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FROM FEELINGS TO WORDS:

PROCESSES OF SYMBOLIZATION IN MOTHER INFANT INTERACTION

AND THEIR IMPLICATIONS FOR ADULT PSYCHOTHERAPY

by

ELIZABETH CATHERINE TINGLEY

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

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Abstract

FROM FEELINGS TO WORDS:
PROCESSES OF SYMBOLIZATION IN MOTHER-INFANT INTERACTION
AND THEIR IMPLICATIONS FOR ADULT PSYCHOTHERAPY

by

Elizabeth C. Tingley

Advisor: Professor Arietta Slade

This research examined mother-infant interaction, focusing on what mothers do that might support their infants' growing capacities to put words to feelings. Sixty-eight mother-infant dyads were videotaped in the laboratory. Infants were aged either 6, 12 or 18 months. Episodes of infant affect were identified from 18 minutes of videotaped mother-infant interaction and were classed by valence (positive or negative.) Type of maternal responses (action, speech and affect) to infant affect and functions of maternal speech in response to infant affect were coded. The ten function categories were elicit, acknowledge, clarify, guide, facilitate, label, evaluate, alleviate, re-orient and other. These data were analyzed using infant age and gender as the between subjects variables and infant affect valence (positive and negative) as the within subjects or repeated factor. Results showed that mothers' own affective responses varied by infant age and infant affect valence (positive versus negative). Mothers also varied their functions of their speech by infant age (clarify and label more frequently at 6 than at 12 or 18 months; guide and other more frequently with older than younger infants), infant affect valence (clarify, evaluate and alleviate and evaluate more frequently with negative than with positive affect). There were two interaction effects for infant age and infant affect valence.

Mothers used words to elicit positive affect only less frequently with 18 months olds than with other ages while mothers decreased their use of words to re-orient infants away from negative affect at 18 months. No gender differences were found. These findings were discussed in relation to Vygotsky's concepts of internalization and scaffolding, infant development and developmentally appropriate mother-infant interaction. Specifically, it was suggested that mothers' use of language to respond to infant affect, mothers use of redundant information across modalities and developmental changes in these maternal behaviors are potential scaffolds for the symbolization of affect. In addition, maternal behaviors were evident which could support the infant's move from a passive to an active stance in symbolizing affect. These results were also applied to processes in adult psychotherapy, including transference, interpretation, structure, reflective functioning and empathy.

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This is dedicated to Donald F. Tingley, Ph.D

scholar, mentor, father and Democrat

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CHAPTER ONE: INTRODUCTION

The central aim of this research is to illuminate a process in mother-infant interaction. It asks: how might mothers support their young children's developing capacity to put feelings into words? What do mothers specifically do that might facilitate children's ability to talk about their emotions? In learning that words can represent, or symbolize, affective states, the child takes a critical leap forward in knowing how to recognize, understand, express and regulate even strong emotional states. This ability to symbolize affective states both requires and creates space between feeling and action. The capacity to symbolize affect is a key component in emotional health and emotional development.

Prior research (e.g. Ridgeway, Waters & Kuczaj, 1985; Bretherton & Beeghly, 1982; Lamb, 1991; Bretherton, Fritz, Zahn-Waxler & Ridgeway, 1986) indicated that most children begin to develop the ability to talk about internal states in the third year and that this ability is related to earlier maternal speech about internal states (e.g. Dunn, Bretherton & Munn, 1987; Bretherton & Beeghly, 1982). However, a review of the literature will show very little is known about the range of maternal behavior involved in supporting the child's capacity to symbolize affective states. Therefore, the central aim of this research is to describe types of maternal behavior which might serve to support the developing abilities of young children to talk about, or symbolize, affective experience. This research will not focus on the effects of these maternal behaviors on the child's capacity to symbolize affective states. Rather, it asks: what is present in maternal responsee to infant affect which has

the potential to support the development of this ability?.

A second aim of this research is to consider the implications of symbolizing processes in the mother-infant relationship for the therapist- patient relationship. Talking about feeling states (and other ephemeral experiences such as unconscious wishes and thoughts) is also a central activity in adult psychotherapy. Breuer and Freud (1895/1955), after all, called psychoanalysis the "talking cure" (p. 30). As will be described further below, talking, among other symbolizing activities, seems to be an important element in making psychotherapy therapeutic. Thus a second goal of this research is to apply the findings on specific maternal behavior supporting the infant's symbolization of affective experience to adult psychotherapy.

CHAPTER TWO: REVIEW OF THE LITERATURE

The following review of the literature is divided into two broad areas corresponding to the two research aims. First, prior literature describing mother interaction and early symbolization and their theoretical and clinical significance of is presented. Next, prior literature suggesting the relevance of mother-infant interaction and the symbolization of affect to adult psychotherapy is reviewed.

The first section of the literature review is divided into three different areas. The first addresses the basic theoretical rationale for pursuing the research question on mother–infant interaction. This focuses primarily on the work of Vygotsky and other contemporary theorists working in the Vygotskian tradition. The second area is an elaboration of the significance of children's ability to symbolize affective states and

of the potential maternal role in developing this ability. Why is this ability so important in child development and how might what mothers do be central to the process? Third, empirical literature on mother-infant interaction in a variety of contexts is reviewed. This section asks: does prior research point to any specific maternal behaviors which could be construed to support the symbolization of infant affect?

Mother-Infant Interaction and Potential Maternal Support for the Symbolization of Affect

Theoretical underpinnings

This research is grounded in the theories of Vygotsky. Vygotsky (1975) pointed to processes of internalization to explicate the nature of mind. He argued that mind is the "internal reconstruction of an external operation " (p. 56) and that this "is the distinguishing feature of human psychology" (p. 57).

Vygotsky illustrated this idea by describing the child's development of pointing as a communicative gesture. The preverbal child reaches for something beyond her grasp. Her caretaker brings the item to the child's outstretched hand. With repeated experiences, the reaching towards comes to signify a meaning common to both partners. As Vygotsky put it, "its [the act of pointing] meaning is created at first by an objective situation and then by people who surround the child" (p. 56). The child takes in this meaning and forms a mental representation of it, or again, as Vygotsky put it, an "interpersonal process is transformed into an intrapersonal process" (p.57). The external act comes to have a mental representation, including a

meaning which can be communicated.

Vygotsky did not suggest that internalization is an automatic process, nor that it results in an exact replica of the external in the mind. Rather, it is a prolonged, active process of transformation.[1]

In this research, the view is taken that what mothers do in relation to children's affect, including symbolize it themselves through talk, is in some ways internalized by children. How mothers respond to children's affect, like others' responses to the child's act of "reaching towards" in Vygotsky's example, will help create the meaning of feeling states for children. The primary premise in this research is the following: maternal behavior in the context of children's affective expression supports children's internalization of a symbolic mode in relation to affect.

Also relevant to the rationale of current research is Vygotsky's argument that internalization occurs through adult-child interaction in the "zone of proximal development." As Kozulin (1986), a recent translator and contemporary cognitive psychologist put it, the zone of proximal development is "the place at which the child's empirically rich but disorganized concepts 'meet' the systematicity and logic of adult reasoning....The depth of the 'zo-ped' varies, reflecting the child's relative abilities to appropriate adult structures" (p. *xxxv*). This suggests that maternal behavior supporting the symbolization of affect would vary according to the

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[1]Although Vygotsky seems to picture the mind as a "blank slate" upon which interaction "writes," he also pointed to endogenous drive–a "want" for the initial object for which the child reaches. This duality allows for the use of Vygotskian theory specifically and psychoanalytic theory more broadly to inform this research.

developmental level of the child. The present research, again taking the view of Vygotsky, examines how maternal behavior supporting the symbolization of affect is related to child age.

Contemporary psychologists (e.g. Cole, 1985; Wertsch & Tulviste, 1992) further defined interaction in the zone of proximal development. They likened the adult's actions in the zone of proximal development to that of "scaffolding," whereby the adult maneuvers the task or problem close to the child's level of competence. This assists the child to move a step above her level of competence.

Consider, for instance, the toddler who has seen an older sibling dunk a basketball in the hoop. This small child may pick up a ball and attempt to throw it without getting it close to the hoop. A sensitive parent might then pick the child up, move him with the ball over to the hoop and position the child so that he can drop the ball through. Wertsch and colleagues would say that the parent has provided a "scaffold" for the child's participation, acting in the child's zone of proximal development. In contrast, a sensitive parent of an older child who gets the ball to the rim of the hoop but often misses the basket might respond differently. He might intervene only with words, saying "Move closer and throw more softly. I know you can get that in there."

These two different parental responses illustrate operations in the zone of proximal development. The adult provides only just enough assistance to help the child achieve what is barely beyond the child's individual competence. The specific behavior adults use to support children's development is quite different for c hildren of

different ages. Thus, in the present research, the examination of mother-infant interaction is a search for developmentally sensitive maternal "scaffolds."

Bruner (1983, 1990), a contemporary cognitive-developmental psychologist elaborated and reformulated Vygotsky's concept of scaffolding using the term "format." Bruner (1983) described several properties of formats.

> A format is a initially microcosmic interaction pattern between an adult and an infant that contains demarcated roles that eventually become reversible...They have a script-like quality that involves not only action but a place for communication that constitutes, directs and completes the action...In time...formats are assembled into higher-order subroutines and in this sense can be conceived of as the models from which more complex social interaction and discourse are constructed (pp. 120-121).

Bruner pointed to the micro-elements in interaction–repeated action leading to socially shared meaning and a means of communicating meaning. He put forth the idea that these micro-elements of interaction are eventually organized and re-organized to become complex forms of both interpersonal and intrapsychic activity. The present examination of mother-infant interaction is, again, a search for "formats" related to the development of the symbolization of affect.

Bruner was also interested in how to characterize changing formats over time as children become more competent. To study this, Bruner looked at varying formats in mother-infant play over time. For instance, in the game of peek-a-boo, the adult and infant engage in a sequential game of hiding and finding. The sequence has a predictable beginning, middle and end, with places for the words "where's mommy" and "peek-a-boo" said in varying intonation, volume and rhythm. At first the child is

an observer. Mother essentially performs the whole game herself.

Over time, and with many repetitions of the same sequences, the child gradually becomes an active participant in the play. The baby begins to pull the cloth from her mother's face, or begins to hide himself behind the cloth. Mother and baby begin playing peek-a-boo before the infant has any expressive language. Eventually, in the second year, the baby starts to utter with glee "peek-a-boo" at the return of her mother's hidden face.

Here Bruner identified a process of internalization, where mothers, operating in the zone of proximal development, "scaffolded" children's participation into the game. Over time, this included children's verbal participation. Most importantly, Bruner identified a direction to changes in the "scaffold' or "format." The children took over the mothers' role in the game. The direction of change is from passive to active.

This too is relevant to the current research. It is expected that mothers will do the same for children's developing participation in symbolizing affective states. Mothers of different aged infants are likely to provide different kinds of repeated sequences of interactions. Mothers of younger children will do more of the work themselves and mothers of older infants will expect children to take a more active role.

To summarize the theoretical underpinnings of the current research, it begins with Vygotsky's theory that mind is a social construction. Vygotsky argued that mind is constructed through a processes of "internalization." This research centers on one element in the social environment which is available to the child for internalization: what mothers do. Vygotsky described a developmental model of internalization. This

model predicts that mothers' support for internalizing the symbolization of affect will operate in the zone of proximal development, i.e., will be developmentally appropriate and change with the capacities of the child. It also follows from Vygotsky's model that maternal support serves to "scaffold" the child's participation in the process. The scaffolding is built, in part, through repeated sequences of interactions between mother and infant. The scaffolding will change in ways that help the child move from observer to actor in the symbolization of affect. This research will not examine the effects of maternal behavior on child behavior, rather it will describe what mothers do when responding to infant affect and thus is available to the child for iternalization.

The developmental-clinical significance of acquiring the capacity to symbolize affective states

Why is the capacity to symbolize affect so critical to children's emotional development and emotional health? Consider this hypothetical example.

> Sixteen-month-old Evan is playing with some toys on the kitchen floor while his mother cleans up. He chases after a wooden ball, which has rolled across the floor to a far corner. His mother starts the dish washer and begins to wipe the counter top. Evan is startled by the noise of the dishwasher; he looks frightened and scurries over to his mother. He flings himself against the back of his mother's legs and hides his face in her skirt. She leans down and puts an arm around Evan, holding him close. Smiling, she says with warmth and affection, "You caught me. You're playing a funny game with mommy."

This mother's behavior was responsive, warm and affectionate. With her touch and tone of voice, she gave her son the reassurance he needed. Yet her words reflected a mis-understanding: Evan was not playing; he was scared. Evan's mother might have said "Oh Evan. That noise was just the dishwasher. I bet it scared you

but it's just the dishwasher, getting the dishes all clean." Then the toddler's experience would have been quite different. His feelings and their causes would have been shared and explored on an entirely different level, a symbolic level. The extent to which he could make use of these comments is not entirely clear because at sixteen months, Evan is just learning to talk. Yet, as most toddlers do, he likely understands more than he can say. A potential opportunity to share meaning at a symbolic level was lost. Evan also did not find any help to contain or regulate his fear in his mother's response.

More generally, an understanding of the role that early social experience, particularly the mother-infant relationship, plays in children's adaptive functioning and psychological health has grown enormously in recent years (e.g. Winnicott, 1971; Bowlby, 1969; Mahler, Pine & Bergman, 1975; Stern, 1985; Sroufe, 1996). Much of this work on mother-infant relationships suggested that nonverbal and affective modes of interaction (e.g. affect attunement, affect exchange, intersubjectivity, emotional availability and maternal sensitivity) are key processes in promoting optimal early development. However, Stern (1985) argued that while affect is a primary "mode of relatedness" in the first year, by the second year another mode of relatedness emerges-- verbal relatedness–that is essential to the child's adaptive functioning. From new modes of relatedness come new modes of self experience. This is a developmental model of relationship, suggesting that the child's emerging skills and capacities become important tools for both child and caregiver to use in interaction.

As the child learns to speak, language becomes an important vehicle for social interaction. For instance, physical proximity to the caretaker is the key to felt security

in the first year of life, but by the second year, "distal" communication serves attachment needs (Cicchetti, Cummings, Greenberg & Marvin; Sroufe, 1996). That is, talking with the attachment figure can be sufficient contact in many contexts to help the child feel safe in the second year of life and beyond. More generally, language provides opportunities for the sharing of new meanings between parent and toddler, toddler and siblings and so forth.

In Stern's model, language does not replace affect as the vehicle for mother-infant communication, but rather supplements it. The sharing of feeling states through facial expressions, gestures, body posture, tone of voice and so on continues to be important throughout life. In fact, words themselves mean much less outside of the context of these extra-linguistic elements but they are an important addition to these channels of communication. Sparkling eyes and a wide smile convey a positive inner state; words accompanying this expression can explicate much about that state. Thus, when language is accurately integrated into the affective meaning system between mothers and babies, Stern said, the opportunities for the infant to experience himself and to be-with other people can increase dramatically. But, if language distorts, contradicts, negates or ignores the infants' experience in systematic ways, the infants' sense of self and other can be affected. In the example above, if Evan were consistently to find that his feelings were not reflected or explored through language, his ability even to recognize what he feels could be compromised. In addition, Evan's sense that his inner experiences can be known and understood by others might also be affected.

