallies of each behavior were added up at the end of each coding session and a final score for each category was entered for the child.

The second inventory used with the videotapes examined Negotiation episodes. These episodes were only coded when the child initiated communicative contact with the mother and were scored according to the method used by Golinkoff (1986, see Appendix C). Interrator agreements for the various categories have ranged from .79 to .95 when infants and toddlers were observed in a longitudinal study. On this scale, verbal and nonverbal communication behaviors are recorded. The following components of negotiation episodes were scored for purposes of this study: Number of Signals sent by the toddler, Number of Immediate Success in which the mother immediately understood her toddler, Length of the Longest Conversational Turn between mother and toddler, and the Number of Conversational Turns over Two exchanges.

Each of these categories was recorded as a frequency count. For Number of Signals, the final score was the total number of signals sent by the child. For Number of Immediate Successes, the final score was also the total number of successes observed. The Length of the Longest Conversational Turn was recorded as the longest turn observed between mother and child. The Number of Conversational Turns over Two episodes was simply the count of how many times mother and child negotiated more than twice in any interaction. Three of these variables were frequency counts, and the fourth, the Length of the Longest Turn, was the single highest number of conversational exchanges observed between the dyad.

Bayley Scales of Infant Development

As part of the larger study, only lower class toddlers were given the BSID (Bayley, 1969). The BSID is designed to provide a three

component assessment of the development status of infants from two months to two and a half years. The first two scales, the Mental Scale and the Motor Scale, result in quantitative standard scores, called the Developmental Index. The third scale, the Infant Behavior Record (IBR), consists of thirty descriptive rating scales that are designed to assess the child's social and objective orientation toward his or her environment. Designed to be used both as a clinical tool and for research, the BSID has proven to be a useful tool to assess the current development status of normal children compared to national norms and for assessing the development of high risk children (Sattler, 1988).

One Developmental Index score and three composite scores were calculated for the children. The first, the Developmental Index score, was based on the Developmental Index from the BSID and was used to provide a measure of developmental competence for the lower class subjects. A cut-off score of 85 was used to mark the developmentally incompetent from the competent. A score of 85 marks one standard deviation below an average score of 100, and would be the lowest score a toddler could get and still be considered average.

Two of the composite scores were also derived from the Infant Behavior Record of the BSID to measure overall affective experience. It was broken down into two components. The first was Social Competence and was computed in two steps. First, the child's Social Orientation to the Examiner was subracted from the child's Social Orientation to the Mother. It was thought that the socially competent child would be more responsive to his or her mother, and that this computation would indicate either a positive or negative direction in the child's social orientation. For example, if a child responded better to the examiner than to his or her mother, this arithmetic operation would provide a negative or very low number, indicating that the social orientation was not in the expected direction. A positive number would indicate social responsiveness in the expected direction. This computed value was then

added to the child's score on the Responsiveness and Cooperativeness items to provide a final score for this variable. A score of 11 was considered to mark the Socially Competent child from the incompetent child, based on the anchored ratings of each item, where a lower score indicated less desirable level of functioning.

The second component of overall affective experience was the Fear/anxiety index (see Table 1). A high score indicated a toddler who was fearful while a low score suggested a less fearful child.

Two composite scores were computed from the two rating scales to determine Intentional Communication Competence and Negoitation Competence. Since these scores drew from the communication inventories, they were available for all three groups. The Intentional Communication Score was created by adding the toddler's scores on the following items: Comment on Object, Request for Action and Acknowledging from the Intentional Communication Scale, plus Number of Signals from Negotiation of Failed Messages scale. This score was set at a high - low median split to determine competence. Scores ranged from 7 to 130, with the median at 40.

Similarly, the Negotiation Score was computed by adding the Number of Signals to the Length of Longest Turn on the Negotiation of Failed Messages Inventory. This score was thought to represent toddler efforts at communication and their persistance at communicating. The median was calculated at 17, and competence was computed from a high - low median split.

Scores of Maternal Fit to Child Characteristics

Two socres were computed in order to determine the goodness of fit between mother and child in the lower class groups (see Table 2). The first score combines the Appropriateness of mother's Style of Assistance with toddler's Reactivity, which is a measrue of the ease with which a child is stimulated to react in general. The second score combined maternal Appropriateness of Style of Assistance and her child's

competency in Intentional Communication to examine the match between mother's support and toddler communicational competence.

Both of these measures will be used with the lower class groups, and will be compared on the factor of maltreatment and also the child's Developmental Competence (based on the child's performance on the BSID).

Interrator Reliability

All of the videotapes were coded by one rater blind to group status of the children. A random sample of 18 videotapes was selected by coin toss and these tapes were coded by a second rater blind to the purpose of the study and to maltreatment status. The second rator was a graduate student in the School Psychology program, who had a master's degree in the counseling field, had practiced as a mental health therapist and was a mother. Training for the rators included developing audio taped instructions to code each instrument and then weekly sessions to train together. A total of eight sessions were used to bring rators up to 65% accuracy before coding began. After each set of two tapes was coded, the rators meet bi-weekly for four months and worked up to interrator agreements of .78 to 1.00 on the various scales.

Interrator reliability was computed for the PCIS by dividing the number of agreements by the total number of observations. Interrator agreement for the PCIS across all behaviors and subscales was 65%.

For the Intentional Communication Inventory, interrater agreement was calculated for each of the eight behaviors by dividing the number of agreements by the number of agreements plus the number of disagreements. For the Intentional Communication Inventory, interrator reliability was 66% , with individual subscales ranging in reliability from 72% to 61%. For the Negotiation of Failed Messages scale, interrator reliability was 66%, with individual subscales ranging from 88% to 53%.

Tapes were conferenced bi-weekly when the agreement on each variable was less than 80% and the conferenced value for each subscale was recorded as the final score for each item. In cases where

interrator agreement met the 80% standard, the initial rator's values were used.

Design

This study is designed to compare a clinical sample with two comparison groups. These three groups, the lower class maltreated group, the lower class nonmaltreated group and the middle class nonmaltreated group, represent two levels of groups. With the lower class groups, the identified maltreated toddler is compared to a matched nonmaltreated toddler of the same SES, so that the group maltreatment factor has two levels. With the middle class nonmaltreated group, the two lower class groups can be compared on the factor of social class, so that the class factor has two levels.

The study compares these three groups on the child factor of Intentional Communication and Negotiation of Failed Messages and on three maternal factors: Amount of Interaction, Quality of Support and Appropriateness mother's Style of Assistance. The study will also compare the two lower class groups on Affective and Social Competence and Developmental Competence.

Membership in the maltreatment group was revealed and coded after ratings of the videotapes were completed.

Data Analysis

ANOVAs were performed to analyze the maternal and child variables by group. The assumption of equal variance was tested when t-tests were performed and F values were consulted to detect significant difference between the group means.

Maternal Measures

The maternal factors of Amount of Interaction, Quality of Support and Appropriateness of maternal Style of Assistance were compared in an ANOVA to the three groups.

Secondly, maternal competence scores on two particular behaviors, Verbal Involvement and Control over Child's Activities, were computed.

Correlations were performed by Pearson Product Moment Correlation to examine the relationship between these maternal behaviors and Amount of Interaction, Quality of Support and Appropriateness of Style of Assistance.

Child Measures

An ANOVA compared the scores of the two communication inventories and the scores on Intentional Communication and Negotiation by group. In addition, the three composite child scores, Developmental Competence, Social Competence and Fear/anxiety were compared in the lower class groups.

Scores of Maternal Fit to Child Characteristics

T-tests compared the two scores, Goodness of Fit and Dyad Match by maltreatment status and Developmental Competence.

CHAPTER III

RESULTS

This study was designed to examine the relationship between a toddler's intentional communication, overall affective experience and style of negotiation with his or her socioeconomic status (SES), maltreatment status, and the maternal variables of Quality of Supportive Presence and Appropriateness of her Style of Assistance. Means and standard deviations were computed for all categories on the Intentional Communication scale, for the Negotiation of Failed Messages, and for the Maternal measures (see Tables 3 & 4).

When the means for the Intentional Communication Inventory are examined, it is interesting to note than middle class toddlers were more verbal in almost every category except Request for Action and Protesting. They provided about 13% more Answers, about one-half as many Comments and about one-half as many Requests for Information than both lower class groups. Middle class toddlers gave about 60% fewer Requests for Action, suggesting that they were less passive in their interactions. They also gave more Answers than the lower class toddlers, suggesting that they were more active conversational partners. Middle class children gave about one-half less Protests than their lower class peers, suggesting that the middle class dyads had less acrimonious interactions than the lower class dyads. On the Negotiation of Failed Messages scale, middle class toddlers sent about 13% more signals than the lower class toddlers.

Hypotheses Related to Intentional Communication

Despite observed differences in the means, when the Intentional Communication Inventory was compared across all three groups, no significant differences were found $F(2, 37) = 1.01$ n.s. An ANOVA showed that, surprisingly, on the whole there appeared to be only class differences in Intentional Communication, where the middle class looked better than the lower class. Since these results were so surprising,

individual items on each scale by group were examined, even though some authorities do not recommend looking further into nonsignificant data.

In this second analysis, one behavior, Acknowledging, was significant, with lower class maltreated toddlers producing more Acknowledging than their lower class nonmaltreated peers. Acknowledgement was scored for four different behaviors: spontaneous imitation of adults's gesture or utterance, head nodding to agree or disagree with adult's message, imitation of adult utterance, and verbal agreement with adult's utterance. Lower class maltreated toddlers had about 75% of their responses in the first two categories, suggesting more gestural/vocal acknowledgements and fewer verbal acknowledgements. Although lower class nonmaltreated toddlers followed the same pattern, with about 75% of all responses in these categories, they scored overall fewer Acknowledgements than their maltreated peers. Middle class toddlers, on the other hand, scored more Acknowledgments across the board, with at least 50% of their Acknowledgments in the more mature verbal categories.