Fonagy and colleagues' concept of the "mentalizing" or "reflective function" is also important to a full appreciation of the consequences of a verbally mis-attuned or verbally unelaborated mother-toddler interaction. Fonagy (1991) defined the capacity to mentalize as "the capacity to conceive of conscious and unconscious mental states in oneself and others" (p. 641). Fonagy and Target (1998) suggested that reflective functioning comes into operation between the third and fifth year. The child realizes this capacity through experience with a caregiver who can mirror the child's states of mind (including but not limited to affects.) Mirroring is only one aspect of what the child needs in order to move towards mentalizing. As Fonagy and Target (1998) put it, this "involves the presence of another being who reflects the infant's internal state, but [who] re-presents it as a manageable image, as something that is bearable and can be understood" (p. 94.) When this occurs, the child not only comes to know what he feels and how to regulate his feelings, but also comes to recognize that there are worlds of feelings and beliefs, or minds–his and others.

This awareness, according to Fonagy and colleagues, is crucial to the child's psychological functioning. When the child gains some understanding that thoughts and feelings underlie behavior, behavior becomes more meaningful and more predictable. What people do starts to make sense. The reflective function also gives the child some "separation" from his and others' mental states. Mental states thus become mental states, not reality, and emotional states and reactions of others can become less defining of the child's sense of self. Above all, say Fonagy and Target "mentalizing can help the individual to achieve a higher level of intersubjectivity, in

terms of deeper experiences with others" (p. 463).

Although Fonagy posits playful interactions between young child and parent to be a central route to mentalizing, conversations between parents and young children about mental states also create opportunities for the child to acquire reflective functioning. For instance, in her commentary on Fonagy and Target's work, Coates (1998) pointed to what caregivers say about their children's mental states as one component of the interpersonal experiences which foster the reflective function. She gave the example:

> ...wherein the child discovers something new about his mind through his mother. A young toddler, barely two, is playing in the backyard; he excitedly pulls at and sniffs some flowers while making excited but unintelligible utterances. His mother ...smiles in recognition saying "you really love those colors, don't you? You are a guy who loves flowers."....the child looks at the mother, sees himself and smiles; there is a recognition and a discovery of a part of the self held by the other (p. 123).

The verbal aspect of this mother's response to the child's affective experience is essential to its role in promoting mentalizing. Without words, there would have been resonance between mother and toddler, but the meaning of the mother's recognition of the toddler's pleasure would have been far less elaborated and would have communicated less to the child about who he is.

Fonagy and Target (1998) documented that parental reflective functioning is related to important developmental outcomes. Expectant parents who were rated higher on reflective functioning were more likely to have children rated as securely attached at one year. In addition, in cases where mothers were under high levels of stress and/or had experienced significant childhood deprivation, reflective functioning

served as a protective factor. Even severely stressed and deprived mothers who were rated high in reflective functioning were more likely to have securely attached children than mothers similarly stressed and deprived rated low in reflective functioning. A parent's ability to mentalize was related to the child's ability to mentalize, mediated through the development of a secure attachment. Using theory of mind tasks as indices of children's emerging capacities for reflective functioning, they found that insecure attachment is related to delayed or impaired mentalizing abilities. Fonagy and colleagues also theorized that failures in reflective functioning contribute to the unstable object relations (actual and internalized) in borderline functioning. Fonagy et al (1997) also found significantly more impairment of mentalizing in violent criminals diagnosed with borderline forms of psychopathology than in a psychiatric control group of noncriminal borderline or a medical control group.

Slade (1994, 1996) and Slade and colleagues (Slade & Cohen, 1996; Slade, Belsky, Aber and Phelps, 1999) suggested that parents' mental representations of their children are significant factors in parenting and adaptative outcomes for children. In addition, Slade (2002) took Fonagy's concept of reflective functioning and applied it to mother-infant interaction. She argued that reflective functioning is a critical factor in parents' capacities to "keep the baby in mind," and to adequate parenting. When parents can perceive the intentions, wishes and feelings of children, and link these to their own internal experiences, i.e. symbolize both simultaneously, they are more likely to respond appropriately and sensitively to their children.

Using a case study of psychotherapy with a mother and child, Slade (1999)

described the interrelation one mother's mental representations of her own attachment figure and of her own child (drawn to some extent from her child's actual behavior). These representations, while not the only factor in the severe pathology of a very young child, were important elements in the difficulties of the child. They were especially key to the child's inability to symbolize, or to mentally represent, to understand and to achieve distance from his own affective states. The mother did not have the ability to symbolize in consciousness the child's inner experiences because she could not admit into consciousness her own feelings of anger and anxiety. Through the therapeutic work, the mother began to feel and acknowledge her own intense separation anxiety regarding her troubled son. When the mother could represent her own anxiety, she began to find new ways to respond and react to her son's emotional storms which provided the child with enough recognition in the mind of another, that he too began to be able to symbolize his experience, primarily in play. When this boy could symbolize through play his own experience, his overall adaptive functioning improved.

One consequence of unsymbolized affective experiences is that the symbolic mode is not available to help the child manage or regulate affective states. Talk about feelings has the potential to help the child create some distance between affect and action, thus decreasing the likelihood that the child is disorganized or dysregulated by overwhelming emotion. Both Thompson (1990) and Kopp (1989) gave significant roles to conversation, talk about feeling states, in emotion regulation. When emotion states are labeled, their causes, consequences and appropriateness discussed, children

gain new tools to reflect on and manage their emotional experience. As Thompson put it, "language is an especially powerful mode of emotion regulation for children because of its explicitness, its capacity for past and future reference, allowing adults to draw on a history of shared experiences as well as to anticipate future experiences when conveying information about emotion" (p. 410).

The work of Dunn and colleagues (Brown & Dunn, 1991; Brown & Dunn, 1996; Dunn & Brown, 1995; Dunn, Brown & Beardsall, 1991; Dunn, Brown, Slomkowski, Tesla, & Youngblade,1991) suggested that there are developmental consequences for children who are less able to talk about their emotions. Primarily, they found that emotion talk facilitates emotional understanding. This in turn is related to quality of interaction with siblings, to perspective taking and to appreciation of mixed or ambivalent emotions.

Emotion regulation has become central to discussions of both optimal child development and childhood psychopathology (Thompson, 1994; Cicchetti, Ackerman & Izard,1995; Cole, Michel & Teti, 1994). Thompson (1990) defined emotion regulation as " regulation of underlying experiences of emotional arousal" (p.369). Failures in emotion regulation have been linked to difficulties in adaptive functioning, primarily with peers in the preschool and middle childhood eras (Rubin, Caplan, Fox & Calkins, Gottman, 1997) as well as to psychopathology (Cicchetti, Ackerman & Izard, 1995; Cole, Michel & Teti, 1994). Other positive correlates include attachment (Cassidy, 1994) self-esteem and mastery motivation (Kopp, 1989), internalization of standards and delay of gratification (Sroufe, 1997).

> Sroufe described a range of outcomes related to failures in emotion regulation.
>
> If children are not able to regulate emotion flexibly and achieve a degree of instrumentality and social effectiveness at that time, they are vulnerable to low self-esteem and a sense of incompetence, with associated feelings of worthlessness, guilt and depression. Defenses which normally serve young children, can become ingrained defensive strategies. Some children are characteristically (1) easily frustrated, overstimulated, tense and anxious; (2) dependent, passive and helpless; (3) hostile, aggressive and antisocial; (4) emotionally insulated; or (5) profoundly disconnected from experience. The first two of these...are defensive in postponing actual autonomous coping and calling for continual adult care. The latter three serve to keep people and feelings at a distance (p. 222).

According to Sroufe, difficulties in emotion regulation lie at the heart of most of the major patterns of child psychopathology.

There is an important role for social experience in the development of effective emotion regulation. Fogel (1982) found that mothers initiated, shaped and expanded positive emotions and arousal levels of their infants through playful, yet predictable sequences, like peek-a-boo games. He argued that one goal of this play is the enhancement of "affective tolerance" or emotion regulation. Lamb & Malkin (1982) studied the infants' development of distress-relief expectations, finding that prompt, timely, and consistent responses by caretakers in the first six months led to anticipatory quieting at the approach of the caregiver. Thompson (1990) also indicated that processes of affect attunement and social referencing serve regulatory functions, helping the child to recognize, organize and manage affect states. Sroufe (1996) suggested that attachment relationships have significant functions as the "dyadic context for affect regulation" (p. 172). He argued that the balancing of needs to feel secure and to explore the environment is, in effect, affect regulation. The child

develops a more active and purposeful role in managing his affective states over time even though the attachment figure has an ongoing role in this aspect of the child's emotional life.

Object relations theory also points to the central role of the mother-infant dyad in "containing" and modulating both affect and drive states. Winnicott described the role of the mother early in the infant's life as providing a "holding environment" through good-enough mothering and "primary maternal preoccupation." The infant needs psychological holding because of his complete psychic dependence on the mother to protect him from being overwhelmed, both by internal tension and affect and by external overstimulation and "impingement." When the infant experiences good-enough mothering, again "holding," she gets to play with or operate in an "intermediate" reality or potential space. The infant then experiences a sense of omnipotence and magic, which enables him to become less dependent, more separate and alive.

Bion (1967) termed the maternal capacity to "hold" the infant's states of mind "containment." Alvarez (1992) summarized Bion's definition of this aspect of the mother's mind as:

> a state of maternal reverie in which the mother feels the impact and upset projected into her by the distressed baby, but contains it and returns it to him in a modified form. Later Bion gave a name to the modifying process which went on inside the mother or analyst as a sequel to the impact of the initial containment; he called it a transformation and likened this to the activity of the artist (p. 53).

In this interpersonal, inter-psyche process, affect is transformed, becoming manageable and tolerable. In part, containment involves a transformation from

unsymbolized to symbolized.

In many ways, then, the capacity to symbolize affect is critical to children's emotional development and emotional health. Stern (1985) argued that language, when well integrated with affective experience, gives the child new possibilities for closeness and contact with his mother. Stern also suggested that when language distorts affective reality, the child's very sense of self is compromised. Fonagy emphasized the importance of mentalizing or the reflective function to optimal functioning. While not synonymous with symbolic processes, the ability to mentalize does include the ability to symbolize affective states. Fonagy's work linked reflective functioning to the child's ability to empathize with others and to become securely attached. Mentalizing abilities, again which include the capacity to symbolize affective states, also seem to be a protective factor for forms of severe psychopathology. Slade (1999) tied failures to symbolize affective states to impaired parenting and thus to impaired child functioning. She found that psychotherapy fostered one mother's capacity to symbolize the mental states of her child, which in turn, improved her child functioning. The literature on emotion regulation demonstrated a role for talk about feeling in fostering emotion regulation and implicated failure in emotion regulation to a range of maladaptive states in children. Together, this work indicates that the best possible understanding of the processes supporting the capacity to symbolize affective states, both in parent and in child, would make a significant contribution in promoting child mental health.

Prior descriptions of maternal behavior potentially related to the symbolization

of affect

The present research has as its central aim the elucidation of symbolizing processes in mother- infant interaction. Does prior research identify any specific maternal behavior which could be construed to scaffold the infant's capacity to symbolize affect? This review will focus on three areas in the literature: observational studies of mother-infant interaction, studies of the maternal role in language development and studies of mother-child conversation about affective states. What do these literatures reveal about what mothers actually do with infants and how might specific behaviors support the infant's capacity to symbolize affective states? What are the categories of maternal behavior that could serve to support symbolization? Are there developmental patterns of maternal behavior? If so, could patterns of maternal behavior promote an active role for infants in their symbolizing affective states over time?

Observational studies of mother-infant interaction

Starting in the 1970's, researchers (e.g. Stern, 1974; Tronick and colleagues, 1977; Ainsworth and colleagues, 1978) began systematic study of mother-infant interaction. This research looked at mother-infant interaction in two ways. One examined the micro-units of interaction–the second-by-second behaviors of both interactive partners. The other focused on global qualities in mother-infant interaction such as sensitivity, responsiveness, attunement and so forth. However, both types of studies emphasized that mother-infant interaction is essentially a nonverbal, affective process. Both identified a range of specific maternal behaviors occurring in these

nonverbal, affective interactions. Do studies which seemingly describe nonverbal, affective interaction provide any evidence for processes supporting (or scaffolding) the symbolization of affect?

Studies of mother-infant interaction in the first two to three months of life revealed that mothers and infants are mutually responsive to each other and that there are cycles of engagement and disengagement (Brazelton, Koswolski and Main, 1974; Fogel, 1977; Stern, 1974; Tronick, Als, & Brazelton, 1977). Across these studies, specific maternal (and infant) behaviors evident in these cycles were gaze, vocalization and affective expression. These studies did make clear that gaze, vocalization and affect were co-occurring elements in maternal behavior. None of the studies made clear, however, whether maternal vocalizations contained speech; it is possible they did.

Belsky and Isabella (1989) characterized early mother-infant interaction as behaviorally "synchronous." Both mother and baby were noted to adjust their behavior to that of the other. Belsky and Isabella too identified specific maternal behaviors in cycles of matching or synchronous behavior. These were maternal vocalization to infant, maternal response to infant vocalization and maternal soothing (both verbal and nonverbal) of infant. Again, their work demonstrates that maternal speech is present in early mother-infant interaction, even though they frame the essential nature of mother-infant interaction in nonverbal terms–behavioral synchrony.

Together these studies tell us that even if maternal vocalizations contain no linguistic content, there is behavioral co-occurrence of maternal affect and speech.

This co-occurrence serves, perhaps, as a scaffold for the symbolization of affect. Affect and something like speech are intertwined in the infant's experience even in very early development. Given this, the infant is likely developing a rudimentary sense that affect is naturally connected to speech. The experimental literature seems to bear out the notion that the infant early on makes such a connection. Studies show that infants are sensitive to incongruent information in auditory and visual channels (e.g. Lyons-Ruth, 1975; Aaronson & Rosenbloom, 1971, Kuhl & Meltzoff, 1982). This work shows that by four months, infants expect facial expressions and speech to match. Perhaps infants' experience with their natural co-occurrence in maternal behavior could an initial step towards the verbal or symbolic representation of affective states.

Tronick (1989) argued that affect is a critical regulator of mother-infant interaction. His and others' research (Cohn & Tronick, 1983; Tronick & Cohn, 1989; Field, 1984; Field, Vega-Lahr, Scafidi & Goldstein, 1986; Segal, Oster, Cohen, Caspi, Myers & Brown, 1995) using the "still face" procedure demonstrated the importance of nonverbal, expressive maternal behavior as an organizer of infant behavior. Nonresponsive maternal behavior had significant impact on infant behavior, with the infants seeming surprised at first and then distressed. In addition, infants generally were not able to immediately re-engage when mothers became responsive again. Here again, affective responsiveness was portrayed as the essential, organizing element in the disruption of infant functioning but close examination of the still-face methodology suggest at least a supporting role for maternal speech. In these

experiments, mothers either remained silent (Field's studies) or slowed their speech, speaking in a monotone and keeping their faces immobile while looking at their 3- or 4-month-old infants (Tronick's studies). Again, affect may have been the main ingredient missing in the mothers behavior, but it is important to note that altering maternal expressiveness meant altering normal maternal speech.

Research on social referencing (e.g., Sorce & Emde, 1981) has also pointed to maternal affect is an organizer of infant behavior. Social referencing refers to the infant's looking at the primary caregiver's facial expression to assist in evaluating the meaning of a confusing or uncertain event. For instance, Sorce, Emde, Campos & Klinnert (1985) found that infants placed on the visual cliff were more likely to cross over to the caregiver if the caregiver showed a positive emotion on her face, and were less likely to take this risk if the caregiver showed fear or other negative emotions. Similarly, research has shown that infant's reactions to novel and frightening toys or the presence of a stranger was mediated by maternal facial expressions (Gunnar & Stone, 1984; Hornik, Risnehoover, & Gunnar, 1987; Klinnert, 1984; Sorce & Emde, 1981).

As in the still face experiments, affect was highlighted as the most important element in social referencing but modification of maternal speech was also involved in the various experimental conditions. In most cases, this meant mothers were instructed to remain silent during the periods that they presented specific facial expressions to the infants (Sorce, Emde, Campos & Klinnert, 1985; Gunnar & Stone, 1984; Klinnert, 1984; and Sorce & Emde, 1981). In one case, mothers were

instructed to talk about how much fun or how disgusting the novel toys appeared, in addition to maintaining a specific facial expression (Hornik, Risenhoover, & Gunnar, 1987). Significantly, the last study involved older toddlers and here maternal vocalization contained information at a symbolic level matching the affective expression.

This suggests a critical developmental pattern in maternal behavior. Linguistic meaning is added to the tone of maternal speech to communicate to the child how to respond to these stimuli. Across these studies, then, maternal affect may play the lead, but speech clearly has a supporting role. With older children, the content of speech comes to be an important element. Taken together, the still-face studies and the social referencing studies again suggest that the co-occurrence, in fact, the essentially integrated nature, of these channels of communication, could serve as a means of scaffolding the symbolization of affect.

Stern (1985) theorized that the affective, nonverbal exchange in mother-infant interaction itself fosters symbolization. Stern said that by the last quarter of the first year, "affects are both the primary *medium* and the primary *subject* of communication"(p. 135) between mothers and babies. He described this process as "affect attunement." Attunement is not simply the caregivers' imitating or matching of infant states, but rather "the performance of behaviors that express the quality of feelings of a shared affect state." Stern found that attunement generally occurred across communicative modalities. For instance, if the infant expressed excitement by waving his arms, the maternal response might be a vocalization that was similar in

rhythm or intensity to the infant's gesture. In one example, an infant reached towards a new toy with excitement and determination. The mother's response was to say, with appropriate rhythm and emphasis, "*Yeah*, ya *like* that." (P. 151). (Note here again that the affect attunement occurs through the mother's voice but her vocalization does contain speech.) According to Stern, the mother's inexact repetition of the infant's expression by the mother allows the focus of what is shared to shift from the behavior to the feeling state underlying the overt behavior. It is, he said, "a recasting or restatement of a subjective state" which gives the infant "*the experience with analogue in the form of attunements, an essential step towards the use of symbols*" (p. 161, emphasis added). Feldman & Greenbaum (1997) found empirical support for the relationship of affect attunement and symbolic competence, including symbolization of affect. Maternal synchrony and attunement at 3 and 9 months significantly predicted the toddler's symbolic play and internal state talk at 24 months.

Another set of observational studies examined mother-infant interaction for global qualities such as sensitivity (Ainsworth, Blehar, Waters & Wall, 1978), responsiveness (Bornstein, 1989) or emotional availability (Emde (1980). Much of this work suggests that these qualities of interaction are very related to children's later adaptive functioning (see Biringen & Robinson, 1991 for a review). This literature will be examined for evidence of maternal behaviors supporting the scaffolding of the symbolization of affect and the role of these behaviors in sensitivity, responsiveness and emotional availability.

Ainsworth and colleagues (1978) defined sensitivity as appropriate, accurate

and prompt responses to infant behavior. A part of this is the mother's ability to respond to the needs, wishes and desires of the infant, rather than to act on her own needs and feelings. This entails a maternal capacity to recognize the infant's affective state. One of the specific behaviors that Ainsworth and colleagues found to be highly correlated with maternal sensitivity was swift reaction to infant distress. They did not identify the specific maternal behavior involved in "swift response" but given the above review of seemingly nonverbal mother-infant interactional processes, it is likely that speech plays a role. And, as argued above, its co-occurrence could play a role in scaffolding the infant's ability to symbolize affect, in this case distress. By the fourth quarter of the first year, another specific behavior correlated with maternal sensitivity was the mother's acknowledgment, including verbal acknowledgment, of the infant while entering the room.

This last finding regarding verbal acknowledgment portrays a developmentally sensitive scaffolding process for symbolizing affect related to maternal sensitivity. Between 6 and 9 months, most infants begin to develop distress at separation from caregivers and are working at object permanence, i.e. things, including the mother. continue to exist even when they are out of sight. In this developmental phase, the infant seems to experience anxiety, as well as possibly other negative affective states around the comings and going of the primary caretaker (Sroufe, 1996). Ainsworth and colleagues describe that sensitive mothers mark their reunions with verbal, i.e. symbolic, recognition of the child. This behavior could be construed as maternal scaffolding behavior because the symbolic marking of coming and going punctuates

the child's emotional concern with this event. This gives the child the understanding, again, that words are related to feelings and that words are associated with what transforms affective states–the new feeling generated by the mother's return. This component of maternal sensitivity also reveals a developmental change. Verbal recognition was not found to be a component of maternal sensitivity prior to 9 months. This suggests that the symbolic component became more important to high quality interaction over the course of the first year of life.

Emde's (1980) concept of emotional availability included maternal supportive presence and maternal acceptance of the infant's varying emotional expressiveness. In their review of the construct of emotional availability, Biringen and Robinson (1991) extended the notion to both maternal and child behaviors, and elaborated the components of this quality of interaction. To them, maternal sensitivity is an essential component of emotional availability, although they expanded the definition of sensitivity, describing it as a communication process. Sensitivity involves an affective component-- warmth, positive feeling and affective resonance between mother and infant. It also includes responsiveness to infant cues and signals, but in their conceptualization the affective component in this responsiveness is key. Sensitivity also implies the ability to negotiate miscommunications or mismatches of intentions, feelings and actions.

Biringen and Robinson also found that maternal nonintrusiveness is important to emotional availability. One key part of this element is the mother's ability to keep her affective and other behaviors from overwhelming the infant in a variety of ways.

Biringen and Robinson do not identify a specific role for maternal speech, but clearly responses to affect are critical to the conceptualization of emotional availability. However, given that the above review found that language is often a part of this nonverbal responding, there may very well be a symbolic element in the maternal behavior which characterizes emotional availability. Certainly, communication with semantic content, as it becomes meaningful to the infant, would significantly help with the negotiation of mis-communication. A key question which will be addressed in this research is how the role of language changes in interaction between mothers and different-aged infants.

Bornstein (1989) stressed "responsiveness" as the optimal quality of mother-infant interaction; his focus was primarily the precursor processes supporting infant cognitive development. He defined responsiveness as "prompt, contingent and appropriate behavior" (p. 4) which was meaningfully related to the infant's prior behavior. Reporting on home observations of 2- and 5-month-old infants and their mothers, Bornstein found that mothers were responsive to nondistressed states of their infants about 25% of the time and to distressed states about 75% of the time. Bornstein delineated the specific maternal behaviors subsumed under the construct of responsiveness. They included physical and verbal orienting to the infant, verbal imitation, vocalize, tactile/kinesthetic arousal, positive affect, pick up, pat and feed. Thus responsiveness included three modes of maternal behavior; verbal/vocal(verbal orienting, verbal imitation, vocalize) action (physical orienting, tactile/ kinesthetic arousal, pick up, pat and feed) and affect (positive affect.) Even with infants this

young, Bornstein found that 58% of mothers' responses to distress involved the verbal/vocal component, only 22% of the time did the mothers use an action response. Thus, early on, infants experience auditory input from mothers, including speech together while feeling upset. Bornstein does not make clear how often maternal vocalizations included speech per se, but it is likely that some significant proportion did, even to infants who had no receptive or expressive language. Bornstein's data shows again that infants naturally find that words go with feelings. This is an intrinsic scaffold for the symbolization of affect. His work also underscores the co-occurrence of maternal speech and infant affect as an element in optimal mother-infant interaction.

One early study of "optimal maternal care" by Clarke-Stewart (1973) suggested an important role for maternal speech in the high quality mother-infant interaction. In the study "optimal" was determined by what was correlated both with cognitive performance and with infant expression of positive affect. Clarke-Stewart observed infants and mothers for 9 months, following them from 9 to 18 months of age. During this period, there was a decrease in the amount of physical contact and proximity, and an increase in the amount of instrumental speech by the mother. A factor analysis of maternal behaviors revealed a factor of optimal maternal care that included warmth, contingent responsivity and stimulation, including talk. By the toddler period, mothers' verbal responsiveness to their children was clearly an important element. This suggests an important developmental shift in the ways that mothers optimally engage with their children; speech, while initially integrated with maternal action, comes to take a more prominent role in mother-infant interaction with

18-month-olds.

Clarke-Stewart also found that in her lower SES sample, there was a range in the proportion of interactions that included maternal speech, from 4% to 72%. This raises an important concern about cultural differences in the role of maternal speech to infants. Most of the studies reviewed above that found a co-occurrence of maternal speech and other nonverbal behavior were studies of European-American, middle class children. Language is clearly a social process and its uses reflect cultural values and beliefs. Thus, we might expect mothers to use language differently with their infants depending on their cultural beliefs about the nature of the infant and the typical pattern of communicative functions present in their language and subculture. It is important to examine literature on culturally diverse mother-infant interaction to see if and how the co-occurrence of speech, affect and action occurs cross-culturally.

Miller, Richman and Levine (1992) studied differences in maternal responsiveness to infants in Boston, rural Kenya (Gusii) and Mexico. Comparing first the Boston mother-infant dyads with the Guisii dyads, they observed five behavioral types of maternal responses: hold, touch, talk, look and feed/nurse. They found significant differences in the types of maternal behaviors directed to infants in two groups. At 4 months, hold was the most frequent in both groups and talk third. By 10 months the Gusii mothers most frequently held and touched infants while Boston mothers looked and talked. Types of responses were also related to infant behaviors of cry, look and vocalize. At 4 months, holding was most common to infant crying in both groups, but Boston mothers looked and talked most frequently in response to

infant vocalizations even at this age. By 10 months, the US mothers talked more frequently to all three types of infant behaviors than the Gusii mothers. Among the U.S. mothers then, there was a developmental progression from action responses (hold, look) to verbal/vocal responses (talk) from ages 4 months to 10 months, but this progression was not observed cross-culturally.

Interestingly, their investigation of maternal responsiveness among Mexican mothers and infants compared groups of mothers who had varying levels of education (between 1 and 9 years) interacting with their 10 month old infants. In the Mexican sample, the pattern of response to infant vocalizations, looks and cries was similar to that of the US sample, although looking was more frequent than talking in the Mexican mother-infant dyad. Amount of maternal verbal responding was positively correlated with educational level. Thus, it seems there are significant cultural differences in how frequently mothers respond to infant behavior by talking but verbal responses seem to become more frequent even with as little at 8 or 9 years of formal education. These cross-cultural findings also support the notion of the integration of language and other types of maternal behavior when responding to infants, as well as a developmental increase in the use of verbal (symbolic) responses with infant age.

Observational studies of mother-infant interaction indicate that mothers do make a symbolic mode available to young infants in the context of affective expression even though prior work has characterized this behavior as nonverbal. There is some evidence that maternal behaviors can be categorized in three ways: as action (touching, holding etc), affect (mother's own facial expressions) and vocal/verbal behavior (what

mothers say). There is also evidence that affect and action may be most central early on, but that this changes with development. Processes of affect attunement involve recasting of affective experiences across communicative modes–waving arms, changing rate of speech, etc. Among mothers with a minimal amount of formal education, verbal responses to infant affect co-occur with the nonverbal (action and affect) behavior but as infants become older, the verbal element plays a more central role in what mothers do with infants. Mothers use a symbolic mode more frequently and may produce somewhat less co-occurring nonverbal behavior with older children.

Three potential scaffolding strategies emerge from this examination of maternal behavior. First, mothers may provide a natural link between affect and speech when they respond to infant affect by saying something. This seems to occur frequently in mother-infant interaction. Infants may not only associate speech with maternal responsiveness to feeling states, but some evidence suggests mothers may intuitively tie changes in affective states to language by using it to soothe infants and to mark their comings and goings. Second, by providing what Stern calls affect attunement across modalities, the mother gives the infant experience with analogue. This shows the infant that the same meaning can exist in different forms. Finally, after initially embedding verbal responses in action and affect, mothers may begin to rely more on language and use non-verbal expression somewhat less, although these types of communication are certainly ongoing. In theses ways, maternal behavior could gradually bring the infant into relying on the symbolic mode gradually.

Studies of early language development and evidence of maternal scaffolding

for the symbolization of affect

Research on language development has documented many features of maternal speech to prelinguistic children. This work highlights the ways talking to infants facilitates language acquisition, but a full understanding of how mothers talk to babies in general is quite relevant to the proposed research on how mothers might use talk in order to scaffold infants' capacity to symbolize their affective states. The language development literature also grapples with the relationship of the infant's affective and verbal communicative capacities, also quite relevant to an understanding of maternal scaffolding behavior vis-a-vis the symbolization of affect.

Researchers in the child language field have examined in some detail the characteristics of adult speech to infants and young children. A particular style of talking, called "motherese" or "child directed speech" (CDS) has been noted in speech to infants in a variety of cultures. What changes in CDS is primarily prosody or intonation. CDS tends to have a higher and more variable pitch than adult speech. Patterns of stress are also exaggerated in CDS, as are the accompanying facial and gestural expressions. Given a choice between adult speech and CDS, infants typically prefer CDS (See Sachs, 2000 for a review).

Fernald and colleagues (Fernald, 1985; Fernald & Kuhl, 1987) pointed out that the prosodic dimension of speech is the dimension that conveys affect. They argued that CDS is appealing to the infant because it highlights the salient and meaningful element–the feeling tone. As they put it, "the melody is the message" (p.182). Comprehension of speech does not begin with lexical comprehension. Locke (1993),

agreeing with Fernald's argument, put it this way:

> affect is information. And prosody conveys. What could be more informative than the vocal cues that tell listeners whether the signal is worth listening to, why the message is being generated, and –taken with the linguistic structures that are conveyed-what the speaker really means. Indeed...it can be argued that infants latch onto first those social signals that mean the most (p. 64).

Locke's primary thesis is that prosody is the path to language for the child; it is the primary route by which the child grasps the meaningfulness of speech. From there, the child comes to have the capacity to convey all kinds of information, including additional information about affect and its meaning.

Others looking at maternal speech to young, language-learning children have noted several distinct features of the mother-child verbal interactions, including structure, function and topic. For instance, Snow (1977) found that even the earliest talk to infants mimics conversation, with mothers pacing their vocalizations so that infants can "take a turn." At three months, mothers counted such non-purposeful behavior as burps, hiccups and cries of the infant as a turn, by pausing and commenting on them. By the time the infants were a year old, mothers continued to pace their verbalizations to the child, but responded only to infant vocalizations that sounded like words. How mothers structure these verbal exchanges, then, even before their infants can understand words, in effect "teaches" the infant how to participate in reciprocal verbal exchange.

In conversations with their young children, mothers tend to insure that turns are meaningfully and contingently related to each other. (See Newport, Gleitman, & Gleitman, 1977; Brown, 1980; Cross, 1977; Corsaro, 1979), Roth, 1987; Rocissano &

Yatchmink, 1983; Kaye & Charney, 1980; Wanska & Bedrosian, 1986; Howe, 1982.) Well into the third year, the adult sustains the conversational topic by adjusting to the child's focus, thus contributing to what Kaye & Charney, 1980 called "maintaining dialogue. " (p.212). Adults also tend to adjust the complexity of their speech to the child's language abilities (Brown, 1973).