In addition, there were several items on which lower class nonmaltreated toddlers performed significantly differently than both the middle class toddlers and their lower class maltreated peers (see Table 5). Compared to the middle class toddlers, lower class nonmaltreated toddlers' had significantly fewer Requests for Information and Acknowledgments. Lower class nonmaltreated toddlers' Requests for Action were more frequent than middle class toddler's requests. These comparisons present a picture of the lower class nonmaltreated toddlers as being somewhat less curious (fewer Requests for Information), less involved with their mothers (fewer Acknowledgments), and more passive (more Requests for Action) than both their lower class peers and their middle class peers.

A score for Intentional Communication was calculated to measure competence and was based on a high - low median split, as described in

the Methods section. Toddlers in the competent group (scores over 41, n = 24) were composed of seven middle class, ten lower class maltreated and seven lower class nonmaltreated toddlers. Toddler scores in this group ranged from 41 to 130. Those who were incompetent (scores up to 41, n = 15) were composed of three middle class, four lower class maltreated and eight lower class nonmaltreated toddlers. An ANOVA compared these Intentional Communication Scores to two maternal variables, Quality of Mother's Support and the Appropriateness of her Support to match her child's developmental level. The ANOVA revealed no significant differences on Intentional Communication Scores for Quality of Support (F (2, 37)= .02 n.s.) or Appropriateness of Style of Assistance (F (2, 37) = .48 n.s.). Surprisingly, toddler's competence at Intentional Communication seems unrelated to maternal variables, as well as social class and maltreatment status.

Hypotheses Related to Negotiation of Failed Messages

The Negotiation of Failed Messages Scale was comprised of four scores from the rating scale. When the means are examined (see Table 3), class differences appear to be operating. For example, middle class toddlers again appear more verbal, giving 13% more Signals than the lower class toddlers. In addition, middle class mothers immediately understood their toddlers 50% of the time. In comparison, lower class mothers met with success only about 33% of the time. Interestingly, Number of Conversational Turns over Two averages about five for each group. According to Golinkoff (1986), five turns is about the average number of turns for negotiations for this age, so most of the toddlers were age appropriate on this variable.

Disappointingly, in spite of observed differences in means across groups, there were still no significant differences on the Negotiation of Failed Messages scale between groups. In an ANOVA comparing all three groups, the following comparisons were found: Number of Signals (F(2, 37) = .37 n.s.; Number of Immediate Successes F(2, 37) = -.72

n.s.; Length of the Longest Turn $F(2, 37) = .47$ n.s.; and Number of Conversational Turns over Two $F(2, 37) = .16$ n.s.

The Negotiation Score was computed, as described in the Methods section, at a high - low median split. Toddlers belonging to the high Negotiation group (scores over 18, n = 26) were composed of eight middle class, eight lower class maltreated and ten lower class nonmaltreated toddlers. Toddler scores in this group ranged from 18 to 97. Of those toddlers who were rated as incompetent (scores up to 18, n = 13), two were from the middle class group, six were from the lower class maltreated group and five were from the lower class nonmaltreated groups. Toddler scores in this group ranged from seven to 17. When the maternal variables of Quality of Support and Appropriateness of her Style of Assistance were compared to the two Negotiation competence groups, no significant differences were found in either Quality, $F(2, 37) = .66$ n.s. or Appropriateness, $F(2, 37) = 1.14$ n.s. Again, the Negotiation score does not appear to differ by maltreatment status, social class or maternal Quality of Supportive Presence or Appropriateness of her Style of Assistance.

While no differences were obtained, this may in part be due to the large variance in the middle class group, where values ranged from 13 to 108 on the Negotiation Scale. In addition, there was a wide variety among scores in the lower class groups, which also may have affected the outcome of these comparisons. Given these findings, it is possible that with larger groups, at least class differences would have been found.

Hypotheses Related to Child's Affective Experience

Child's Affective Experience was determined from individual items on the Infant Behavior Record (IBR) and was only available for the two lower class groups. Two composite scores were calculated, one to examine Social Competence and the other to examine Fear/anxiety, as described in the Methods section. Social Competence did not differ

significantly between the lower class groups $t(27) = -.42$ n.s. nor did the Fear/anxiety index differ significantly $t(27) = .14$ n.s.

The two Social Competence groups were broken down into competent (n = 17) and incompetent groups (n = 9), as described in the Methods section. Incompetent children's scores ($M = 9.0$) were much less than competent children ($M = 13.3$). This suggests that incompetent children were less responsive and cooperative than their competent peers and may also have responded more positively to the examiner than to their mothers. When these Social Competence scores were compared to the maternal variable of Quality of Supportive Presence, no significant difference was found $t(27) = .47$ n.s. Similarly, when Appropriateness of mother's Style of Assistance was compared to Social Competence, there were still no significant differences $t(27) = 1.60$ n.s. However, when Amount of maternal Interaction was compared to the two Social Competence groups, there was a very significant difference ($t(27) = 5.40$, $p = .03$). This suggests that mothers who were more involved across all behaviors had children who were more socially competent.

The results of these comparisons were surprising since they showed that Social Competence and Fear/anxiety were not related to maltreatment status. In addition, the data did not support the hypothesized difference in Social Competence based on Quality of mother's Support or to the Appropriateness of her Style of Assistance. Mothers who scored high on Amount of Interaction, however, tended to have more socially competent children. Their children were exposed to more interaction with their mothers on a physical and verbal level, and had mothers who were more appropiate in their responsiveness and control.

Maternal Measures

Middle class mothers had significantly higher levels of Quality of Support and Appropriateness of her Style of Assistance then either of the two lower class groups (see Table 6). There were no significant

differences within the lower class groups on the maternal measures of Quality of Support and Appropriateness of her Style of Assistance.

Interestingly, on the Amount of maternal Interaction there were no significant differences between groups, as each group produced about the same level of maternal involvement. Since there were such unexpected results when maltreatment was examined on maternal variables, it was decided to examine two of the maternal behaviors measured on the PCIS. Through observation of the videotapes, it appeared that mothers differed mainly on the amount of their verbal interaction and how flexible they were in controlling their child's activities. Therefore, the variables of Verbal Interaction and Control over Child's Activities were examined to determine how much these behaviors were contributing to the overall ratings of Amount of Interaction, Quality of maternal Support and Appropriateness of her Style of Assistance.

Correlations were performed to examine how the behaviors of Verbal Interaction and Control over Child's Activities related to maternal scores on Amount of Interaction, Quality of Support and Appropriateness of her Style of Support as well as to child competence (see Table 7). It was found that Verbal Interaction correlated significantly to Amount of Interaction and to Appropriateness of her Style of Support but not to Quality of Support. In addition, both Verbal Interaction and Control over Child's Activities were significantly correlated.

Control over Child's Activities correlated significantly to Quality of Support, Appropriateness of her Style of Assistance and just missed significance with toddler's Developmental Competence. This suggests that Verbal Interaction and Control over Child's Activities do have a positive correlation to overall maternal scores in Quality and Appropriateness and appear to have an impact on the toddler's Developmenal Competence. Verbal Interactions are also positively related to Amount of maternal Interaction, which is related positively to toddler's Social Competence. These correlations suggest that

interventive work with mothers focussing on the aspects of appropriate verbal responses and control may help both cognitive and social competence to develop.

Child Developmental Competence Measures

Since group membership failed to predict Intentional Communication Scores, Negotiation Scores or Social Competence, the analysis was directed toward investigating Developmental Competence of the children. Developmentally Competent toddlers were considered to be those who scored at or above the average score on the BSID (85 or above). Of the twenty-nine toddlers who were videotaped, there were five who were not tested with the BSID, so the total number of subjects in this comparison is only twenty-four. When Developmentally Competent toddlers (n = 17) and incompetent toddlers (n = 7) were compared by group, there were no significant differences, $t(24) = -1.21$ n.s., suggesting that maltreatment status was not related to Developmental Competence.

When Developmental Competence was compared to Intentional Communication scores, the comparison fell just short of standard significance levels (see Table 8). However, the comparison suggests that developmentally competent toddlers were apt to be better at intentional communication than incompetent toddlers.

When the Social Competence of the children was evaluated based on Developmental Competence, a t-test comparison showed significant differences. Developmentally Competent toddlers were more Socially Competent than their incompetent peers, and, although the correlation indicated there was a positive relationship between the two, it just missed being significant (see Table 7). Examining the correlation for the maltreated group alone shows that this group was closer to having a significant correlation between developmental and social competence than the nonmaltreated group. It is possible that again, the poorer showing of the lower class nonmaltreated group has made it difficult to make

significant comparisons on these two variables, and that given more subjects, there would have been a significant finding.

The Developmental Competence Score was also used to compare toddlers on the Fear/anxiety index. However, no significant difference was found (see Table 8). All toddlers appeared to have about the same score for this index.

A separate comparison was performed to examine the relationship between Social Competence and the three maternal values of Amount of Interaction, Quality of Support and Appropriateness of her Style of Support. As discussed previously, only Amount of maternal Interaction was was related to Social Competence. Socially competent toddlers were significantly more likely to have mothers who were high in their Amount of Interaction ($\underline{M}$ = 3.55) than socially incompetent toddlers $\underline{M}$ = 2.95), $\underline{F}(2,37) = 9.96$, $\underline{p} < .01$.

Scores of Maternal Fit to Child Characteristics

Two additional comparisons were made in an effort to better describe the relationship of maltreatment in the lower class groups between maternal characteristics and corresponding child behaviors. These two scores, Goodness of Fit and Dyad Match are described in the Methods section. Although a t-test on the first comparison, Goodness of Fit, fell just short of standard significance levels, it suggests that maltreating mothers are less able to stimulate their children in a way that is sensitive to their developmental needs compared to their nonmaltreating peers (see Table 9).

When Goodness of Fit is comapred by Developmental Competence groups, the difference is significant. As expected from the correlations, the Appropriateness of mother's Style of Assistance (see Table 7) is related to child cognitive abilites and her match to her child's need to be stimulated.

The Dyad Match score was evaluated to see if it differed by maltreatment status or the child's Developmental Competence. In this t-

test comparison, there were no significant differences based on maltreatment status. However, when this comparison was made on child's Developmental Competence, there was a significant difference (see Table 8). This suggests that, again, developmentally competent children are significantly more likely to have mothers who are appropriately involved and that this involvement influences the development of intentional communication.

CHAPTER IV

DISCUSSION

Child Variables

Hypotheses Related to Intentional Communication

It was expected that maltreated children would show less Intentional Communication than both their nonmaltreated lower class peers and the middle class toddlers. However, on most categories of Intentional Communication, differences were not observed in the lower class groups. In only one case, lower class maltreated toddlers appeared to differ: They acknowledged messages from their mothers more often than their lower class nonmaltreated peers. About 75% of these acknowledgements came from the gestural or gestural/vocal categories of acknowledgement, suggesting that the maltreated toddlers were using mostly gestural responses to acknowledge their mother's messages. When the middle class toddlers were examined on this category, they gave at least 25% more acknowledgement than the lower class toddlers and about 50% of their acknowledgments to their mothers were in the verbal category.

Research in the language of maltreated preschoolers suggests that maltreated toddlers tend to use less mature language. For example, Gersten and her colleagues (1986) found a high use of fillers in conversational exchanges by maltreated toddlers. They suggested that this was due to the toddlers' conversational immaturity, that is, they knew when it was their turn to speak but they used a filler, such as "uh-huh" or "oh" to fill their conversational turn. The use of fillers is similar to the category of Acknowledging in this study, as in Acknowledging, the child provides notice that the previous message has been received.

However, in this study, this finding is complicated by the fact that middle class children showed even more frequent use of Acknowledgment. Is a high number of acknowledgements still indicative

of conversational immaturity? When the video scoring sheets were consulted, however, it appeared that conversational maturity did explain these findings.

Acknowledgments may be coded for repeating mother's gesture, such as spinning the top after she spins the top, or when the toddler shows that a message has been received, by nodding their head. The child may also repeat a few words that the mother says, such as "Oh-oh", for an acknowledgement to be coded. With the middle class children, the toddlers tended to not only repeat gestures and nod their heads, but also many of them scored acknowledgements when they repeated words or phrases spoken by their mothers. For example, one middle class child spontaneously imitated over 15 words, such as "sister", "brother", "little", "biggest" and most color words. Another middle class toddler repeated "Mommy has a turn" and "Put in his mouth". Lower class toddlers, by comparison, repeated fewer words, and responded by more often imitating gestures and single words. They tapped the turtle when mother tapped the turtle, or repeated ritualized phrases such as "Oh-oh" or "all gone". These examples suggest that the middle class toddlers imitated mother's signals more frequently and repeated more mature kinds of language. Thus, the middle class toddlers' more frequent use of acknowledgement does not appear to be in conflict with previous findings of conversational immaturity of maltreated toddlers.

In other categories of Intentional Communication, lower class nonmaltreated toddlers Requested Information less, used fewer Acknowledgements and gave more Requests for Action than either of the other two groups. This suggests a number of interpretations. The toddlers may have been less able to do the sorting task, or they may have received poorer directions to do it. Their lower number of Acknowledgements may indicate that they were less involved with their mothers and the higher number of Requests for Action suggests that they were less involved or felt less able to the task. In general, then, it appears that they were

more passive in their approach to the task. When they were compared on the Intentional Communication score, over half of these toddlers scored in the incompetent range. This additional comparison suggests that at least half of these toddlers use less frequent communicative intents compared to their nonmaltreated peers and to the middle class toddlers.

Hart and Brassard (1991) found that there were selection problems with this lower class nonmaltreated sample when they were examined in the larger study. The lower class nonmaltreated toddler group, recruited from well baby clinics, proved to be a high risk group that displayed many developmental delays, and "were actually functioning at a level below the maltreated group" (p. 28). It is possible that this group may have also been cases of maltreatment that had not yet been determined. This group was composed of mothers who shared the debilitating effects of poverty and isolation with their maltreating peers, and poverty and isolation are recognized as key elements in the ecology of maltreatment (Belsky, 1980; Cicchetti & Rizley, 1981; Garbarino, 1982; Tonge, James, & Hillam, 1975). The two lower class groups had been equally affected by these factors and were representative of the lower class families in the area. If there were some more subtle within group differences between lower class maltreating and nonmaltreating mothers, the scales used in this study may have missed them.

Middle class toddlers, on the other hand, performed more as expected, giving more responses in almost every category of Intentional Communication. Their more frequent verbal responses suggested that they were more involved in interactions and were more active conversational partners. Their fewer number of protests indicated that they had more harmonious exchanges with their mothers. The most significant differences found in this inventory were based on class differences.

When the composite score of Intentional Communication was compared to the maternal variables of Quality of Support and Appropriateness of

her Assistance, no differences were found. These results were surprising because it was anticipated that maternal variables would relate to intentional communication. It is possible that both lower class groups represent borderline parenting abilities, and these similarities may have affected the comparison of maternal variables. The large variance within the middle class toddlers may have also contributed to the lack of significant findings.

The toddlers' ability to communicate intentionally did relate to their Developmental Competence, however. Developmentally competent toddlers were significantly better at intentional communication than their incompetent peers. This means that developmentally competent toddlers were more verbal and sent more signals to their mothers than their incompetent peers. This suggests that the intentional communication is related to toddlers' cognitive competence.

The study did not support the differences anticipated between intentional communication and maltreatment or intentional communication and the maternal variables of Quality of Support and Appropriateness of Style of Assistance.

Hypotheses Related to Negotiation of Failed Messages

When the Negotiation of Failed Messages Inventory was compared by group, no significant differences were found. However, middle class mothers appeared to immediately understand their children's intents at least 50% of the time, while lower class mothers immediately understood their children less frequently, only about 33% of the time. Middle class mothers appeared to be more in tune with their children, as they immediately understood about every other communication by their child. Lower class children, on the other hand, were understood less frequently. It is interesting to note that lower class children also signaled about 7% less frequently than their middle class peers. This means that they signaled less often to their mothers, and only one out of every three of their signals was immediately understood. This would

be a frustrating conversational pattern, and it seems understandable that their Protests were higher than middle class toddlers.

Given these differences on the Negotiation of Failed Messages, it was disappointing to find no significant differences by group. The variance on many of these scores was almost as large, or larger than, the means for each item and this large variance may have contributed to the lack of significance.

When the Negotiation score was compared to the maternal variables of Quality of Support and Appropriateness of her Style of Assistance, again no differences were found. It seemed hard to believe that maternal qualities of support and appropriate assistance did not relate to the child's negotiation ability but again, the problems with the sample and item variance may have had a similar affect on this comparison.

Therefore, this study found no relation between Negotiation of Failed Messages and maltreatment or between Negotiation of Failed Messages and the maternal variables of Quality of Support and Appropriateness of her Style of Assistance.

Hypotheses Related to Child's Affective Experience

Scores on the BSID to were used to create two composite scores, Social Competence and Fear/anxiety for the lower class groups. On both scores, no differences were found by group. When the score for Social Competence was examined (n = 26 for this comparison) with nine nonmaltreated and eight maltreated in the competent category and three nonmaltreated and six maltreated in the incompetent category. Here, the the maltreated toddlers appeared to be somewhat more delayed than their nonmaltreated peers.

When the individual IBR scores were examined, it appeared that the lower scores for several of the maltreated and nonmaltreated toddlers appeared to be due to two major differences. They responded slightly more positively to the examiner than did their competent peers and were rated as less cooperative, making their score lower when subtracted from

their response to their mothers. The socially competent peers scored higher in cooperation and were scored as slightly less positive in their orientation to the examiner. This combination of more positive response to the examiner and less cooperation in general lowered the scores for the socially incompetent toddlers.

It is interesting to speculate on these differences, for it appears that the socially competent maltreated toddlers may have responded less positively to the examiner but were rated as more cooperative. It is possible that their history of being 'punished' by their mothers for 'not cooperating' made them appear more cooperative in the testing situation, even though they may have been more suspicious of the examiner than their nonmaltreated peers. This produced a higher value on the social competence score even though their higher scores may have been due feeling more cautious around the strange examiner.

Research in the area of maltreatment and social competence suggests that maltreated children may be more perceptive of the social behaviors of adults (Cummings, Zahn-Waxler, & Radke-Yarrow, 1981). It may be that maltreated children learn to adapt to their environment by paying more attention to adult signals or becoming hypervigilant (Martin & Beezely, 1977, 1980). If so, it may be that the better showing of the maltreated toddlers in Social Competence is in fact a result of their better perception of the social behavior of adults. It may also be a precursor to the development of hypervigilance.

When the Social Competence score was compared to the maternal variables of Quality of Support and Appropriateness of her Style of Assistance, the anticipated differences were not found. However, the mothers' Amount of Interaction did relate significantly to Social Competence. This comparison suggests that mothers who are more involved in the behaviors measured in this study, that is, in their verbal and physical presence, in their responsiveness and in their control of the child's activities produce toddlers who are socially competent. This

active involvement is the opposite of a pattern of neglect, in which mothers tend to ignore their children and react less frequently to them.