Drawing on the work of Austin (1962) and Halliday (1975), other work has looked at the functions of speech between mothers and young children. (See McDonald & Pien, 1980; Olson-Fulero, 1982; Hoff-Ginsburg, 1987a, 1987b, Corsaro, 1979; Corte, Benedict & Klein, 1983; Newport, Gleitman & Gleitman, 1977; Ochs, Schiefflin & Platt, 1979; Ringler, 1978, Shatz & Gelman, 1977). This work has examined language as an interpersonal tool or language as the embodiment of interactive, social goals--speech acts. Functions noted in early maternal speech include requesting, teaching, commenting on and interpreting events. (Cross, 1977; Moerk, 1975). Olson-Fulero identified two conversational styles categorized by predominant function: directive and conversational. A mother with a directive style uses talk primarily to get her child to do, or not do, something while a mother with a conversational style seems to be aiming to facilitate further talk.

Mothers and their very young children discuss many topics. Some researchers have concluded that, in general, the topics relevant to mothers and children are constant (Cross, 1997). Others found developmental change in conversational topics. For instance, Snow (1976) found that mothers tended to talk about their 3-month-old infants and their experiences in the present. The topic of mothers with their 18-month-

olds centered more on objects, events and the world around, in past and future tenses. Furrow and Nelson (1984) found that some mothers initially talk more about objects and others about people, but that as their children's language abilities increased, these differences became less pronounced.

Together, these findings bear on the likely structure, function and focus of maternal verbal responses to infant affect in several ways. Speech to infants carries important information about the feeling state of the speakers. Mother-infant/toddler verbal interactions are structured, by the mother, to lead the child into reciprocal, contingent and semantically related talk or conversation. Long before the infant is able to participate purposefully, mothers scaffold their participation in conversational exchanges. Part of this occurs by the mothers adjusting the topic of speech to the infant's ongoing activity. Speech to the young language learning child has many diverse social purposes.

All of these facts are relevant to an investigation of maternal verbal responses to infant affect. A verbal response is, in part, an affective response, and contains meaningful information, potentially including affective resonance or attunement. At first these is no lexical content which is accessible to the infant. However, with development, the prosody of maternal verbal responses to infant affect may help to link these two modes of meaning for the infant. Mothers verbal responses to infant affect may also serve as a format or scaffold, such that infants will come to realize that words and affects go together, naturally enabling talk about feelings. Given that mothers tend to adjust the topic of their speech to the infant's activity, it is likely that mothers will

talk to infants about their affect.

Studies of the child's development of an internal state vocabulary, mother-child conversations about internal states and evidence of maternal scaffolding for the symbolization of affect

This section of the literature review will tell us what is currently known about when and how children develop one component of the ability to symbolize affect–the labeling of affective states. It will also ask if and how prior maternal behavior is related to this development. This review will also delineate the ways prior research has categorized specific types or functions of maternal talk about affects. What kinds of talk might we expect in mother-infant interaction? What are the varieties of talk mothers might use to facilitate infants' symbolization of affect? This section of the literature review will also tell us about developmental patterns in types of talk that might contribute to effective scaffolding. This literature points out that there are factors other than child age to consider when looking for maternal behavior which supports the symbolization of affect. This review will demonstrate that child gender, as well as type of emotion or emotional experience (e.g. positive versus negative affects), must be considered when looking at what mothers do and say to scaffold symbolizing processes.

Young children themselves develop some ability to symbolize affective states in the form of labeling internal states at the end of the second year into the third year, at least in European-American, middle-class families (e.g. Ridgeway, Waters & Kuczaj, 1985; Bretherton & Beeghly, 1982; Lamb, 1991; Bretherton, Fritz, Zahn-Wexler & Ridgeway, 1982). Internal states include not only affect but physiological (tired,

hungry), perceptual (seeing, hearing) and cognitive (knowing, remembering) states. This work shows that by the third year, children have both an ability to label internal states and an ability to make simple references to causes of these states. . Younger children (i.e. 18 to 22 month olds) more frequently labeled physiological/ perceptual states than affective or cognitive states. There is an increase in labeling of affect by 28 months (Beeghy & Bretherton,1982; Bretherton, Fritz, Zahn-Waxler & Ridgeway, 1982). This literature also provides evidence that the child acquires the ability to label internal states through a process of internalization. Most work has shown such an association between rate or frequency of maternal talk about internal states and the age at which children begin to label internal states (e.g. Dunn, Bretherton & Munn, 1987; Bretherton & Beeghly,1982; Ridgeway, Waters, & Kuczaj, 1985). In addition, there is research that reveals that both frequency and type of maternal talk about internal states vary by the developmental level of the child. Mothers use diverse developmentally sensitive scaffolding strategies to facilitate children's symbolizing capacities (e.g., Malatesta & Haviland,1982, Dunn, Bretherton, & Munn, 1987).

With regard to frequency of maternal internal state talk, there is not necessarily a straightforward increase in mothers' talk about feelings by infant age. For example, Malatesta and Haviland (1982) found that mothers of 3-month-old infants talked more about infants' affective states than did mothers of 6-month-old infants. They also reported less nonverbal acknowledgment of affect at 6 months than at 3 months. Certainly this is evidence that mothers are providing dual channels of information (nonverbal acknowledgment and talk) about affect to 3-month-old infants which could

serve to connect affect and words for their infants. What the changes represent at 6 months in regard to the symbolization of affect is less clear. Perhaps as the literature of mother-infant interaction suggested, affect is most central in early infancy. Mothers are very focused on it at three months but the centrality of affect has already begun to decline by six months. Thus, mother talk about and generally respond less to affect at 6 months. Clearly, though, mothers do symbolize their infants' affective states by talking about them long before infants can access the semantic content of that talk.

Several studies did find an increase of maternal labels for internal states through the second into the fourth year as well as increase in the frequency of internal state references and the range of internal state references (Beeghly, Bretherton & Mervis, 1986, Dunn, Bretherton & Munn,1987, Zahn-Waxler, Ridgeway, Denham, Usher & Cole, 1993). Through this period, as children become more linguistically competent, mothers increase their demand that the child participate in the symbolization of affective states, i.e. talk more about feeling states.

Most of these studies found that only a small proportion of maternal utterances actually provided a specific internal state label. Estimates ranged from 1% (Lamb, 1991) to 13% (Bloom & Capatides, 1987), increasing to about 26% in contexts specifically designed to elicit talk about feeling states (Dunn & Beardsall, 1991). While is it possible that young children learn to symbolically represent affect from such a small proportion of verbal exchanges, it is more likely that maternal labeling of affective states is only one element in this process. This work therefore directs us to consider more diverse maternal behavior and to complex processes beyond labeling of affect to

understand fully the scaffolding process involved.

Previous work has characterized various types of maternal talk about internal states in distinct but overlapping ways. Table 1 summarizes the coding categories from several studies examining mother-child conversation about feeling states.

Mothers' talk about affect has a variety of functions. Across studies, mothers label affect. Other maternal utterances serve to simply recognize or acknowledge the child's feeling state. Maternal words address the causes of, or clarify, affective states. Maternal talk about emotion also evaluates the appropriateness of an affective response. Maternal speech in this context also functions to change the child's affective state in variety of ways from eliciting affect to discouraging or suppressing the affective state These last two categories are related to making a affective state disappear. In part, the discourage and suppress categories could be considered an "evaluation" of the affect, in the sense of mothers' disapproval of it. Two more specific categories that might be involved in this move away from a particular feeling state are re-orient, as in distracting the child from the feeling, and alleviate, as in soothing the child with words.

Mothers also give action directions; they tell children to do something about emotional experience. One key distinction, from Capatides & Bloom (1993) is that some action directions may help the child achieve his own goals while others request the child to act in accord with their mother's agenda. Words that direct the child to do something he wants to do could be considered facilitating words, while words that direct the child to conform to the mother's wishes might be considered guiding words.

Several studies revealed differences in the ways mothers use these functions

with different aged infants. Malatesta & Haviland (1982) found that mothers of 3-month olds were observed to use language to elicit positive affective states more than mothers of 6 month olds. Similarly, mothers of the younger infants were more likely to make simple unelaborated comments about affect than were mothers of older infants. These researchers observed that mothers did use language to discourage the expression of affect, especially negative affect but equally so at 3 or 6 months. Beeghly, Bretherton & Mervis (1986) found that from 13 to 28 months mothers' attributions of internal states to their children decreased while their attribution of internal states to other people and objects increased. Dunn, Bretherton, & Munn (1987) found that maternal references to antecedents of feeling states increased between 18 and 24 months. Mothers did more explaining and guiding and less commenting on affective states at 18 months than they did at 24 months. Themes of maternal talk did not vary by age; discussions of distress, pain, sleep/fatigue and pleasure were the most common subjects at both ages

Work in this area has also indicated significant individual differences in the ways that mothers talk about internal states. Some maternal factors have been related to style of mother-child conversation about emotion. Zahn-Waxler et al (1993) found that maternal depression changed the ways that mothers varied their emotion talk according to the developmental level of the child. The number of explanations of positive emotions increased by the age of the child in nonaffectively-ill dyads but not in depressed mother-child dyads. Affectively-ill mothers were also more likely to make simple, unelaborated comments on negative affects and this too did not change with the

age of the child.

In an earlier study, Zahn-Waxler, Radke-Yarrow & King (1979) noted that type of maternal response to another child's distress was related to independent ratings of maternal empathic responding. Given the observed links between maternal use of internal state language and child use of internal state language, the findings that maltreated toddlers (Cicchetti & Beeghly, 1989) and insecurely attached children (Muchmore, 1993) have smaller internal state vocabularies suggest that less adaptive social environments support verbal engagement with emotion less effectively.

Prior research has also pointed to several child factors that contribute to variability in the ways mothers represent affective experiences in language (Dunn, Brown & Beardsall, 1991). Child factors include attachment status (Lewis & Michalson, 1993), stage of moral development (Lamb, 1982) and handicapped status or typically developing toddlers versus toddlers with Down syndrome (Beeghly, Bretherton & Mervis, 1982). Mothers were also observed to talk differently about emotion to full and preterm infants (Malatesta & Haviland, 1982).

There is also a body of work that points to child gender as a significant influence on maternal talk about emotion. Interestingly, the work on gender frequently suggests that mothers talk differently to boys and girls about different kinds of affects. Zahn-Waxler et al (1993) found that mothers talked about emotion more to girls than to boys, especially about negative emotion. This gender difference increased from age 2 to age 3. Dunn, Bretherton, & Munn, (1987) also found that mothers talked more to girls about feeling states than they did to boys, although Beeghly, Bretherton &

Mervis (1986) found no gender differences in maternal internal state talk.

Fivush (1993) studied parental emotion talk with preschoolers and also found gender differences intertwined with differences related to type of emotion. With 30 to 35 month old children, Fivush observed that mothers used positive and negative emotion words equally with boys and girls. However, mothers' references to negative affect with their sons centered on the boys themselves while references to negative affect with daughters centered on others' negative affect. Mothers talked about sadness more with daughters than with sons and more about anger and fear with sons than daughters. Mothers did not confirm or elaborate negative emotions with girls as often as they did with boys; causes of negative affect were more often explored with boys than with girls. Fivush found that references to positive emotion states concerned boys and girls equally. Conversations about positive affect tended to merely confirm boys' feelings while the same conversations were equally likely to confirm or elaborate girls' feelings.

Fivush (1993) also asked mothers to discuss instances when their children felt happy, sad, angry and afraid. Again, significant gender differences were noted, especially related to topics of negative affect. Mothers talked more about sadness with girls than with boys and gave more explanations of sadness to girls than to boys. Mothers talked more about anger with boys than with girls. Mothers confirmed boys feelings of anger more than they did with girls and gave more explanations of anger. Resolution of negative affective states also varied between boys and girls. Girls were reassured more in response to sad stories than boys. Girls were also directed to the re-

establishment of relationships in response to anger stories more than boys while boys discussed retaliation more than girls in anger contexts. Examining talk of mothers and fathers with 40- month-olds, Fivush found that parents of girls used more emotion words. With girls, parents attributed a higher percentage of positive emotions to other people than they did while speaking to boys. A greater variety of emotion words were used by fathers and mothers with girls than with boys.

There are two specific issues relevant to the current study that these studies on mother-child talk about emotions do not effectively address. First, very little of this work examined maternal talk in the contexts of immediate affective experience; rather observations of mother-child talk occurred primarily in conversations focused on past events, in book reading situations and during pretend play–more reflective situations. This work does not tell us very much about how mothers might discuss internal states in affectively charged interaction between mother and infant/toddler. The one notable exception is the Dunn, Bretherton, & Munn (1987) study. They found a decline in proportion of references to feeling states following the child's behavioral or verbal expression of distress from 18 to 24 months. This suggests that mothers may be adapting their verbal responses to the immediate expressions of affect according to the child's developmental capacity.

Second, none of these studies looked from infancy into toddlerhood and thus little linkage was made between internal state labeling by mothers and other, nonverbal processes that might precede and support this aspect of maternal support for the symbolization of affect. Malatesta and Haviland (1982) did provide evidence for

maternal use of dual channels of information about affect to 3-month-old infants. They noted maternal speech co-occurring with nonverbal acknowledgment, which could serve to connect affect and words for their infants. Zahn-Waxler et al. (1979) studied how mothers reacted when their own toddlers provoked peer distress. She found several verbal and nonverbal types of responses including explanations of the other child's distress, with and without accompanying affective tone of concern and upset. Zahn-Waxler et al (1979) found, interestingly, that maternal verbal explanations were most effective in changing the child's behavior when they co-occurred with maternal affective expression. That is, if a mother said to her transgressing toddler "Don't do that again." without affective emphasis, it had little impact.

To summarize, by age three most children can talk about internal states; this ability is related to prior parental speech about these states. This is evidence for the notion that children do internalize the ways adults talk with them about affects. The language mothers use in this process is quite diverse. Mothers label internal states, but also discuss many aspects of internal states. To understand how mothers support the child's capacity to symbolize affect it is necessary to look at many aspects of mothers' speech, particularly its diverse functions in relation to affect. The examination of prior categorization systems of maternal talk suggested a classification system for use in the present study of maternal talk during mother-infant interaction. Maternal speech is likely to be best described by examining categories of labeling, clarifying, evaluating, eliciting, guiding, facilitating, re-orienting, acknowledging and alleviating feeling states.

Kinds of talk about feeling states varied by age and gender of the child and

valence (positive or negative) of emotion in prior studies. This indicates that any further study of maternal responses to infant affect must take into account what affects mothers are responding to and if they are responding to boy or girl babies. While this review indicates that much is known about mothers' conversation with their children about affect, there is still more to know. For instance, a limited number of these studies about maternal emotion talk examined it in the context of the child's ongoing affective experience. This is an objective of the present study. None of the studies examined the transition from pre-verbal, infant functioning to verbal, toddler functioning for developmental changes in maternal talk about feeling states, also a key objective of this research.

The Relevance of Mother-Infant Interaction and Processes of Symbolization to Adult Psychotherapy

This paper returns now to the second aim of the dissertation- to use the present research on symbolizing processes in the mother-infant interaction to enhance our awareness of how adult psychotherapy works. The ideas that there are parallels between mother-infant and therapist-patient interaction and that psychotherapy is essentially a symbolizing process are not novel. A review of these ideas already present in psychoanalytic theory, together with a common sense understanding of the nature of psychotherapy, will lay the groundwork for the application of the present study to adult psychotherapy.