In this study, there were equal numbers of maltreated and nonmaltreated toddlers who were socially competent. This suggests that about 64% of the mothers in each group were able to be involved enough to produce socially competent children. These mothers scored high on the appropriateness of their control of their children's activities and in their verbal interactions.

The research on maltreatment has characterized parent child interactions as maladaptive (Bousha & Twentyman, 1984; Coster, Gersten, Beeghly, & Cicchetti, 1989; Egeland & Sroufe, 1981) and describes parents as often having low rates of verbal interaction with their children, a low degree of mutuality and reciprocity, and increased negative and critical interactions (Burgess & Conger, 1978; Christopoulos, Bonvillian, & Crittenden, 1988; Clarke-Stewart, 1973; Crittenden, 1981; Egeland & Sroufe, 1981). These parents represent the other 36% of this study's sample, who scored low on the Amount of Interaction on the PCIS and were unable to supply appropriate support, had low rates of verbal interaction and produced both socially and developmentally incompetent children.

When Social and Developmental Competence are compared in this study, Deveopmentally competent toddlers are significantly more likely to be Socially Competent. Of the sixteen Developmentally Competent toddlers, four were socially competent and in the nonmaltreated group and ten were socially competent and in the maltreated group. There were several unexpected mismatches however, representing about 17% of the sample. Two toddlers in the nonmaltreated group and three in the maltreated group who were Socially competent were Developmentally incompetent and, interestingly, had mothers who scored below the mean on their Appropriateness of Support. However, in only one case, a maltreated toddler who was developmentaly competent was socially incom-

petent. This mother also scored below the mean on Appropriateness. In general then, cognitive abilities are seen to contribute to Social Competence and, in most cases, low cognitive skills will affect how well a toddler can function socially. This comparison also implies that if toddlers have average cognitive skills but have mothers with less than optimal parenting skills, toddlers may have fewer positive social interactions, thus affecting their competence in social interactions.

The comparison of toddlers' affective experience, both Social Competence and Fear/anxiety, showed that maltreatment was not related. In addition, maternal variables of Quality of Support and Appropriateness of her Style of Assistance did not relate to competence in this area, while Amount of maternal Interaction was significantly related.

Maternal Variables

Differences in the maternal variables have provided the most interesting comparisons in this study. Middle class mothers appeared to do better at most parenting skills than their lower class peers, which was anticipated.

It was intriguing that the Amount of Interaction did not differ on the basis of class. Mothers from either class could be high in the Amount of their Interaction. Interestingly, the Amount of Interaction was significantly related to the toddler's Social Competence. Therefore, when the lower class groups were examined, socially competent toddlers could be members of either group and had mothers who were highly involved. The correlation matrix showed that maternal Verbal Interactions were related to Amount of Interaction, and this suggests that mothers who were high in their Verbal Interactions may be likely to have Socially Competent toddlers.

Mothers who scored high in Verbal Interactions talked to their toddlers at least half the time, adjusted their conversation so that the toddler could understand it and were able to talk about their own, as well as their child's, activities. For example, a high score would be

assigned to a mother with an active, independent child who may comment on what the child is doing, even offering interpretations ("That was hard for you, wasn't it?"). For less active children, a high score would be assigned to a mother who commented on the child's eye gaze direction or smaller movements of the head and arms ("You hear that noise too? Wonder what that is?"). In contrast, a mother who talks equally as much but does not comment on the child's activities would receive a lower score. If the mother's speech were almost always composed of directives, this would show that she was trying to shape her child's behavior, not comment upon it. Therefore, an adult who gives mostly directives receives a lower rating on this item.

Mothers who receive a high score on Verbal Interaction are more likely to have Socially Competent children. Children who are surrounded by highly interactive dialogue are given many opportunities to understand adults and to negotiate relationships with them. Therefore, it makes sense that these toddlers would be more socially competent.

Another correlation between maternal Control of Child's activities and the Quality of maternal Support and Appropriateness of their Style of Assistance suggests that mothers who are high in Control of the Child's Activities also may score high on Quality and Appropriateness. To obtain a high score on the control item, mothers had to be somewhat flexible in the organization of their child's activities and show that they could structure the task appropriately for the child's developmental level. The fact that lower class nonmaltreating mothers scored lower in the Appropriateness of their Style of Assistance suggests that these mothers would also exhibit a lower score on control, showing a 'laissez faire' attitude toward their child. This pattern suggests poor parenting skills and implies that the lower class nonmaltreating group was the group that was less skilled at effective parenting.

Maternal Fit to Child Characteristics

The score called Goodness of Fit was created to examine the Appropriateness of mother's Style of Assistance to her child's developmental level and how well that matched the ease with which her child responded in general. In this comparison, which was close to significance, lower class maltreating mothers showed that they were less able to provide an appropriate match to their children's responsiveness than their nonmaltreating peers. When the IBR scores for Reactivity were examined, they show that maltreated toddlers tended to score about the same on this item as their nonmaltreated peers. Therefore, it appears that, even though there were no class differences on Appropriateness of Style of Assistance, when maltreating mothers are matched with their toddlers, differences are found.

When Goodness of Fit was examined on Developmental Competence, however, clear differences were found. Developmentally Competent toddlers were significantly more likely to have mothers who were appropriate in matching their level of assistance to their toddler's need for stimulation. When the group is examined, nonmaltreating mothers appear to be less skilled at matching their child's need for stimulation.

Although the second score Dyad Match did not show differences based on maltreatment, it did show a significant relationship between Developmentally Competent toddlers' Intentional Communication and their mother's Appropriateness of Style of Assistance. Again, when the scores are examined, the nonmaltreated dyads are under represented in the competent group. Mothers who were able to match their level of assistance to the child's communication abilities had children who were more competent at communication. Again, the nonmaltreated dyads were under represented in the competent group.

Mothers who are restricted in the Amount of their Interactions and who are unable to match their level of support to the child's needs

appear to have children with a poor prognosis for development both socially and in their intentional communication. Greenspan describes this kind of parenting style as emotionally distant and ambivalent. He terms it 'growth inhibiting' (1981).

Growth Inhibiting Style

One nonmaltreating lower class mother in this study presents a good example of this style. She appeared withdrawn from the task and talked very little during the entire videotape. She simply pointed to the correct hole for each shape. The child stayed focused on the task for an incredible six minutes while there were other children playing in a room nearby. However, he only said three words during the taping "Get it" and "Mommy". Another nonmaltreating mother had trouble focusing on the task herself and appeared to be quite withdrawn, as can be seen in this except from a videotape (C signifies the child, M is the mother):

C. (other children can be heard in the background) Shut up, Tyronne! (moves the turtle) Shut up, Tyronne!

M. (sits with an impassive look on her face, does not make eye contact with either child, on or off camera)

C. (sings to herself and plays with the turtle, pushing it back and forth on the floor. She flops backwards onto the couch, leaving the turtle on the floor)

M. (after a pause of 30 seconds, grabs the turtle and presses it hard on the toddler's stomach, rolling it back and forth)

C. Ee-yee ! (laughs and rolls away on the couch)

Such inconsistent focus and shifting from task orientation to thoughts of her own were visible in both lower class groups. This inconsistent engagement makes it difficult for the child to share experiences and engage with a social partner. In addition, the inconsistent interaction these mothers provide does not facilitate the child's use of gesture or language, and in fact, may be growth

inhibiting. Since the motivation to communicate is thought to come from a desire to share social experiences with a partner (Bruner, 1975; Vygotsky, 1978), children with growth inhibiting mothers appear to be surely at risk for language difficulties.

Developmental Challenges in the Dyad

Lower Class maltreating and nonmaltreating mothers had similar problems in following their child's lead in play, suggested by their lower scores in Quality of Support and Appropriateness of their Style of Assistance compared to their middle class peers. At least part of this problem appears to be related to how mothers control their children. This situation is observed often in young single mothers who are struggling with a need for independence and control over their own lives as well as over the life of their toddler. The situation becomes complex when the toddler is also struggling for independence and autonomy. This underlying conflict appears to be a developmental one (G. Reisman, personal communication, May 1, 1992). Since both members of the dyad are experiencing a similar developmental task, mother may respond to her child's need for independence as if it is a threat to her own independence. Excerpts from videotaped conversations highlight this dilemma and will be examined more completely in the next chapter.

However, the issue of control appears to have influenced the performance of competent children in this study. Mothers with high Control over their Child's Activity tended to have children who were both Socially Competent and more competent in their Intentional Communication. To obtain high scores on this item, mothers provided a moderate to high degree of organization. They were flexible in their demands for at least half of the session and demonstrated an appropriate level of structure for their child's developmental level. Children who had mothers who provided this combination were Socially Competent.

This data compares favorably with the findings of Allen and Wasserman (1985), who found that mothers who maltreated their infants

had infants who failed to develop appropriate verbal skills. These mothers showed a pattern of low verbal stimulation and high ignoring of their infants, and over time, their infants were delayed in their verbal development.

Summary

It is baffling that the anticipated differences in Intentional Communication, Negotiation of Failed Messages and Affective Competence were not found based on maltreatment, although the choice of class as the comparison group may have masked cultural differences in language. Larger group size might have helped bring about more significant differences.

This study did describe, however, patterns of maternal interaction that enhanced the social and communicative competence of toddlers. Mothers who were able to appropriately match their level of assistance to their child's developmental needs were more likely to have toddlers who were both Developmentally Competent and competent in Intentional Communication. Mothers who were more involved in all behaviors measured by the PCIS and were highly verbal appeared to have toddlers who were Socially Competent. Unfortunately, there was limited information on the middle class children so that measures of social competence could not be computed for this group.