Starting from a common sense point of view: what is adult psychotherapy? Essentially, it usually consists of two people in a room, talking. These elements of

psychotherapy, the people and the talk, are perhaps the only generic components always present in psychotherapy. This is true in spite of the vast array of theoretical orientations to therapy, the diverse personal styles of therapists and the enormous variability in patients' needs and difficulties which greatly influence the way psychotherapy is conducted. But the elements of (1) two people in a room, (2) talking, could be called "psychotherapeutic universals."

What are, again in common sense terms, these elements? First, two-people-in-a- room implies human interaction, or at least a relation of two people, if not a relationship of two people, in close proximity to each other. In psychotherapy, we could say one person in the room is working at being helpful to the other person in the room, while the latter person is likely to be in some kind of psychological distress.

Talking, in simplest terms, implies the use of language, a symbolic system, in the service of communication. In psychotherapy, we could say that talk between therapist and patient involves listening and speaking, and that such talk is likely to focus on personal, and perhaps deeply felt, matters of concern to the patient. Again, intuitively, talking is a major part of the interaction between patient and therapist. Indeed, talk likely plays a role in making the exchange therapeutic.

As straightforward as these elements appear through the lens of common sense, the literature on psychoanalytically-informed psychotherapy[2] reveals significant

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[2]The distinction between psychoanalysis and psychotherapy is an important one; they are clearly not the same activity or method of therapeutic change. However, here psychotherapy is meant as "psychoanalytically informed psychotherapy." Thus, theories of psychoanalysis are quite relevant to the practice of this kind of psychotherapy and when a source discusses psychoanalysis, it will be treated as "about" psychotherapy.

controversy about how these elements combine to produce psychic change in the patient. Yet, understanding psychotherapy in these common sense terms points to a link between mother-infant interaction and adult treatment; processes of internalization from interaction and processes of symbolization are central in each. In examining the specific types of maternal support for the first rudimentary kinds of symbolization of affect, the present research also endeavors to add to the understanding of the therapeutic relationship, symbolization and psychic change.

As indicated above, these are not new concepts. Psychoanalytic thinkers such as Kohut (1977), Lichtenberg (1983), Loewald (1960), Pine (1985) and Winnicott (1955, 1971) have already proposed direct parallels between psychoanalytically informed psychotherapy and early development. Together, their work suggests that the therapist-patient relationship is in some ways analogous to the mother-infant relationship. Their work too directs us to the study of mother-infant interaction to help understand how the therapist-patient relationship functions and how it facilitates change.

Similarly, other psychoanalytic theorists (e.g. Loewald,1960; Winnicott,1955, 1971; Freedman, Aragno, 1997 and Fonagy, 1991) have already pointed to processes of symbolization in psychotherapy. This body of work claims that psychotherapy is essentially a symbolizing activity. At its most basic, talking--giving words to subjective, personal felt experience-- is one type of symbolizing activity. It can be a transforming experience. In psychotherapy, the therapist strives to help the patient give

conscious form to his or her most private pain, unconscious thoughts and feelings. As Cardinale (1983) put it, therapy gives the patient "the words to say it." In the process of translation from unsymbolized to symbolized, the patient's inner world becomes open to influence from the therapist's perspective on it, the patient's insight and whatever new experience the patient has of his inner world, given the presence of a therapeutic other. With these influences, psychic change becomes possible, i.e., talking transforms unconscious or amorphous aspects of the patient's psyche. These points and others on the notion of psychotherapy as a symbolizing activity will be reviewed in more detail.

Literature on the parallels between mother-infant and therapist-patient relationships

Winnicott (1965) proposed a three-stage theory of infant development in which the infant moves from absolute dependence, to relative dependence and then toward independence. Progress from absolute dependence requires the presence of a care-taking other. In perhaps his most well known remark, Winnicott said "there is no such thing as an infant, meaning that whenever one finds an infant, one finds maternal care and without maternal care there would be no infant" (p. 39). For Winnicott, maternal care first of all involves empathy, or a felt resonance with the infant and meeting of the infant's physiological needs. It also includes "reliability" (p. 70) and "holding" (p. 43). These allow the infant's move toward greater differentiation. Part of what occurs with the move toward independence is the creation of a transitional or potential space between infant and mother, where there is a not-me and a not-you. Winnicott also

called this psychic space a "playground" and what occurs there, playing. Play, he says, is not outside, or inside. It comes into being with the start of differentiation between mother and infant.

Winnicott (1971) also described what transpires between therapist and patient as "playing," inhabiting the potential space between them, again as the mother and infant do together:

> Psychotherapy takes place in the overlap of two areas of playing, that of the patient and that of the therapist. Psychotherapy has to do with two people playing together. The corollary of this is that where playing is not possible then the work done by the therapist is directed toward bringing the patient from a state of not being able to play into a state of being able to play (p. 38).

Clearly Winnicott does not mean this literally, but rather metaphorically. The therapist joins the patient in a process where things are coming into being, where the patient has a magical control to invent, test and, to be redundant, "play with " his psychic realities in an almost external space. This, is an obvious, deliberate and familiar parallel to what occurs in typical development, naturally between an infant and his good-enough mother.

To do psychoanalytic work with very fragile patients, those he termed "borderline-schizoid," Winnicott argued the analyst must be able to tolerate the patient's regression to absolute dependence:

> Dependence takes on a form that is exactly like that of the infant in the infant-mother relationship....It is...very painful to the patient to be dependent...and the risks that have to be taken in regression to dependence are very great indeed. The risk is...that the analyst will suddenly be unable to believe in the reality and intensity of the patient's primitive anxiety (p. 240).

What the patient risks is that the analyst will be unable to comprehend his most intense feeling states. What the analyst must do, according to Winnicott, is to take on the "holding" function of the mother to the infant. But in fact, he says that the holding "often takes the form of conveying in words at the appropriate moment something that shows the analyst knows and understands" (p.240). The patient then comes to rely upon words that will "hold" him.

Loewald (1960) also proposed that "the parent-child relationship can serve as a model" (p.229) for what is therapeutic in psychoanalysis. What he highlights in the parent-child relationship is the parent's empathy for the child at each particular point in development co-occurring with the parent's sense of the next developmental step for the child. This clearly coincides with Vygotsky's notion of the zone of proximal development. What a good parent does, says Loewald, is provide experiences which the child can internalize, including the parent's own image of the child "which is mediated to the child in the thousand different ways of being handled, bodily and emotionally." (p. 231). Loewald emphasized that micro-elements of the child's experience with the parent which shape the child's senses of being both connected and yet separate from the therapist. He went on to say that "especially in borderline cases and psychoses, processes such as I tried to sketch in the parent-child relationship take place in the therapeutic situation in levels relatively close and similar to those of the early child-parent relationship" (p.232).

Loewald made another connection between the therapist -patient and mother-

infant relationships when he argued that psychoanalysis is essentially a process of interpreting the patient's internalized object world. This internalized object world can best be understood by looking at the significance of object relations in the developmental process, or the nature of the parent-child relationship. The therapeutic relationship not only functions like the mother-infant dyad, but actively works through the residues of the mother-infant relationship by putting words to that aspect of the patient's experience. How the analyst does this is to interpret the transference, especially the distortions the patient exposes in reaction to the analyst.

> Increasingly, through the objective analysis of [the patient's transference distortions] the analyst becomes not only potentially but actually available as a new object, by eliminating step by step impediments ...to a new object relationship...the analyst in actuality not only interprets the transference distortions, [but] in his interpretations he [also] implies aspects of undistorted reality, which the patient begins to grasp, step by step as transferences are interpreted (p.228)..

These interpretations enable the patient to develop a sense of hope of healthier and more mature object relations involving the internalization of an interaction process as well as the internalization of a static object. A key to this is Loewald's idea that at first the analyst does most of this work but over time, the patient himself becomes a more active "associate" in the analysis as does a healthily developing child.

Kohut (1977) wrote that the "childhood situation is in certain decisive respects prototypical for the analytic situation" (p. 84). Like Loewald and Winnicott, Kohut emphasized the role of empathy in both psychoanalysis and early development. He described the child's need for "an empathic responsive human milieu [is just as vital as]...an atmosphere that contains an optimal amount of oxygen if he is to survive" (p.

85). Kohut discerned two stages in the caregiver's response to the child. The first involves "an empathic merger with the self-object's mature psychic organization and participation in the self-object's experience of an affect signal." The second is the "need satisfying" action towards the infant which the caregiver takes to respond to what she has understood through empathy. Kohut emphasized that the first is the most critical to healthy psychic development. The parallel he drew to psychoanalysis is in the process of interaction.

> And it must be stressed that the same principle underlies the analyst's attitude toward his analysands. Every interpretation, in other words, and every reconstruction consists of two phases; first the analysand must realize that he has been understood. Only then, as a second step will the analyst demonstrate to the analysand, the specific dynamic and genetic factors that explain the psychological content that he had first empathically grasped (p. 88).

In analysis, like in early development, the analyst understands and then "acts" by interpreting what he understands, thus "satisfying" what the patient needs to move toward health.

Pine (1985) also proposed the parent-child relationship as a model for therapeutic change–"all the mechanisms for bringing about change that I discuss can come under the heading of 'good parenting'" (p. 128). He, like the others above, believed that this was most true for more disturbed patients, those he called "ego-deficient." More specifically, Pine pointed to what parents <u>are</u> and what parents <u>do</u> as aspects of good parenting which are analogous to good psychotherapeutic treatment. By what parents <u>are</u>, he meant the parent's ongoing presence, consistency of response and availability or, in other words, the context of safety that the parent's

presence provides. By what parents do, he meant the more active aspects of encouraging and educating the child. Applying this model to psychotherapy Pine said:

> Psychological treatment can be viewed as the relation of one person to another where part of the task is to enable the patient to take in and make his own what is 'given' by the therapist....It is a formulation that provides a natural link to the historical issue of parenting, in which the establishment of a relationship and the influence of the parent and her or his input to the child is at the center of the process. In psychological treatments, as in parent-child relations, the ways in which the other becomes significant for the self (the problem of object relations) and the ways in which the other becomes part of the 'me' (the problems of internalization are at its core) (p. 129).

In treatment, says Pine, the role of the therapist's words or interpretations are critical. The interpretation is the active part of the therapist's role. Like the parent's speech, these "train" the patient in new ways of thinking, reflecting and controlling impulses or action through a new experience of an object relation, or internalization.

Similarly, Pine identified three modes of impact of one person on another present in parent-child and patient-therapist relations. The first is identification, where the attitudes, style, interests, sense of humor etc, are acquired "silently" from the other . Second, Pine argued that both parent and therapist have educative roles. Like the child, the patient gains insight not only from the therapist's interpretation but also from the "attitudes about behavioral options, modes of functioning in the real world. " Finally the way that one person influences another is through confirming the inner reality of the other, certainly a part of both parental and therapeutic repertoires.

Lichtenberg also pointed to mother-infant interaction as a metaphor for psychoanalysis. At the same time he insisted that

> The analyst will neither try to do what the mother did, nor try to make up for what she failed to do. While many activities of the analyst-reliability, physicianly concern, tact and attentiveness – coincide with positive parenting, the analyst will direct his or her primary effort only to conceptualizing experience, present and past, in terms of its unique individual meaning to the patient (p. 211n)

This being said, Lichtenberg did believe that there were insights from mother-infant interaction that were helpful to a psychoanalytic understanding of what the patient brings to therapy from early experience. This may be enacted in the transference and what the analyst works towards with the patient, metaphorically.

Lichtenberg argued that the maternal empathy *in the first year of life* involves attuning to the infant's experience at the pre-symbolic level (affects, somatic states etc). On the other hand, the analyst typically engages the patient on the symbolic level; the analyst listens to the patient's words and works at understanding their meaning. However, there are times where the analyst too must move to the pre-symbolic level to apprehend the patient's meaning. This may require attention to body language, tone of voice, facial expressions, etc. Yet, the analyst's goal is always to move the patient from the pre-symbolic level of expression to the symbolic mode of understanding. Lichtenberg says this differs from the maternal empathy of the first year.

All of these theorists use mother-infant or parent-child relations to illuminate the therapeutic process, although they all also take care to explain that the therapist does not "mother" the patient. Rather, some aspects of what the therapist does, especially with more disturbed patients, is like the parenting which promotes development in the early years. Empathy, although defined and valued in slightly

different ways, is central in all theorists' analogies between mother-infant and therapist-patient relationships. Processes of internalization, especially of the micro-interactions of parent and child (ways of touching, talking to, feeding) and analyst-patient (reliability, consistent concern) are also common across theorists.

The theories reviewed above also point toward something beyond empathy that must occur in both kinds of relationship for growth to occur. For parents, this involves a more active, educative or guiding function. For therapists, "interpretation" is a critical element of "taking action" with the patient.

The final common thread seems to be that somehow the parent must know the infant's developmental capacity and how to facilitate the infant's move to the next stage. Likewise, these theorists all emphasize in a parallel way the therapist's sensitivity to where the patient is and the patient's readiness to take the next step. (For example, it is commonly said that timing is crucial for interpretations to "work".) Taken together, these theories suggest that the practice of psychotherapy benefits from knowledge about mother-infant (or parent-child) interaction. More specifically, it seems, a better understanding of empathy in the earliest relationship, the actions mothers take based on their empathic responding and the ways that very young children are helped to become active participants in this process, could further illuminate the parallels described here.

Literature on symbolizing processes in psychotherapy

Several psychoanalytic theories point to psychotherapy as essentially a symbolizing activity. To reiterate, Freud & Breuer (1895/1955), after all, called

psychoanalysis "the talking cure" (p. 30), and language itself is symbolic. In classical psychoanalytic theory, analysis proceeds primarily through interpretation; the function of interpretation is to bring into conscious awareness unconscious material, through the analyst's words. This too is what mothers do at the end of the first into the second year–help their toddlers put words to experiences. This more specific parallel has also been suggested in psychoanalytic theories of psychotherapy.

Many of the theorists who proposed parallels between the early parent child relationships and the psychotherapeutic dynamic were also those who pointed to the symbolizing aspect of that process. Winnicott (1965) certainly perceived the capacity to symbolize as an important development in both mother-infant and therapist-patient relationships. His concepts of "transitional space" and "playing" concern the development of meaningful, or true, symbols. This occurs when the mother repeatedly succeeds in "meeting the infant's spontaneous gesture of sensory hallucination.....the capacity *to use a symbol* is the result (p. 145). He used a more classical formulation later, stating "the stuff of the secondary process is applied to the stuff of the primary process as a contribution to growth and integration" (p. 167).

Lichtenberg was even more explicit in this regard. He saw the mother responding to the child on a presymbolic level, with the analyst typically responding on a symbolic level. When this was not possible in analysis, he saw the goal of the analysis as moving the patient to symbolic, or "as if" dialogue.

Freedman (1998) argued that the essential psychoanalytic activity is symbolizing.

> The psychoanalytic attitude is a symbolizing attitude. We listen to our patients' stories as signifiers of multiple meanings and we listen to ourselves from multiple perspectives. Our patients not only deal with drives, self and object relations but they strive to deal with the symbolization of drives, self and object relations. What matters, consistently, is the process of translation and transmutations.. Psychoanalysis...is a process of linking items of experiences in different spheres in the mind, where one of these items comes to represent the other, a process whereby what was taken as fact--through self-reflection--becomes symbol...it is along lines of symbolization and desymbolization that we can account for psychoanalytic work and psychoanalytic change. (pp. 79-80, emphasis added).