A number of interpretations can be made about the results of this study. The concept of the continuum of care proposed by Sameroff and Chandler (1975) suggests that it is the broad continuum of care over the years that influences all child outcomes. Continuum of care is a complex factor that includes social and environmental factors, such as poverty and isolation. The combination of factors may present so many challenges to parenting that it affects the way parents 'fit' with their children. This may be a contributing factor to the results of the data examined by this study.

In particular, the theory that language and symbolization emerge within the context of the caregiving relationship appears to be relevant here. If mothers from both lower class groups are unable to provide sharing experiences that support the child's sense of self, the child's sense of differentiation will be affected and language production may also be affected. The similarity between groups may therefore be contributing to the paucity of significant results.

The lack of significant comparisons in the data on the three rating scales may have been due to the difficulty in coding many of the lower class and several middle class videotapes. In general, scoring these videotapes was difficult due to poor sound and visual quality. A written transcript for each tape would have facilitated the coding procedures, especially for the Negotiation of Failed Messages.

Problems with one instrument were also apparent. The Negotiation of Failed Messages had been designed to be used in a lunchtime feeding situation, in which the mother's motivation would have been to provide the requested item for the child. It proved more difficult than originally expected to apply the designated categories of maternal responses to a teaching task. For example, if a mother answered her child's question by saying "No, I won't put that shape in the turtle for you", what exactly did this mean. Could it be coded that she misunderstood her child when the child's intention was to have her do the task, or was she trying to facilitate the child's learning? Technically, if the child's intent is not satisfied by the mother, the episode is coded as a communication failure. However, in a teaching task, the goals of mother and child may be different than those of a feeding task, in which mother and child hopefully have the same goal. Therefore, sometimes the coding became unclear, since mothers often understood their child's request but refused to grant it. Therefore, the organization of this scale did not facilitate the collection of data and often became confusing.

Finally, the problem of finding few significant differences in this study may also be due to the age of the children. Aber, Allen, Carlson and Cicchetti (1989) found no differences in the level of symptomatology between poor maltreated preschoolers and poor nonmaltreated preschoolers but did find differences as children got older and entered school. Hart and Brassard (1991) also found a similar pattern among children as they matured.

Adding to the complexity of examining this population are the child's own abilities, such as temperament and level of cognitive, social and physical functioning. When a child is functioning at a low developmental level, the 'return' the mother gets for her 'investment' in the child may be unsatisfying, and mothers may see the child as behaviorally symptomatic (Aber, Allen, Carlson, & Cicchetti, 1989). The data from Aber and his colleagues suggests that competent children tend to respond more positively to their mothers, cooperate more and are more responsive than their incompetent peers. This suggests that they would be more rewarding as social partners. Being a good social partner can facilitate linguistic competence of the child by building upon the platform of positive social interactions with a responsive caretaker. In this study, developmentally competent children also scored higher on Intentional Communication, suggesting that this cooperative interchange may have already begun to produce a difference.

The instruments used for this study did suggest that, at least in one category of Intentional Communication, gestural/vocal use was different. In Acknowledgement, maltreated toddlers used more frequent gesture than both their nonmaltreated peers and the middle class toddlers. This suggests that differences in gesture may be present in maltreated toddlers. Situations may be constructed to enhance the collection of this data, using structured sessions like those designed by Bates, Snyder, Bretherton and Volterra (1979). This type of research

might demonstrate clear differences in the use of gesture between maltreated and nonmaltreated toddlers.

Directions for Future Research

The results of this study appear to have some parallels to existing research on the language of maltreated children. However, the expected differences in early language were not found between matched lower class maltreated and nonmaltreated toddlers. Other differences that may exist may have been missed due to the choice to compare language based on class and maltreatment. Dividing the sample according to culture and style of child's communication (i.e., children who are high communicators versus children who are low communicators) would give more precise information on the effect of maltreatment. Since the original data was not collected in a way that facilitated the examination of toddler language, it is possible that this study missed other differences that do exist between maltreated and nonmaltreated toddlers.

There are also clear directions in the literature indicating that caregiver behaviors can affect child outcomes. Maternal supportive presence and emotional availability have been shown to contribute to the development to the representational capacities of children. Ainsworth (1973) has theorized that toddlers who are confident in their mother's availability feel free to explore the world and interact with others. As a consequence, these children are expected to develop a more highly differentiated sense of self (Cicchetti, 1989). Therefore, it is reasonable to expect to find differences in maltreated populations in the development of language, particularly when examined along with maternal measures. The assumption by Bates that most mothers fit well enough with their child to accomplish the prerequisites necessary to develop language cannot be assumed with mothers who are dealing with the effects of poverty and isolation. Further investigation on the effects of variations in maternal behavior (i.e., inconsistent responsivity,

unpredictably changing the focus in a task, and emotional distance and ambivalence toward the child) on linguistic outcomes is clearly warranted.

Studies focusing on parent/caregiver interactions in the maltreated population could make good use of the PCIS. It is well structured and easy to use and understand. The Intentional Communication Inventory is also an instrument that easily adapts to the research situation. The use of the Negotiation of Failed Messages is not recommended as it would need extensive revision to adapt its use for a nonfeeding task.

CHAPTER V

A QUALITATIVE LOOK AT MOTHERS ON VIDEOTAPE

Although the data from this study did not disprove many of the original null hypotheses, viewing the videotapes did provide the rater with an opportunity to witness parent and child interactions that suggested certain patterns of communication. Some of these patterns appeared to foster communication, while others did not. After viewing each tape for the first time, a brief paragraph was written describing a salient interaction seen between that mother and her child. After all of the tapes were coded, these paragraphs were sorted into groups and read together. These interactions help to illustrate the patterns that were described in the analysis. Patterns such as inconsistent responding, lack of verbal guidance, and in general, the lack of a good fit between mother's teaching style and the child's level of development were some of the patterns that began to emerge.

Middle class mothers tended to follow their child's lead in play with the toy, and if the child became bored or frustrated, they found something else to do with the toy that increased their child's interest in or tolerance for the task. This strategy appears to increase the goodness of fit between mother and child.

For example, one middle class mother follows her child's lead as the task becomes more boring:

M. Want to take them [shapes] out [of the turtle]?

C. Leave those in.

M. Leave those in ? Okay.

C. (squeaks the toy by pushing down on the turtle's head)

M. (spins the circle on the turtle's back)

C. (looks at mother and smiles)

M. (returns C's smile)

In contrast, another mother interpreted the task in a very rigid way and had a toddler who was very reluctant to play:

M. (holds shape in fingers and tries to put it into C's hand)

C. (C is unwilling to take shape and closes her hand, turning the palm down toward the floor)

M. (slaps C on her bottom) Straighten up!

C. (looks at mother and then points to the turtle) En gah.

M. Com'on.

C. (sinks backward)

M. Com'on.

C. (points to toy and begins to cry)

M. (slaps C's hand)

B. (cries)

Although this mother had showed the toddler how to put in the shapes once, she seemed to expect the child to go ahead with the task with no more instructions. This maltreating mother was unable to provide appropriate instruction for her child and the videotaping had to be terminated early because of the mother's extreme volatility toward her child.

Several maltreating mothers appeared very withdrawn from the task. One mother finally responded after 11 minutes of her child's attempts to put in a shape by clapping, smiling and saying "Yeah." Her child responded by looking at her with a sober expression. In other tapes, children were less persistent and the task became boring for both mother and child. In the following case, a nonmaltreating mother was unable to change the task to a more appealing one:

M. Let's put them in again (taps finger on turtle).

C. (pushes mother's hand away)

M. (looks at camera) She just wants to push Mommy.

C. Brat!

M. You're a brat! Put the pieces in here.

C. Brat! (picks up a shape)

M. Hush!

C. (grunts, gets the shape in)

M. Good girl.

C. Mom brat!

M. (laughs) She's calling me a brat.

C. (grunts as putting another shape in)

M. That don't go in there. It goes right here. You're not cooperating.

C. (looks at turtle with hands in lap)

Another maltreating mother seemed more in tune with her child, but instituted an interaction that had a sing-song neutral quality to it, that seemed to show little interest in the task. In this case, the child was focused on the task. After teaching her child to do the task, mother and child went through the task quickly two complete times and then had this interaction:

C. Your turn.

M. You want me to have a turn ? Okay (picks up a shape). Where does this one go ?

C. Right there (points).

M. No.

C. Right there (points).

M. Yes, right there.

C. Got it.

In this case, the child and the mother have instituted an interaction pattern in which the mother is able to follow her child's lead, but a sing-song quality noticeable on the videotape indicates that mother's investment is minimal in the task. It is the child's persistence and own sense of play that keeps the task going in a mutual way.

A child's temperament can also help to shape an interactional pattern. In this excerpt a girl toddler had been active in her expression of boredom with the turtle task. She was much less interested in the task than other children had been, and attempted to

leave the area five times in the first eight minutes of the task. Her mother appeared to find this behavior amusing, and her enjoyment of her daughter's actions made it difficult to keep her on task. After the child left the area for the fifth time, the mother finally placed the child on her lap and this interaction followed:

C. (throws the turtle)

M. Oh, you hurt Mr. Turtle. He's cryin' (picks up the turtle and places it next to child). Give him a kiss.

C. (pick up the turtle and squeezes it in her arms, smiling)

M. Oh, how sweet!

C. (tries to wiggle off M's lap)

Here, the mother was successful in interesting her independent toddler in the turtle's 'feelings' but she was unable to interest her child for long in turtle play. The child ended the videotaped segment by tantruming and had to be restrained by her mother. In this case, although the mother had some good ideas for play, she seemed unable to persist with them and tailor them to her child's interest and developmental level. The child became very frustrated with the task and was unwilling to concentrate. Part of this problem was due to her own need for fast paced action, and part of it, no doubt, was due to mother's inability to focus her on the task.