At base, Freedman's thesis was that human efforts to create meaning, or to make sense of experience, requires symbolization. He pointed to Freud's interest in dream interpretation to show that psychoanalysis has always had this focus. He also asked the critical question: what "drives the symbol and what is it that may foreclose, even annihilate the construction of symbols? (p.81).' In part, this is a developmental question.

He went on to lay out several motives for symbolization. The first, as above, is meaning making. The mental process of linking or building bridges across experiences, perceptions, thoughts and feelings also initiates symbol formation. Similarly, processes of differentiation are also involved--becoming a separate self, finding distinctions between perceptions, thoughts and feelings, etc. He also suggested that "the process of symbolization is propelled by the intrinsic need to connect" (p. 87).

Freedman viewed symbolization as a transformational activity. He illustrated this by describing a therapeutic sequence in which the patient begins with what he terms a "frozen constellation" or a conflict the patient perceives as reality. The meaning of

this may be clear to an outside observer but the patient feels stuck. With the generation of associations and elaborations, a new perspective emerges for the patient, with new self-reflective ability. When this is shared and played with in the therapeutic relationship, the "conflict that was at first frozen and condensed is now alive and symbolized" (p. 88). Freedman's views of symbolization are similar to those expressed by Schimek (1975) who argued that mental representation occurs at different levels, but representation at a level accessible to consciousness, or at a symbolic level, is the level at which experience becomes reworked and transformed in psychoanalysis. Interestingly, this is a view that symbolizing is facilitated by the presence of the other, especially a "listening analyst, in a holding environment". This leads again to the beginnings of basic symbolic capacity in a social context–i.e. the early mother-infant relationship.

Aragno (1992) proposed a developmental paradigm of symbolization as the basis for a "new psychoanalytic theory of mind." Essentially she argued that there are differing levels of symbolic functioning and argued that the mind is structured by these differing levels or modes of symbolic expression. She posited six levels in the hierarchy; these levels do not replace one another, but go on being and are all present in the adult mind. The lowest she called "the protosensory anlage, which is a completely unsymbolized mode. The next she named "primary or archetypal signs and signals, where categories of feelings and experiences come into being (e.g. affection and rage.)" The prior two levels, when fully developed mental capacity is present, express the meanings of the unconscious and are primarily enacted.

Next comes the level of "symbolic function"; this is the stage of single words that have a connotative function. Words are still partially somatic-affective expressions and partially "names" for things. This reflects the preconscious part of mind. All of these levels, according to Aragno are still "figurative" as opposed to conceptual, which comes into being at the next stage. Aragno termed this level "primary symbolization: language" where denotive reference comes into being. Words can now express ideas and feelings.

At the next level, secondary symbolism, language is a vehicle or bridge used to express concepts, ideas and feelings. Language also plays a mediating role between affect and action and also serves to integration disparate aspect of the internal world. Finally, comes the level Aragno called "the reification of self" or the "psychoanalytic process" and refers to the uses of language in multiple ways, to represent and objectify even the most ephemeral subjective states.

Aragno posited that the work of psychoanalysis occurs at these last two levels, by bringing the other levels into consciousness and working them through, using the integrative function of symbolizing at the most complex level. In Aragno's model, the analyst's task is to represent meaning and to foster dialogue about meaning at the highest symbolic level. The sequence Aragno posited is closely aligned with the developmental literature on language acquisition and symbol formation. The current research focuses directly on what mothers do in the ontogenetic process to enable the child to move from the second level, primary and archetypal signs, through the third level, initial symbolic function (single words), to the edge of the fourth level, of primary

symbolization. It seems likely that there could be important parallels between the analyst/therapist's work to move dialogue to the highest levels and the work of the mother to start the child on that path. Perhaps careful study of the details of maternal support for this process in development could also illuminate this effort of the therapist in this regard.

Fonagy and colleagues (Fonagy & Target, 1996; Target & Fonagy, 1998), described the "mentalizing" or "reflective function." In fact, Fonagy (1998) stated that he began thinking of these functions as symbolizing functions but found that term had too much "baggage" in psychoanalytic thought to usefully capture what he meant to say about psychic life. Actually, these concepts describe a particular kind of symbolizing activity. Fonagy and Target (1996) talked about the child's development of "psychic reality" through "psychic equivalence" to "pretend" to mentalizing. They argued that what the child requires for this to occur is "repeated experience of three things: his current feelings and thoughts, these mental states represented (thought about) in the object's mind and the frame represented by the adult's normally reality-oriented perspective (p. 221).

Fonagy et al. (1995) also posited that one important element in the pathology of certain seriously disturbed, e.g. borderline, patients is impaired mentalizing. They went on to state that psychotherapy can facilitate this capacity:

> Psychotherapeutic treatment...compels the patient's mind to attend to the mental state of a benevolent other, the therapist. The frequent and consistent interpretation of the mental state of both analyst and patient...is then desirable ...if the inhibition on this aspect of mental function is to be lifted. Over a prolonged time period, diverse interpretations concerning the patient's perception of the analytic

> relationship would enable him or her to attempt to create a mental representation both of self and of analyst as thinking and feeling (pp. 270-271).

We might say that psychoanalytically informed treatment is concerned with symbolization, and that there is a developmental, interpersonal process that facilitates it. This suggests again that research detailing these or related processes which occur in development would inform the clinical theory of mentalizing and specify how it might be promoted in clinical practice.

Although framed somewhat differently, these theorists agree that symbolizing is a critical element in psychoanalytically-informed psychotherapy. When the patient is unable to obtain enough distance from , and paradoxically enough connection with her own internal experience, or to be able to symbolize her feelings, wishes, and thoughts, the therapist must help the patient to do this. The therapist gives words to that which is unsymbolized. In part this occurs when the patient finds these unsymbolized elements met by the therapist. This is what is meant by working in "transitional space, by "playing" or being found in the mind of another. The process of symbolizing the subjective (e.g. affects) here too has its roots in a process like empathy, which above was shown to be key the mother-infant and therapist patient relationships.

Thus, connecting mother-infant interaction and processes of symbolization that grow out of interpersonal action to adult psychotherapy is not a novel concept. The above theorists clearly demonstrate that such links are justified. One important point, here, however, is that little of this prior research and theory is very specific. Little is known about exactly <u>how</u> either kind of mechanism for acquiring an authentic capacity

to symbolize what is unsymbolized operates. In focusing on micro-elements in the mother infant interaction which facilitate symbolizing processes, the goal of the present research is to create a more precise understanding of specific behaviors in the mother-infant interaction.

The Specific Research Questions

As stated, the central aim of this research is to illuminate processes in mother-infant interaction that scaffold infants' capacities to symbolize affective states. The literature reviewed above has shown that symbolizing affective states is a critically important ability, very related to adaptive outcomes for children. Theoretically the development of this capacity involves a process of internalization, facilitated by mothers' varying behavior in response to infants' changing competencies. To promote symbolizing of affect by infants, mothers will operate in the zone of proximal development. One aspect of the scaffolding process involves bringing the child from a passive position to an active role in the process of symbolizing affective states.

The specific predictions concerning maternal behaviors and how they support the overall scaffolding hypothesis are defined as follows:

1. Mothers will include speech in their responses to infant affect; in this way infants come to associate affective experience with maternal speech.
2. Mothers will respond to infant affect through multiple channels; they will use symbolic and nonsymbolic behavior together, so that the infant can begin to link symbolic meaning with nonsymbolic meaning.
3. Mothers will vary their use of multiple channel responses to infant affect

by infant age. With the youngest infants, mothers will use all channels of communication available. Gradually, with older infants, symbolic modes of response will become more salient, with nonsymbolic responses becoming somewhat less frequent–although the nonsymbolic will still be present.

4. Mothers will at first "do all the work" to symbolize infants' affective states; older infants will be required to participate more actively in symbolizing affective states.

5. Mothers' symbolic responses to affective states will serve multiple functions. These functions will include acknowledging, alleviating, clarifying, eliciting, evaluating, facilitating, guiding, labeling and re-orienting of affective states.

6. Mothers will use these speech functions in response to infant affect differently with different aged infants. This will include mothers taking a more active role in words to manage or regulate younger infants' affect.

7. All elements (symbolic and nonsymbolic) in maternal responses to infant affect as well as the diverse functions of symbolic responses to infant affect will also vary by the valence of infant affect. Mothers are likely to respond differently to positive and negative affects. Mothers will vary their speech functions when infants express negative affects versus positive affects.

8. All elements (symbolic and nonsymbolic) in maternal responses to infant affect, will also vary by infant gender. Mothers are likely to respond differently to boys and girls' affects, including talking about them differently.

9. Developmental patterns evident in maternal scaffolding of infants' capacity to symbolize affect will have relevance to the theory and technique of adult psychotherapy

CHAPTER THREE: METHOD

In this section, the specific methods used to test the scaffolding hypothesis are described.

Subjects

Sixty-eight infants and their mothers were participants in a year-long, cohort-sequential study of the relation of the quality of mother-infant communication to infant expectations that others are "understanding" and the self is "understandable." Mothers and infants were recruited from suburban north Dallas through newspaper birth announcements, pediatricians, and community programs for infants and mothers. Participation criteria included that infants be full term, healthy at birth and living in two-parent families. Infants were first born (53% of the sample), second born (38% of the sample) or third born (9% of the sample) singletons. English was the primary language spoken in the home. All data reported here came from the first visit to the Behavioral Research Laboratory at the University of Texas at Dallas (UTD) by mothers and their

infants.

At first observation, infants were aged 6 months (M = 26 weeks, range 24 to 29 weeks), 12 months (M = 53 weeks, range 51 to 55 weeks) or 18 months (mean age = 79 weeks, range 76 to 81 weeks). There were 10 girls and 11 boys in the 6-month-old group, 12 girls and 12 boys in the 12-month-old group and 13 girls and 10 boys in the 18-month-old group. Most children were not in full-time child care. Average number of hours per week of nonmaternal care was 13. Boy and girl infants in each age group were matched by age. (All F ratios ns). Age groups were also matched on birth order (X^2 = 3.13, df 8, ns), hours of nonmaternal care per week (F = 1.50, df 3,62, ns) and by developmental status as assessed by the Mental Development Index of the Bayley Scales of infant Development (F = 1.46, df 3,61, ns).

This was a middle-to-upper-middle class, European-American sample. Median family income was above $70,000 per year in 1992. Average maternal educational level was 1 year of postgraduate education. Average maternal age was 32.28 years. Most mothers (56%) at first data collection were not employed outside the home. Across the age groups, 57% of mothers of 6-month-old infants did not work outside the home. 67% of mothers of 12 months olds held no outside employment while 43% of the mothers of 18-month-olds were at home with their children full time. Some mothers were employed part-time, less than 20 hours per week (full sample M = 18%, 6- month-olds M = 19%, 12-month-olds M = 29% and 18-month-olds M = 37%.) Other mothers were employed outside the home for more than 20 hours per week (full sample M = 26%, 6-month-old M = 24%, 12-month-old M = 4% and 18-month-old M= *21%*).

There were no differences between the age groups on maternal age, (F = .48, df, 2,57, ns), maternal educational level (X^2 = 10.42, df 11, ns), maternal employment (X^2 = 6.59, df 8, ns) or family income level (X^2 = 6.52, df 14, ns).

Procedure

At the laboratory visit, informed consent and a brief developmental history of each infant was obtained from the mother. Next the Mental Development Index (MDI) of the Bayley Scales of Infant Development was then administered to the infants. Mothers and infants then entered a playroom equipped with developmentally appropriate toys. All procedures after this were videotaped using a Panasonic S-VHS recording system that allowed for generation of split screen images.

Procedures for the 6-month-olds and the 12- and 18-month- olds differed somewhat. Five minutes of mother-infant face-to-face play were observed in the 6-month-old group. Infants were placed in an infant chair with their mothers were seated across a table from the infants and told to interact with their infants using no objects. This was followed by 20 minutes of free play. After the Bayley, the two older groups were observed in the Ainsworth Strange Situation. This was also followed by twenty minutes of free play. At the end, the mothers of the 12- and 18-month olds were asked to fill out two short questionnaires while their infants continued to play (a competing task episode). Procedures for the visit for each age group are shown in Table 2. For the purposes of the present study, a total of 18 minutes of mother-infant interaction were observed for infant affect, and for type and function of maternal behavior during infant affect. Initially, this study included only data from the last fifteen minutes of the 20

minute free play interactions. The first five minutes of the free play were excluded as this was really a transition from one activity to another, and children and mothers needed settling in time. However, very little negative affect was observed during the free play. Therefore, to gather sufficient data on negative affect, an additional 3 minutes of interaction were coded. For different aged groups, these minutes came from different contexts. The 6-month-olds tended to be fussy during the face-to-face play; the older two groups were fussy during the final competing task episode. Therefore, data were obtained from these interactions. It was only possible to add three minutes to the total time observed because some 6-month-old infants were unable to remain in the infant seat for longer than three minutes. Thus, portions of these differing contexts were included in this study for a total of 18 minutes of observation.

Measures

Infant affect

Episodes of infant affect were identified using a coding system adapted from the Thompson (1985) Infant Affect Scales. This adaptation combined information from vocal and facial channels and rated infant behavior in 5 second intervals using a 5 point scale. A 5 represented strong negative affect; generally, this was crying. A 4 referred to brief fussing and frowning. Three corresponded to neutral affect. Thompson's scales do not capture the affects of interest or low levels of wariness; typically these are coded as neutral. A 1 represented strong positive affect, laughter or full smile and 2 represented positive toned vocalizations and less intense smiling. (See Appendix A for further details on the adapted coding system.)

Three coders, advanced undergraduate majors in psychology, rated the affect in different age groups. After extensive training on 10 cases, inter-observer agreement was established by having all three coders rate 5 cases previously coded by the author and an advanced graduate student. Coders also rated 3 of each others' cases to insure adequate agreement across coders during the coding process. Cohen's Kappas were calculated across categories of affect and using the combined reliability data. Kappas were .74 for the 6-month-old data, .72 for the 12-month-old data and .80 for the 18 month-old data. The Kappas all fall within the good to excellent range according to published guidelines (Cicchetti & Sparrow, 1982). In addition to this reliability process, the author and an advanced graduate student, while coding maternal behavior during episodes of infant affect, checked the original affect coding. In no cases was there disagreement on more than 10% of the intervals observed. Any disagreements noted at this point were discussed and resolved by conference. Episodes of affect were defined as 2 or more intervals of positive or negative affect which were separated by less than 10 seconds. A total of 447 episodes of infant affect were observed.

The amount of affect observed varied considerably between infants (M = 22% of all intervals observed, range 2% to 75%). No differences were found in the amount of negative affect by age or gender. However, there was a significant gender by age difference in amount of positive affect observed ($F = 3.49$, df 2,62, $p. = .04$). Analysis of the simple effects indicated that this was due to the differences between male and female infants in the 18-month-old group, with girls showing more positive affect (M = .20, sd .14) than boys (M = .08, sd .04). Of the 68 infants, only 48 exhibited episodes of

positive affect and episodes of negative affect. As one goal of this study is to compare how mothers respond to positive affect with how mothers respond to negative affect, only those 48 infants who exhibited positive affective episodes and negative affective episodes were included in the analyses.