In a similar situation with an impulsive child who is bored with the task, the following mother handles her child differently. This mother gets up off the floor four times to get her child and bring him back to the turtle. She finally settles him on her lap:

M. (takes turtle and turns it over, and begins to spin the wheels on the bottom)

C. (spins the wheel with a finger, taps the bottom of the turtle)

M. (hands him a shape and turns turtle over)

C. (attempts to get in a shape. Child correctly places a shape)

M. (claps)

C. (claps)

This whole sequence is without words, but the mother has been successful in calming the child by choosing an easy activity. She has been able to use other sensory modalities, such as sound and touch, to interest her toddler to continue with the task. She also demonstrated that she could read her child's cues and respond in a flexible way to them. Sequences like this one show that mothers can adjust their level of involvement to their child's need. Greenspan (1981) identifies these as growth promoting strategies. This type of interaction would score higher on the level of Appropriateness, or match between mother and child, than the mother who tried to interest her daughter in the turtle's 'feelings'.

Maltreating mothers and children appeared to have more trouble with keeping focussed, particularly when other interactions were going on in another room. In this sequence, a mother has been loudly instructing her toddler where to put each shape and he has been successful a number of times:

M. That one...right there (points).

C. (gets it in)

M. Yeah, you got it in! (grabs his arm and shakes it) Hey Marko, you're good, but you won't clap!

C. (tries to get another shape in while background noise from children playing in another room gets much louder)

M. (looks into other room and watches what's going on)

C. (looks at mother and pushes turtle in her direction)

M. (still looking into other room, pushes the turtle back)

C. (pushes turtle to her)

M. (she escalates the play and pushes it back very hard to the child)

C. (returns the turtle with a hard push)

M. (laughs and looks at C., smashes the turtle hard toward the boy's open legs)

C. (looks bewildered and pushes the turtle hard to M)

M. (returns turtle with a smash)

In this case, the mother's intensity of play seemed to increase with the rising sounds from the other room. At first the child responds to his mother's mimicking of his gesture, but later, becomes bewildered as his mother's intense reaction does not fit in with the level of play he had initiated. This intermittent, often intense, interaction is confusing to toddlers and does not enhance the toddler's ability to predict what his mother will do. This makes it more difficult to engage in play that is mutually satisfying, and will does affect the interactional base upon which language develops.

Some mothers were able to provide an exceptional amount of verbal explanation for the task. This maltreating mother provided the longest description of how to do the task compared to all of the mothers:

M. See, they can't all fit in the same holes. See, all the holes are made for the blocks to fit in, and the blocks won't fit in the holes they're not made to fit in.

C. (trying to fit blocks in the whole time M is talking) Star..gah.

M. How about this hole?

C. Star..gah (tries to get it in).

M. Will it fit here? (opens turtle's mouth)

C. (puts it in the turtle's mouth)

In this case, although the mother was highly verbal, her child just could not do the task with only verbal directions. Therefore, in spite of her efforts, the fit between her level of help and his developmental

level is not very good, although she does make an effort to simplify the task for him.

These examples demonstrate that there was a wide variety of parenting skills among both of the lower class groups. Many maltreating mothers were more responsive than their nonmaltreating peers, but the intensity of their interaction was higher. For example, this mother had a toddler who was quite proficient in getting in the shapes:

C. (gets in shape)

M. Good boy! (very loud)

C. (tries to get in another shape)

M. That one right there (jabs her finger at the hole).

Why are you slobbering boy?

(After 13 minutes into the videotape, C takes the shapes out of the turtle and starts to stack them, getting one stack four shapes high. Then, he drops one off the top.)

M. Ha-ha! (loudly and derisively)

C. Ha-ha! (copies her tone of voice)

M. Ha-ha! (softer and in a sing song tone)

C. Ha-ha! (copies softer tone)

In this case, one wonders if the toddler will soon be more mature than his mother!

Middle class mothers tended to be more even in their intensity and often were able to create games to play when their children became bored. Overall, middle class children did not seem more compliant but the mothers' flexibility helped the children to stay on-task and be cooperative. For example, many middle class mothers stacked the shapes and allowed the child to knock them over. Some nonmaltreating mothers also did this. Pretending the pegs were candles on a cake or that the shapes were dishes of ice cream were strategies used by middle class mothers that were not seen in either of the lower class groups. However, other lower class mothers rolled the turtle or named the colors

on the turtle. Some made a game out of putting the shapes in and out of the turtle's mouth. Flexibility was an important dimension in observing mothers play with their children, and middle class mothers, on the whole, tended to be more flexible in their demands than the maltreating mothers did.

A child's persistence often helped them through the ordeal of sitting still in a hot room (many of the films were made in June) and their own ability to hold and turn the shapes appeared to be a reward in itself. Mothers in all three groups provided few positive comments on the successful placing of shapes and most children continued with the task until frustration or boredom began to become intolerable.

These vignettes suggest that there is wide variety among mothers and their parenting skills as well as among children and their skills. However, mothers who can adjust their actions to the response of their children tend to accomplish more and establish a more positive tone with their children. Being flexible in the interpretation of the task and having a lower intensity of interaction seemed to promote positive interactions, while rigidity and high intensity appeared to inhibit the responses of the child. Mothers who are able to use available sensory modalities to involve children and who are able to read their children's cues are the ones who may be best able to promote their child's growth.

Viewing these videotapes has made it clear how very revealing mother-child interactions are, showing the many factors that come into play within each dyadic interaction. The richness and variety of interactions observed on these videotapes suggested that more differences would be found. It is likely, however, that the similarities between the lower class groups and the sample size of the middle class group may have influenced the comparisons.

Table 1

Individual Items in the Composite Maternal and Child Scores

Composite Score	Individual Items
Scores for All Groups	
Maternal Scores	
1. Verbal Competence	Amount of Verbal Interaction+
	Quality of Verbal Interaction+
	Appropriateness of Verbal Interaction+
2. Competent Control Over Child's Activity	Amount of Control+
	Quality of Control+
	Appropriateness of Control+
Child Scores	
1. Intentional Communication	Comment on Object**
	Request for Information**
	Acknowledging**
	Number of Signals Produced@
2. Negotiation Score	Number of Signals@
	Length of Longest Turn@
Scores for lower class groups	
Child Scores	
3. Social Competence	
a. General Affective Tone	Social Orientation to Mother*
	Social Orientation to Examiner*
	Responsiveness*
	Cooperativeness*
b. Fearfulness/Anxiety	Fearfulness*
	Tension*
	Anxiety*
Maternal Characteristic Scores	
1. Goodness of Fit	Maternal Appropriateness+
	Child Reactivity*
2. Dyad Match	Maternal Appropriateness+
	Child Intentional Communication

\+ Item on the PCIS
* Item on the Infant Behavior Record
** Item on the Intentional Communication Scale
@ Item on the Negotiation of Failed Messages Scale

Table 2

Subjects Participating in the Study

Race	Experimental Subjects Maltreated (n = 14) Boys	Girls	Nonmaltreated (n = 15) Boys	Girls	Middle Class Subjects (n = 10) Boys	Girls
Black	4	3	6	2	0	0
White	5	2	5	2	8	2

Table 3

Means and Standard Deviations for Two Toddler Communication Inventories: Intentional Communication and the Negotiation of Failed Messages By Maltreatment and SES Groups

Variable	Lower Class Groups: Nonmaltreated (n = 15) M	SD	Lower Class Groups: Maltreated (n = 14) M	SD	Middle Class Group (n = 10) M	SD
Intentional Communication Inventory						
Comment on Object	5.0	7.2	4.5	4.9	9.1	6.0
Comment on Action	14.7	10.1	22.0	22.7	25.2	18.5
Acknowledging	4.0	3.5	9.5	9.2	13.5	9.3
Request for Action	8.3	10.5	7.8	10.4	2.8	3.7
Request for Object	.5	2.1	1.7	4.3	1.2	3.4
Request for Information	2.0	2.1	3.6	3.4	6.2	6.0
Protesting	11.5	14.4	8.3	7.9	5.6	6.0
Answering	25.6	14.4	25.3	15.8	32.7	29.0
Negotiation of Failed Messages						
Number of Signals	17.5	10.9	18.1	16.2	21.0	12.2
Number of Immediate Successes	6.4	6.4	6.3	9.8	10.1	12.7
Longest Conversational Turn	5.9	5.4	4.4	2.5	6.0	7.5
Number of Conversational Turns Over Two	5.8	4.4	6.3	4.5	5.6	2.4

Table 4

Means and Standard Deviations for Maternal Rating Scale (PCIS) By Maltreatment and SES Groups

Variable	Lower Class Groups				Middle Class Group	
	Nonmaltreated (n = 15)		Maltreated (n = 14)		(n = 10)	
	M	SD	M	SD	M	SD
Amount	3.28	.55	3.35	.60	4.62	.56
Quality	3.44	.54	3.04	.98	4.46	.38
Appropriateness	3.84	.53	3.35	1.01	4.62	.56

Table 5

Results of ANOVA on Communication Inventory Scales

Variable	SS	df	MS	F	Contrast / t+
Comment on Action					
Between Groups	930.10	2	465.05	1.49	1/ -1.17
Within Groups	12781.78	37	311.75		2/ -1.66++
					3/ .48
Comment on Object					
Between Groups	328.63	2	164.31	4.27**	1/ .05
Within Groups	1576.36	37	38.44		2/ -2.56*
					3/ 2.53*
Acknowledging					
Between Groups	848.11	2	424.05	6.27**	1/ -1.89*
Within Groups	2768.67	37	67.52		2/ -3.53**
					3/ -1.58
Request for Action					
Between Groups	267.73	2	133.86	1.75	1/ .16
Within Groups	3127.17	37	76.27		2/ 1.72#
					3/ -1.51
Request for Object					
Between Groups	11.46	2	5.73	0.50	1/ - .98
Within Groups	465.71	37	11.35		2/ - .63
					3/ - .33
Request for Information					
Between Groups	137.22	2	70.61	4.16*	1/ -1.17
Within Groups	695.32	37	16.95		2/ -2.87*
					3/ 1.65
Protesting					
Between Groups	252.40	2	126.20	1.21	1/ .80
Within Groups	4256.39	37	103.81		2/ 1.55
					3/ - .72
Answering					
Between Groups	618.89	2	309.44	0.73	1/ .14
Within Groups	17296.08	37	421.85		2/ - .99
					3/ 1.10

* $p < .05$
** $p < .01$
\+ Contrast 1 = Nonmaltreated Lower Class with Maltreated Lower Class
Contrast 2 = Nonmaltreated Lower Class with Middle Class
Contrast 3 = Maltreated Lower Class with Middle Class
++ $p = .069$
\# $p = .057$

Table 6

Results of ANOVA on Maternal Scales Between Lower Class Maltreated and Nonmaltreated and Middle Class Groups (PCIS)

Variable	SS	df	MS	F	Contrast+/ t
Amount					
Between Groups	5478.89	2	2739.44	0.8154	1/- .06
Within Groups	137745.53	37	3359.64		2/-1.18
					3/ 1.07
Maternal Warmth					
Between Groups	155265.43	2	77632.71	16.31*	1/ 1.14
Within Groups	137745.53	37	3359.64		2/-5.49*
					3/ 4.62*
Appropriateness					
Between Groups	116757.97	2	58378.98	13.16*	1/ 1.55
Within Groups	181776.93	37	4433.58		2/-5.49*
					3/ 4.62*

\+ Contrast 1 = Lower Class Nonmaltreated with Lower Class Maltreated
Contrast 2 = Lower Class Nonmaltreated with Middle Class
Contrast 3 = Lower Class Maltreated with Middle Class
* $p < .001$

Note: For ease of coding on this scale, the decimal point was placed two spaces to the right, so that a score of 4.75 was tallied as 475. Therefore, the size of the SS and MS values reflect this exponent in their high values.

Table 7

Product-Moment Correlations Between Maternal Scores of Amount, Quality. Appropriateness, Total Control and Total Verbal Scores and Toddler Scores of Social and Developmental Competence

Variables	1	2	3	4	5	6	7
1. Amount of Interaction	-	-.03	.14	.49*	.19	.48*	.11
2. Quality of Support		-	.56*	.27+	.53*	-.008	.22
3. Appropriateness of Assistance			-	.58*	.61*	.19	.55*
4. Total Verbal Score				-	.69*	.27	.01
5. Total Control Score					-	.38*	.37++
6. Social Competence						-	.37++
7. Developmental Competence							-

* $p < .01$
** $p = .06$
\+ $p = .07$
++ $p = .10$

Note: These correlations are reported for the lower class groups, n = 29. For variable 6, n = 26, which is the number of lower class toddlers who were given the BSID. For variable 7, n = 25, the number of lower class toddlers who had Developmental Indexes. The comparison on Social Competence and Developmental Competence had only 10 pairs per group, so that n = 20 on this comparison.

Table 8

Results of t-tests Comparing Developmentally Competent Toddlers and Maltreated Toddlers on Indexes of Intentional Communication, Affective Competence, and Fear/Anxiety

Variable	Developmental Groups					Lower Class Groups				
	Incompetent (n = 7)		Competent (n = 16)			Nonmaltreated (n = 14)		Maltreated (n = 13)		
	M	SD	M	SD	F	M	SD	M	SD	F
Intentional Communication	31.7	13.1	50.5	30.8	-1.54*	16.4	17.3	16	13.1	-1.47
Social Competence	10.11	2.9	12.7	2.7	-1.43**	11.3	2.4	12.5	2.5	-1.54
Fear/Anxiety	11.7	2.5	12.1	2.6	-.32	11.0	2.0	11.7	2.5	-.46

* $p = .053$
** $p = .023$

Note: Developmental Competence was determined by value of the Developmental Index on the BSID.

Table 9

T-test Comparisons on Maternal Characteristics by Groups

	Lower Class Groups					Developmentally Competent Groups++				
	Nonmalt. (n = 14)		Malt. (n = 13)			Incompetent (n = 7)		Competent (n = 16)		
	M	SD	M	SD	F	M	SD	M	SD	F
Goodness of Fit	12.9	1.8	11.2	2.2	1.47*	12.7	1.6	9.8	2.1	1.78**
Dyad Match	43.6	25.6	48.5	31.1	1.47	53.8	30.9	34.8	12.5	6.10^

* p = .058
** p = .042
^ p = .048
\+ Competence was based on a score of 85 or above on the BSID.

Note: The number of cases in these groups was limited by the number that had both scores available on Infant Behavior Record (IBR) and those that also had videotaped ratings. One toddler had an IBR but was missing a Developmental Index rating, therefore the group based on IBR ratings had one less than the group based on Developmental Indexes.

STOP !

NOTE
SPECIAL FILING INSTRUCTIONS

SEE DATA SHEET

APPENDIX A

PARENT/CAREGIVER INVOLVEMENT SCALE
(From Farren, Kasari, Comfort, & Jay, 1986)

I. Physical Involvement

A. Amount of Bodily Contact (includes support, touching holding)

1	2	3	4	5
very little to none A and C hardly ever touch each other (If amount = 1, rate Not Observed on Quality and Appropriateness)		moderate: A and C are in physical contact mostly only in the service of other activities or <u>only</u> passive support		Very much; must include <u>active</u> touching

B. Quality of caregiver handling of child (includes changing child's posture, guiding movements, carrying, eye contact)

1	2	3	4	5
never sensitive, well-executed handling; handling almost always ineffective		sometimes sensitive handling; about half the time (If only passive support, do not rate above a 3)		almost always sensitive, well-executed , never rough or abrupt

C. Appropriateness of caregiver positioning of child; Placement of C in a particular posture for the purpose of play or interaction; placement of A and toys to allow easy access by C.

1	2	3	4	5
always positioned without inadequate access to toys and/or adult; impeding child's best approach to task		sometimes positioned with adequate access; about half the time		almost always positioned for C's best best approach

II. Verbal Involvement

A. Amount of verbal involvement (includes initiating and/or responding to C's verbal or nonverbal behavior)

1	2	3	4	5
A seldom talks Amount = 1, rate Not Observed on Quality or Appropriateness		moderate; A occasionally talks to C; about half the time		very much; A talks to C with with practically no pauses for C to talk

B. Quality of verbal interaction (adjustment for comprehension)

1	2	3	4	5
A never adjusts speech to C's level- either too high or of too low		moderate adjustment for comprehension; sometimes language directed to child too 'babyish' or complicated		A almost always assures C's comprehension alters tone tone of voice to gain C's attention

C. Appropriateness of verbal interaction (How much does caregiver provide a verbal link between child and the world?)

1	2	3	4	5
A hardly ever comments on C's activities to or on A's own activities		A occasionally directs talk to C about C's activities, relates A's activities to C		A's talk almost always relates C's activities and explains A's own activities relative to C. Must both be talking about C's and A's activities to receive a 5

III. Responsiveness of Caregiver to Child

A. Amount of responsiveness to child (to his initiations, verbalizations, demands, distress)

1	2	3	4	5
never responds (if Amount = 1, rate Not Observed on Quality and Appropriateness)		A occasionally responds; responds about half the time		A almost always responds

B. Quality of caregiver responsiveness: Intensity

1	2	3	4	5
responds abruptly forcefully, very intensely, harshly		neutral; response not intense at all		A responds in a gentle, sensitive way. A may respond with delight and enthusiasm. Spontaneity is also observed.

C. Appropriateness of caregiver responsiveness: Timing

1	2	3	4	5
seldom good synchrony of response to C's activities; A overwhelms C with quickness of response or is too slow in responding		moderate synchrony of response to C's needs. About half the time A's response appropriate and well timed to C's needs		response to C always appropriate to C's needs. Good synchrony of response, neither too slow nor too quick

IV. Control Over Child's Activities

A. Amount of control over child's activities exerted by caregiver

1	2	3	4	5
A never organizes C's activities; "Laissez-faire" - C on his/her own (If Amount = 1, rate Not Observed on Quality activities to and Appropriateness)		A sometimes organizes C's activities, about half the time		A almost always organizes C's activities; A always tells or C what to stop and start

B. Quality of control: Intensity/flexibility

1	2	3	4	5
A does much more controlling than is warranted for C's developmental level, or A should do a great deal more controlling because of developmental level of C		A sometimes insistent demanding in organizing activities, but also somewhat flexible and will relent when C is not interested		A very flexible in organizing C's activities; but not overly persistent; adapts demands according to reactions of C

C. Appropriateness of control (fit with child's developmental level)

1	2	3	4	5
A does much more controlling than is warranted for C's developmental level, or A should do a great deal more controlling because of developmental level of C		A does somewhat more controlling of C's activities than is warranted, occasionally over-controls or A should do somewhat more structuring for the developmental level of C		A almost always structures activities appropriately for development of C. Anticipates needs and acts ahead of time. Expectations for amount of structure needed are appropriate to C's skills

APPENDIX B

THE COMMUNICATION INVENTORY
(from Carpenter, Mastergeorge, & Coggins, 1983)

1. COMMENT ON ACTION: Direction of the listener's attention to more observable referent. An intentional behavior that appears to call the listener's attention to the movement of some object rather than the object itself.