Maternal response type

Maternal behavior during episodes of infant affect was rated for type (affect, action or speech.) These coding schemes were developed by the author, although based on the above reviews of studies of mother-infant interaction. (Coding instructions for maternal response type are in Appendix B.) Type of response was rated as the presence or absence of maternal affect, action or speech in each episode of infant affect. Presence of maternal affect was indicated by smiling or frowning facial expressions, laughter and vocal quality. Maternal actions were indicated by any type of physical acts toward objects (moving toys, giving the child a bottle, etc.) or the child (touching, kissing, handling etc). Maternal speech was coded as present in the episode when there was at least one intelligible utterance during the infant's display of affect or the following 5 seconds. Inter-observer agreement was established by having two coders rate 20% of the cases for presence or absence of affect (kappa = .72), speech (kappa = .85) and action (kappa = .75). The Kappas all fall within the good to excellent range according to published guidelines (Cicchetti & Sparrow, 1982). The use of this proportion of cases (20%) for reliability followed the guidelines by proposed by Bakeman and Gottman (1986) in their book Observing Interaction, a standard methodological text on observational research.

Functions of maternal speech

Each maternal utterance during episodes of infant affect was then coded for its function as related to the affective display. This was done from videotape and transcripts prepared in CHAT format (MacWhinney & Snow, 1990). Transcribers were one graduate student in Human Development and two advanced undergraduate majors in psychology trained in CHAT transcription procedures by the author. Utterance functions were derived from the prior work on maternal talk about emotions. (For the relation of current coding categories to those used in prior studies see Table 1.) Utterance functions, definitions and examples of the current coding system are shown in Table 3.

Inter-observer agreement was established by having two coders rate 20% of the data, 6 cases at the beginning and 6 more cases through the coding process. Kappas were calculated separately for each of the ten functions. They were: .88 for clarify, .79 for reorient, .86 for other, .71 for facilitate, .88 for acknowledge, .75 for evaluate, .97 for elicit, .83 for alleviate and .82 for guide. The kappas all fall within the good to excellent range according to published guidelines (Cicchetti & Sparrow, 1982) and again the proportion of cases dually rated corresponded to Bakeman and Gottman's (1986) guidelines. (Full coding manual for maternal language functions is found in Appendix C.)

Analytic Approach

A mixed factorial design was employed. Age and child gender were the between subjects factors and infant affect valence (positive or negative) was the within-subject or repeated factor. The within-subjects, or repeated factor, analyses allowed for comparison of maternal responses to negative infant affect expressed at one point in the observation with maternal responses to infant positive affect expressed at another point in the observation. Maternal response type served as the dependent measures in the first set of analyses. Maternal speech functions served as the dependent measures in the second set of analyses. Given the variability in infant expressive behavior, mothers had very different opportunities to respond to infant affect. To control for this, all maternal behaviors were analyzed in proportions. Two multiple analyses of variance (MANOVAs) were performed using the SPSSX statistical programs. One set of dependent measures consisted of proportions of infant affect episodes containing maternal affect, maternal actions and maternal speech. The other set consisted of the proportion of maternal utterances during infant affect in each function category.

As indicated above, these methods were utilized to test the scaffolding hypothesis. That is, in mother-infant interaction, there are specific maternal behaviors which could serve to scaffold infant's capacities to symbolize affect. The specific predictions related to the scaffolding hypothesis are listed below again. Here the specific variables described above which will be used to test each prediction are included.

1. Mothers will include speech in their responses to infant affect At 6, 12

and 18 months, mothers will use a verbal (symbolic) response to infant affect.

2. Mothers will respond to infant affect through multiple channels. Maternal response types (action, affect and speech) will co-occur in mothers behavior in the context of infant affect

3. Mothers will vary their use of multiple channel responses to infant affect by infant age.

    a. With 6 month olds, mothers will use all types of response (action, affect and speech) in most responses to infant affect.

    b. With 18 month olds, mothers will use more speech to respond to infant affect and somewhat less affect and action, although these response types will still be present

4. Mothers will at first "do all the work" to symbolize infants' affective states; older infants will be required to participate more actively in symbolizing affective states.

    a. With 6 month olds, mothers will respond to infant affect more frequently using all types of response (action, affect and speech) simultaneously.

    b. With 18 month olds, mothers will use more speech to respond to infant affect and somewhat less affect and action, although these response types will still be present

5. Mothers' affect talk about affective states will serve multiple functions.

a. Maternal verbal responses to infant affect will be functionally diverse.

b. Maternal verbal responses can be categorized as acknowledging, alleviating, clarifying, eliciting, evaluating, facilitating, guiding, labeling and re-orienting of affective states.

c. Some maternal speech occurring in the context of infant affect will not address the affective state in any way; thus some maternal verbal responses will be categorized as other.

6. Mothers will use these speech functions in response to infant affect differently with different aged infants. Specifically, mothers' words will function to actively manage or regulate younger infants' affect while the words to older infants will require them to take a more active role in regulating affect .

a. Mothers of 6-month-old infants will use words to elicit, alleviate, and re-orient infants' affective states more frequently than mothers of 18 month olds; mothers of 12 months will use the eliciting, alleviating and re-orienting functions at rate between that of mothers of 6- and 18- month-olds.

b. Mothers of 18-month-old infants will be more likely to give action directions (facilitate and guide) to their babies than mother of 6 -month olds. Action directions require that infants do something in regard to their affective states.

7. All of these elements in maternal scaffolding will vary by the kinds of affects infants are expressing. Mothers are likely to respond differently to positive and negative affects and vary their speech functions when infants express negative or positive affects.
   a. Maternal response type (affect, action and speech) will vary by the valence of infant affect (negative and positive)
   b. Functions of maternal verbal responses to infant affect will vary by the valence of infant affect (negative and positive) .
8. All of these elements in maternal scaffolding will vary by infant gender. Mothers are likely to respond differently to boys and girls' affects, including talk differently about them.
   a. Maternal response type (affect, action and speech) will be different by infant gender
   b. functions of maternal verbal responses to infant affect will be different by infant gender
9. These patterns of maternal support for the symbolization of affect will have relevance to the theory and technique of adult psychotherapy.

CHAPTER FOUR: RESULTS

These questions were addressed through two sets of analyses. The first main set focused on modes of maternal response (symbolic or speech, and nonsymbolic or affect and action) to infant affect and the ways mothers used these modes to scaffold infants'

abilities to symbolize affective states. The second main set of analyses examined maternal symbolic (verbal) responses to infant affect in more detail. These second analyses looked at different functions of maternal speech, the ways these varied by infant age, infant gender and affect valence as well as possible scaffolding strategies apparent in maternal speech functions.

Types of Maternal Responses to Infant Affect

The initial set of analyses addressed the types of response mothers made to infant affect. These analyses asked if mothers responded on a symbolic level (speech) to infant affect and if mothers combined symbolic modes of response (speech) with non-symbolic modes (affect and action). These analyses also focused on age related ways that mothers might use symbolic (speech) and non-symbolic (affect and action) modes of response to infant affect. These analyses examined the notion that mothers' will scaffold infants' capacity to symbolize affect by making links between the symbolic (speech) and non-symbolic (affect and action) in naturally occurring mother-infant interaction.

Do mothers use speech to respond to infant affect?

This question was addressed through examination of the mean proportion of infant affect episodes in which mothers made a verbal response. Means and standard deviations for the proportion of maternal response type to positive infant affect and to negative infant affect in each age group are shown in Table 4. Inspection of the means revealed that mothers do respond to infant affect very frequently at a symbolic level. In all mother-infant dyads included in these anlyses, on average mothers responded verbally

to infant affect about 90% of the time. Clearly then, mothers do make language an integral part of their responses to infant affect. When mothers do this, they provide infants with a link between affective experience and a symbolic mode. Although maternal speech may not be meaningful in terms of content to preverbal infants, its frequent presence in maternal responses to affect suggests it may be an important element in the "gestalt" of infant affective experience. Thus, mothers provide infants with frequent opportunities to associate feelings with words. To reiterate, *mothers do respond to infant affect in a symbolic mode.*

Do mothers' responses to infant affect combine symbolic (speech) and nonsymbolic modes (affect and action)?

Examination of the means in Table 4 reveals that mothers do combine symbolic and nonsymbolic responses much of the time. During positive infant affect, mothers responded to 89% of affect episodes with speech and to 79% of episodes with action and to 78% of episodes with affect. Given that only 11% of episodes contained no maternal speech, there had to be considerable overlap of maternal response types during positive infant affect.

The co-occurrence of response types may have been slightly less like during negative infant affect, at least concerning the co-occurrence of maternal speech and maternal affect. Although mothers responded to negative infant affect nearly all the times with words, they responded affectively only 51% of the time. Thus half of all responses to infant affect could not have combined maternal speech and affect. However, these data do show that mothers responded to 72% of negative affect through

action. *Mothers do combine symbolic (talk) and nonsymbolic (affect and action) modes when responding to infant affect.*

Do mothers vary their use of multiple channel responses to infant affect by infant age?

These analyses asked if mothers use the symbolic mode (speech) more frequently and the nonsymbolic mode (affect and action) less frequently with older infants. As a part of this, these analyses also tested for differences in the use of symbolic/nonsymbolic modes of response related to infant gender or to infant pleasure versus infant distress. A multiple analysis of variance (MANOVA) was performed with infant age (6-, 12- and 18-months) and infant gender as the between subjects factors and infant affect valence (positive and negative)[3] as the within subjects factor. The proportions of infant affect episodes containing maternal affect, action or speech served as the set of dependent measures.

F ratios, degrees of freedom and significance levels for the multivariate analyses are shown in Table 5. Results of the MANOVA yielded significant main effects for infant age ($F = 4.03$, df 6,80) and infant affect valence ($F = 15.58$, df 3,40) and a significant age by infant affect type interaction ($F = 2.37$, df 6,80). There were no main ($F = .59$, df 3,40) or interaction effects for infant gender on type of maternal response.

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[3]In regard to this last variable, the goal of the analysis was to examine how mothers responded differently when their infants were distressed or when they were expressing pleasure. Thus, in order to compare maternal response type in positive infant affect with maternal response type to negative infant affect episodes, only those cases where the infants exhibited distress and pleasure over the course of the observation period were included in the analysis (N = 48). This subsample consisted of fourteen 6-month-olds, fourteen 12-month-olds and twenty 18-month-olds and their mothers.

Mothers responded similarly to their boy and girl infants, that is the form of their responses (action, affect or speech) were not related to their babies' gender. This factor will not be considered further in this set of analyses. Thus, *mothers do use proportionately different types of responses when interacting with 6- ,12- or 18-month-old babies and when reacting to their infants' distress or pleasure.*

When these significant multivariate effects were found, univariate analyses were performed. The univariate analyses examined maternal affect, maternal speech and maternal action separately. These analyses asked: Do mothers talk more to 6-, 12- or 18-month-olds during displays of affect? Do mothers respond with their own affect more frequently to 6-, 12-, or 18-month-olds? Do mothers take action in response to infant affect more frequently to 6-, 12-, or 18 month olds? The univariate analyses also addressed the same questions about response type and infant affect valence. Do mothers talk more in response to infant distress or pleasure? Do mothers respond with their own affect more frequently to infant distress or pleasure? Do mothers make action responses more frequently to infant distress or pleasure?

In the univariate analyses, maternal speech, maternal action and maternal affect served as separate dependent measures. Infant age served as the between subjects factor and infant affect valence served as the within subjects factor. (To reiterate, infant affect valence was of two types, positive and negative, but was observed across the same subjects. Therefore, affect valence is the within, or repeated factor in the analysis. To allow for comparison of maternal responses to positive and to negative infant affect, only the data from 48 dyads were analyzed..) The univariate analyses are shown in

Table 6. Only one clear cut result concerning maternal affect is seen in the univariate analyses of maternal response type. There was a significant interaction effect for infant age and infant affect valence for maternal affect ($\underline{F} = 3.38$, $\underline{df}$ 2,45). Mothers responded with their own affect differently to infants of varying ages and to positive and negative infant affect.

The mean proportions of episodes of infant affect where mothers responded with affect of their own at each age and affect are shown in Figure 1. Inspection of Figure 1 shows that mothers of 6-month-olds responded to both infant pleasure and distress with affect of their own at a very high rate but that the pattern for mothers of 12- and 18-month-olds appears to diverge. Mothers appear to respond with less affect of their own to the negative affects of 12- and 18-month olds.

Differences between the means were tested using Scheffe *post hoc* analyses. This showed that mothers of the 6 month-olds were equally likely to respond to infant positive and negative affect with their own affective displays but mothers of 12- and 18-month olds responded more frequently to positive infant affect with affective displays of their own than they did to negative infant affect. Thus, maternal affect was a constant element in mothers' responses to their infants emotional displays at 6 months, but with the 12- and 18-month-olds mothers were more likely to show their own feelings when reacting to their infants' pleasure than to their infants' distress. This tells us that *at least during negative affect, mothers use less affect in their responses to older children.* In this way, mothers are fostering a greater reliance on symbolic communication with 12- and 18-month-olds, at least in the context of infant distress.

In regard to the question of variation in maternal speech, there was a difference approaching significance ($F = 3.36$, df 1,45, $p. = .07$) in maternal speech to positive versus negative affect. This is shown below in Figure 2. Mothers were somewhat more likely to give verbal responses to negative affect than to positive affect. However, the means suggest a possible ceiling effect. To examine this possibility, individual data points which show the proportion of positive and negative infant affect episodes where mothers responded with speech across the age groups are shown in Figure 3. Visual inspection of these data reveal that most mothers in both positive and negative affect responded virtually all the time with speech. (When mothers responded to positive and infant affect the same proportion of the time, the "x" and circle marks combine to appear as a square.) Of the 48 cases, only 14 of them did not use a verbal response to all infant affect. Of these 14, however, 11 used less speech to infant positive infant affect than to negative infant. In only three cases did mothers use less language in response to negative infant affect than to positive infant affect

There were no main or interaction effects noted in maternal action responses. However, inspection of the means for maternal action responses during negative affect (at 6 months $M = .85$, at 12 months $M = .80$, and at 18 months $M = .57$) suggests that the question of age related change in this behavior deserves additional study, perhaps with a larger sample, where the power to detect differences is greater. Although it remains unconfirmed here, it is possible that mother take action themselves in relation to 18-month-old distress less frequently than do mothers of 6- and 12-month-olds.

To summarize, *there was variation in maternal use of symbolic and non-*

symbolic responses to infant affect related to infant age. Mothers talked at the same rate to 6-, 12- or 18-month-old during displays of affect. Mothers took action in response to infant affect equally to 6-, 12-, or 18 month old, although these data suggest there might be differences in action responses in a larger sample. Mothers responded with their own affect nearly all the time with 6-month-olds during but mothers of 12- and 18-month olds respond withed a high rate of their own affect only during positive affect. The mothers of the toddlers showed much less of their own affect in response to negative infant affect.

These findings are significant for the overall scaffolding hypothesis, suggesting one specific scaffolding strategy. The decrease in use of maternal affect in response to toddler distress could be construed as moving the toddler to a more active role in the symbolizing of negative states. That is, the decrease in affect may make the symbolic mode (speech) more salient in mothers responses to toddler distress. The toddlers might then be required to respond to the symbolic content of mothers' responses. To know the meaning others make of their feelings, the toddler, but not the infant, must participate at a symbolic level. Mothers expect the toddler to grapple with the content of maternal verbalizations.

Functions of Maternal Verbal Responses to Infant Affect

The second main set of analyses examined maternal symbolic (verbal) responses to infant affect in more detail. These analyses looked at different functions of maternal speech, the ways these vary by infant age, infant gender and affect valence and possible

scaffolding strategies apparent in the patterns of speech functions.

Does maternal speech serve multiple functions in response to infant affect?