Gestural or Gestural-Vocal	Tally
a. Looks at an entity in action; points toward an entity in action, or is involved with an entity in action; may vocalize.	_____
Verbal	
a. Looks at an entity in action; or points toward an entity in action; or is involved with an entity in action and produces words.	_____

2. COMMENT ON OBJECT: Direction of the listener's attention to some observable referent. An intentional behavior that appears to call the listener's attention to some object identified by the child.

Gestural or Gestural-Vocal	Tally
a. Extends arm to show entity already in hand; may vocalize.	_____
b. Picks up an entity and immediately shows it to adult; may vocalize.	_____
c. Points to, looks toward or approaches entity; may vocalize.	_____
Verbal	
a. Extends arm to show entity in hand and produces a word.	_____
b. Picks up entity and immediately shows it to adult and produces a word.	_____
c. Points to, looks toward or approaches entity and produces word or word combination.	_____
d. Produces a word or word combination that refers to an entity not existent in the immediate environment.	_____

3. REQUEST FOR INFORMATION: Solicitation of services from a listener where child awaits a response. An intentional behavior that directs the listener to provide information about an object, action or location.

Gestural or Gestural-Vocal	Tally
a. Looks at and/or points toward an entity, movement or location; picks up or touches entity; may vocalize (possibly accompanied by rising intonation).	_____
Verbal	
a. Looks at adult and requests additional input about a referent; gesture may accompany request (generally a wh-word initiates the request), possibly accompanied by rising intonation.	_____

4. ANSWERING: Responding to a request for information with the semantically appropriate data.

Gestural or Gestural-Vocal	Tally
a. Responds to adults query with affirmative head nod; may vocalize.	_____
b. Responds to adult's query with negative head nod; may vocalize.	_____
c. Provides obligatory gestural response to adult's query where the answer is visually apparent in the immediate environment; may vocalize.	_____
d. Provides gestural response to adult query where the answer is not apparent in the immediate environment; may vocalize.	_____
Verbal	
a. Responds to adult's query with affirmative verbal response; may imitate part of adult's preceding question.	_____
b. Responds to adult's query with negative verbal response; may imitate part of adult's preceding question.	_____
c. Provides a verbal response to adult query where the answer is visually apparent in the immediate environment; may imitate part of adult's preceding question.	_____
d. Provides a verbal response to the adult query where the answer is not apparent in the immediate environment; may repeat part of adult's preceding question.	_____

5. REQUEST FOR ACTION: Solicitation of services from a listener where child awaits a response. An intentional behavior that directs the listener to act upon some object in order to make the object move. The child's interest appears to be in the action of the object rather than in the object itself.

Gestural or Gestural-Vocal	Tally
a. Looks at entity that has ceased moving, has the potential to move or be moved; reaches or leans toward entity; may fuss or whine.	_____
b. Looks toward entity that has ceased moving, has the potential to move or be moved; and makes ritual gesture.	_____
Verbal	
a. Looks toward entity that has ceased moving, has the potential to move or be moved; may point toward entity or adult; may give entity to adult and produce word or word combination ("turn", "go").	_____

6. REQUEST FOR OBJECT: Solicitation of services from a listener where child awaits a response. An intentional behavior that directs the listener to provide some object for the child; the child. The object is usually out of reach due to some physical or spatial barrier.

Gestural or Gestural-Vocal	Tally
a. Stretches hand toward entity; whines or fusses while leaning toward entity.	_____
b. Stretches hand toward entity with ritual gesture; may vocalize.	_____
Verbal	
a. Looks at or touches entity; points to or reaches toward entity and produces words.	_____
b. Produces a word or word combination that directs the listener to furnish entity not existent in immediate surroundings.	_____

7. ACKNOWLEDGING: Providing notice that a previous gesture or utterance was received.

Gestural or Gestural-Vocal	Tally
a. Child spontaneously imitates the immediately preceding adult gesture and/or vocalization and awaits a response.	_____
b. Child nods his head to agree or disagree with the adult's immediately preceding action request (e.g., Can you give me a kiss?) or attention request.	_____
Verbal	
a. Child spontaneously imitates the immediately preceding adult utterance and awaits a response. Child does not add any new information or modify word order.	_____
b. Child verbally agrees with the adult's immediately preceding action request or attention request.	_____

8. PROTESTING: Expressing disapproval of the speaker's action or utterance.

Gestural or Gestural-Vocal	Tally
a. Adult initiates an activity (other than a question) that the child rejects or declines to perform. Child may turn away from adult; may fuss (brief or prolonged); may push adult's hand away or strike out at adult; may scream or vocalize.	_____
b. Adult initiates an activity (other than a question) that the child rejects or declines to perform. Child uses ritualized gesture to indicate disapproval or disagreement (e.g., shaking head from side to side); may vocalize.	_____
Verbal	
a. Adult initiates an activity (other than a question) that the child rejects or declines to perform. Child may shake head from side to side or push adult's hand aside; says word(s).	_____

APPENDIX C

NEGOTIATION OF FAILED MESSAGES: DESCRIPTIONS AND DEFINITIONS

(from Golinkoff, 1986)

Component 1: The initial signal. Only instances in which the infant began the interaction by producing some communicative signal(s) were coded. Thus, infant behaviors which did not appear to have communicative intent were not considered initial signals even if the mother treated them as such. Signals produced in response to mother's questions or behaviors were not coded. The criterion for an initial signal was whether the infant's signal appeared to be produced for the mother. This was sometimes indicated by eye contact with the mother, although not always. An initial signal was most noticeable after a break in the interaction.

Behaviors classified as initial signals were the following: a) Pointing; b) Vocalizing; c) Reaching; d) Looks at Mom; e) Looks at Object; f) Leans to Object; g) Word; h) Gives, offers, or shows object; or i) Idiosyncratic of child (such as waving arms, abbreviated cries without tears).

Component 2: Comprehension failure. For messages to fail, mothers must appear unable to comprehend the intent behind the infants' signal. However, mothers' comprehension failures fall on a continuum which ranges from a true failure to a feigned failure, the latter apparently designed to elicit verbal production from the infant. No attempt was made to distinguish these alternatives.

Comprehension failure by the mother was coded under the following circumstances:

1. Any utterance produced with an interrogative intonation in response to the infant's signal. Even when followed by a declarative statement, as in 'Bird? Yes, there's a bird,' an interrogative was coded as indicating uncertainty about the infant's intent.

2. An explicit statement that she did not know what the child meant by his/her signal.

3. Apparent attempt to ignore the infant's signal and introduce her own focus.

4. Nonverbal behaviors such as eyebrow raising.

Infants signal that a comprehension failure has occurred either by rejecting their mothers' interpretation of their signals or by repairing their own signals. Mothers' interpretations come either in the form of some type of comprehension failure or when the mother gives the infant something or makes a declarative statement that the infant wants such-and-such. If the infant disagrees with the mother's interpretation he or she may push an object way or show much negative affect.

Mother's signal their comprehension failures in the following ways:

1. **Nonverbal indicators**: Any nonverbal behavior which indicates confusion or uncertainty, such as cocking the head or knitting the brows.

2. **Reformulations**: Interrogative which translates the infants' nonverbal signal into words, such as "You want the milk?".

3. **Clarification requests**: Either as a clarification marker, or a full question. No potential referent is named. For example, "huh?" is considered a clarification marker, and "what do you want?" is a full question.

4. **Statements of comprehension failure**: Declaratives which explicitly state mother's uncertainty, such as "I don't know what you want".

5. **Explanations and repetitions**: Interrogatives produced only when infant has produced a verbal signal, such as "Did you say 'I want the milk?'"

6. **Change of topic**: Questions, statements or actions to alter infant's focus. Mother does not attempt to interpret infant's signal, such as while infant points at grapes, Mother says "Want some juice?"

7. **Perseverates on change of topic**: Questions, statements, or actions to alter infant's focus. Mother ignores infants prior signal in which infant rejected the same interpretation. For example, mother offers juice, infant pushes juice away, and mother offers juice again.

Component 3: Repairs. Not all negotiation episodes contain repairs. Sometimes infants abandon their goals, or mothers succeed immediately after their first failure. Repairs were classified as one of 3 types: a) a **repetition** of the signal; b) an **augmentation** of the original signal by the addition of one or more nonverbal or vocal communicative behaviors; and c) a **substitution** of a new communicative signal for the original signal. Repairs were judged relative to the infant's immediately preceding turn - not relative to the infant's initial signal.

Component 4: The outcome. There are five types of outcomes for negotiation episodes, as follows:

1. **Success**: when the infant's apparent goal was carried out by the mother.

2. **Mother substitution**: when the mother failed to understand the infant's intent and changed the topic in a way that maintained communication.

3. **Baby substitution**: when the infant selected an available alternative, perhaps because he or she was not very interested in the original goal.

4. **Failures**: whether the mother or infant refused to continue to negotiate.

5. **Compromise**: when the mother verbally indicated that while she grasped the infant's intent, she would not satisfy it at that time.

IMMEDIATE SUCCESSES occurred when an infant's initial signal was comprehended by the mother. **MISSED ATTEMPTS** were coded when the mother failed to pick up on the infant's initial signal. In some cases, the mother eventually responded to the infant's signal.

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