This question was addressed through an examination of the frequency of 10 speech functions in maternal verbal responses to infant affect. (See Table 3 for definitions and examples of each speech function.) The mean proportion of maternal utterances during positive infant affect and the mean proportion of maternal utterances during negative infant affect for the sample as whole are shown in Figures 4a and 4b. Figures 4a and 4b show that some functions were used frequently and others not as often, but all were observed in these data. Some functions of maternal speech seem to be more common responses to positive (e.g. elicit) or negative affect (e.g. reorient), while others seem to be used equivalently (e.g. guide or label) in response to both affect valences. Inspection of these means tells us that *mothers' symbolic responses to affective states do have multiple functions.*

Do mothers use these speech functions in response to infant affect differently with different aged infants?

These analyses also address differences in maternal speech functions by infant gender and to infant pleasure versus infant distress. To address the question of age-related differences in maternal speech functions, means, and standard deviations for each speech function by age group were obtained. These analyses also address differences in maternal speech functions by infant gender and to infant pleasure versus infant distress. To address the question of age-related differences in maternal speech functions, means,

and standard deviations for each speech function shown in Table 7. Inspection of the means in this table suggests developmental variability in how mothers use language in response to infant affect.

To analyze this potential variability, a multivariate analyses of variance (MANOVA) was performed. Language functions of maternal speech were used as the set of dependent measures, with infant age and gender as the between subjects factors and infant affect valence as the within subjects factors. Again, in order to compare maternal speech functions during negative infant affect with maternal speech functions during positive infant affect, only those cases which contained negative infant affect episodes and positive infant affect episodes were analyzed (N = 48). This subsample, as above, consisted of fourteen 6-month-olds, fourteen 12-month-olds and twenty 18-month-olds and their mothers.

Multivariate effects (overall $F = 21.21$, $p. < .001$) were found for infant age ($F = 3.13$, $p. < .001$), infant affect valence ($X_2 = 99.87$, $p. < .001$), the interaction of infant age and infant affect valence($F = 3.09$, $p. < .001$), but no main effects or interaction effects were found for infant gender. This factor will not be analyzed further. *Maternal speech does serve different functions in response to infant affect at different ages, and different functions are used in response to infant pleasure and distress.*

Separate, univariate analyses were necessary to know which speech functions varied by age and affect type. These analyses were performed for each speech function separately as the dependent measure and infant age as the between subjects factors and infant affect valence. as the within subjects factor. As above, infant affect valence was

of two types, positive and negative, but was observed across the same subjects. Therefore, affect valence is the within, or repeated factor in the analysis. To allow for comparison of maternal responses

to positive and to negative infant affect, only the data from 48 dyads were analyzed.

The univariate F ratios, degrees of freedom and significance levels are shown in Table 8. In the univariate analyses, *main effects for infant age and affect type for* several language functions as well as an interaction effect for age and affect type for two language functions were found.

Main effects for age were found for four maternal speech functions: clarify, (F = 4.16, df 2,43) label,(F = 6.02, df = 2,43) guide (F = 11.89, df 2,43) and other (F.= 3.90, df 2,43). The clarifying function involves describing or inquiring about the causes or antecedents of the affective state. Labeling involves naming an affective state (sad, mad etc.). The guiding function refers to mothers responding to infant affect by telling infants to do something, something that the mother wants the child to do, and not necessarily something the child wants to do. The other function refers to remarks that do not center on the affective state of the child in any way at all. Mothers of 6- 12- and 18-month old infants used these 4 kinds of speech functions in response to their infant's expressions of affect with varying frequency. This is illustrated in Figure 5.

Post hoc analyses (Scheffe test) revealed that mothers of the youngest infants were more likely to clarify and label their infants' affective experiences than were mothers of the older two groups of infants. Conversely, mothers of the older two groups of infants were more likely than mothers of the youngest group to respond

verbally to infant affect with remarks that were not related to the affective display (other). In addition, mothers of the 18-month-old infants were more likely than mothers of the other two groups to give their children action directions related to the mother's goals or wishes as the infants showed emotion (guide). *Maternal speech does serve different functions in response to infant affect at different ages, specifically clarifying, labeling, guiding and other.*

There are hints in these findings that the ways mothers talk to infants of different ages night move infants towards an active role in symbolizing processes. Mothers are talking to 6-month-old babies about the what (label) and why(clarify) of emotion. Given that infants this young can do so little on a symbolic level, mothers are symbolizing many aspects of affective experience, while the infant participates only on a nonsymbolic level. This contrasts with mothers' greater use of guiding or action directions during infant affect with 18-month-olds. Here mothers are requiring a response from their toddlers which indicates the child has understood symbolic meaning. At least through receptive language, the child is actively processing what to do about affect on a symbolic level. Thus mothers' differential use of the label, clarify and guide functions to different aged infants provides some evidence for scaffolding processes which move children towards an active role in symbolizing affects.

Maternal speech functions also varied in response to infant pleasure and to infant distress. The univariate analyses, again shown in Table 7, revealed 4 main effects for infant affect valence, unqualified by interaction effects. The maternal speech functions which were used differently in episodes of negative and positive infant affect were:

clarify ($F = 14.40$, df 1,43), evaluate ($F = 4.25$, df 1,43) , other ($F = 8.96$, df 1,43) and alleviate ($F = 20.51$, df 1,43) . Again, clarifying refers to commenting on the causes of affect. Evaluate refers to language with addresses the appropriateness of an affect in a particular context. Alleviate involves using words to soothe an infant. Again, other refers to maternal speech which does not focus on any way the infant's affective experience.

Patterns related to mothers' different use of these functions in response to distress and pleasure are illustrated in Figure 6. Post hoc analyses (Scheffe tests) revealed that during negative infant affect, mothers were more likely to evaluate the appropriateness of infants' affective expressions than they were during positive infant affect. Mothers of all aged infants made more clarifying remarks during negative infant affect than during positive infant affect. Not surprisingly, mothers also used words to alleviate or comfort the infants more during negative than positive affect. Mothers were more likely to focus verbally on objects, events and so forth other than the affective display during positive rather than negative infant affect. Thus, mothers used language in different ways to respond to their babies' positive and negative affective states. They evaluated their infants' feelings, talked about the causes of their babies' feelings and used words to make the infant feel better more often when babies were distressed than when the babies were happy. Conversely, when babies expressed pleasure, mothers were freer to talk about topics other than emotion. *These findings tell us that mothers support infants' participation in the symbolization of pleasure differently from infants' participation in the symbolization of distress.*

These findings also reveal that mothers use speech differently in response to different aged infants' distress and pleasure. Table 7 again shows two significant age by affect type interaction effects for the elicit and reorient variables. The elicit function involves the use of language to bring about an affective state. The re-orient function involves using words to distract the infant from an affective state. The interaction effect for the elicit function is shown in Figure 7. Posthoc analyses (Scheffe tests) indicated that at all ages, mothers used very little language to elicit negative affect and there were no significant differences in the use of eliciting utterances during negative affect by infant age. However, the frequency of eliciting utterances during positive affect declined with infant age. Mothers of the 18 month olds were less likely to use the eliciting function during positive affect than mothers of the 6 and 12 month olds..

The interaction effect for the re-orienting function is shown in Figure 8. Post hoc analyses of the reorienting function indicated that during positive infant affect, mothers did little re-orienting of their infants at all ages. During negative affect, however, mothers of 6 and 12-month old infants were more likely to re-orient their infants than mothers of 18-month-old infants. Although not formally tested, visual inspection of the means in Figure 7 suggest that mothers of 18-month-olds may have been somewhat equivalent in their use of the reorienting function during positive and negative affect. Thus, the likelihood mothers will re-orient, or distract, their babies from their distress decreases with age just as the likelihood that mothers will elicit positive affect decreases with age.

The greater maternal use of the elicit function during positive infant affect and

the reorient function during negative affect shows that mothers are taking a very active role vis-a-vis infant affect with 6-month-olds. Mother are using words to create positive affect and move infants away from distress with younger infants. They do less of this with older infants, thus requiring that the older infants regulate their affects themselves. Here is evidence for maternal scaffolding in a symbolic mode moving infants from a passive to an active role in regard to affects.

Taken together these data tell us that mothers do use words for a variety of purposes, or functions, when responding to infant affect. All categories of speech functions proposed in this research, based on prior work as described in Table 2, were observed in maternal behavior during naturalistic mother-infant interaction. These data also revealed age differences in the ways mothers used language to respond to infant affect. Mothers were more likely to clarify and label the affective states of younger infants while they were more likely to guide infant behavior and focus on topics other than affect with older infants. Maternal speech functions also differed by infant pleasure or distress. In response to negative infant affect, mothers were more likely to evaluate the appropriateness of an affect, alleviate or soothe infants and to clarify, or address the causes of an affective state than they were during positive infant affect. In response to positive infant affect, mothers were more likely to focus their words on topics other than affect more often than in response to negative infant affect. During positive affect only, mothers were more likely to use words to elicit affect with younger infants than they were with older infants. During negative affect only, mothers were likely to use words to re-orient, or distract, younger infants from distress than they were with older infants.

CHAPTER FIVE: DISCUSSION

The Scaffolding Hypothesis

Consonant with Vygotsky's theory of internalization, these results reveal specific maternal behaviors that could support infants' capacities to symbolize affect. These behaviors can be categorized into three scaffolding strategies. First, maternal behavior does create interactional formats which could scaffold infant capacities to symbolize affective states. Second, in some ways maternal behavior in this context can be seen as operating in the "zone of proximal development" (e.g., support symbolizing of affect in developmentally sensitive ways.) Third, there are maternal behaviors which could be understood as requiring that children move from a passive to an active role in the symbolization of affective states.

Returning to the first likely scaffolding strategy, maternal behavior intrinsically links the symbolic (word) and nonsymbolic (affect). At least in this sample of well-educated, upper-middle class European-American families, mothers almost always used a symbolic mode when responding to infant affect. This can be understood as a kind of interactional format. The infant expresses a feeling; the mother's turn includes a multimodal response, with speech as one modality. The infant comes to expect a response that includes words.

More generally, this maternal strategy forges a natural link between feeling states and maternal speech, or between affect and symbol. As infants internalize aspects of mother-infant interaction related to affect, words and affects are intertwined, perhaps even fused. This "format" introduces the infant to a relation of the symbolic (words)

and the nonsymbolic (affect).

Of course, young infants do not have the capacity to grasp the symbolic content of words, but on a sensory level they do experience the "gestalt" of maternal responsiveness, including maternal speech. Infants hear the sounds created by words and prior research indicates that infants do pay attention to maternal speech. (See review by Kuhl, 1987). Work on the infant's developing perceptual system tells us that even very young infants are differentially attentive to the maternal voice (DeCasper & Fifer, 1980). Indeed some work suggests that at birth, infants are already familiar with specific linguistic features of their mothers' voices because of experience in utero (Spence & DeCasper, 1987). Certainly by 6 months, infants have the capacity to tune into the nuances of their mothers' voices, including the pitch, rate, segmentation and acoustic qualities created by words (Kuhl, 1985). Together, this work tells us that infants prefer the maternal voice and are sensitive to linguistic components of speech.

Thus, maternal speech, in its *gestalt*, is likely a salient component of maternal behavior in the context of infant affective expression. Mothers' responses to their babies' feelings, including their words, often have a powerful impact; they can relieve distress or heighten the pleasure of play. Perhaps, for the infant, words come to have the power to represent affects, because maternal responses to their feelings, which include words, so powerfully affect them.

The second key scaffolding strategy evident in these data is the co-occurrence of maternal speech, affect and action. The co-occurrence of symbolic and nonsymbolic modes of response also likely serves to scaffold infant participation in symbolic content.

Consider this example. The mother takes the pacifier out of the mouth of her 6-month-old baby, thinking the baby has drifted off to sleep. The infant immediately starts to cry. The cry has something of a "how dare you?" quality. The mother responds by saying, with a soft tone of outrage mirroring the infant "You didn't like that." As she returns the pacifier to the infant's mouth, she says with warmth and affection "Here ya go! That's better. Yes." In this response, the mother creates an affective resonance through tone and emphasis and an action to change the affective state.

The affective resonance and the action to alleviate the infant's distress are both represented in words. The infant can make sense of, or find meaning in the affective resonance and in the action to remedy the distress. The words overlap with other maternal behavior the infant does understand. In this way the mother is introducing the infant to an awareness of the meaning of words through association with other meaningful, interpersonal information. The mother pulls the infant towards symbolic representation of affective states through reflecting on and giving meaning to feelings in multiple or redundant channels. This too can be understood as an interactional format. Infants perhaps come to "expect" this kind of multimodal response through repeated patterns of interaction, where affects, words and action simultaneously convey the same meaning.

Third, in addition to linking and redundant processes in mother-infant interaction which support the infant's capacity to symbolize affect, there clearly are developmental patterns in maternal responses to infant affect. This developmental sensitivity suggests that mothers do operate in the "zone of proximal development," a key element of

"scaffolding" in Vygotskian theory. Through interaction within and just above the child's level of competence, the mother "boosts" the child to a higher level of functioning. In these data, mothers did change the pattern of linking symbolic and nonsymbolic modes with infants of different ages. With 6 month olds, maternal affect, action and speech almost always co-occurred. Mothers used less of their own affect to respond to their babies' distress with 12 and 18 month old infants. In this way, the symbolic mode became more salient and less dependent on non-symbolic modes for its meaning. The scaffolding strategy evident here is one of providing redundancy and removing some of it with older infants, so that toddlers have to rely more on words to understand how others interpret and react to their affective states.

Of note here is that mothers seemingly used less affect of their own to respond to 12-month-old distress and somewhat more affect of their own to respond to 18-month-old distress. Even though this finding does not indicate simple, linear developmental change, it may reveal a developmentally sensitive scaffolding strategy. At 12 months, most infants have some receptive language; that is, they know the meaning of many more words than they can say (Bates, O'Connell & Shore, 1979). Perhaps, by removing some of the affective responses at this age, mothers simplify and highlight the content or semantic aspect of the words regarding the infant's affect. Mothers' use of affective responses to negative infant affect might increase again at 18 months because they are more confident that their infants can respond to both channels simultaneously. Interestingly, this is consistent with Bloom and colleagues' ideas (Bloom, 1991; Bloom, 1993; Bloom & Beckwith, 1989; Bloom, Beckwith, Capatides,

& Hafitz, 1988; Bloom & Capatides, 1987) that at a critical period just as the child begins to develop expressive language, language and affect compete for the child's cognitive resources. Bloom and colleagues have data which suggests that children exhibit less affect just prior to the onset of expressive language–around 12 months.

In addition, there was evidence of developmental sensitivity in the ways mothers used language with different-aged infants. Mothers did use language for multiple functions in relation to affect and these did vary by age of the infant. Specifically, the speech functions clarify, label, guide and other all varied by the age of the infant. Mothers of the youngest infants were more likely to address the causes of their infant's emotions (i.e., clarify) than were mothers of older infants; they were more likely to do so at all ages during negative affect. Likewise, mothers of the youngest infants were more likely to label their infants' emotions than were mothers of older infants.

Perhaps both of these functions could be considered information functions, or why and what the baby is feeling. Obviously the 6-month-old infant does not understand the content of maternal speech. We could speculate that mothers recognize, well in advance of their infants, that infants "need" to know what and why they feel something to regulate their affect. Paradoxically, this might also represent a developmentally sensitive strategy for 12- and 18-month-olds as well. As children begin to acquire receptive language and then expressive language, mothers may know they need to simplify input. At these ages, mothers may be beginning to expect the infant to "get the message" or symbolic content and reduce its complexity.

In fact, there are developmental data that suggest that these maternal behaviors

are not aimed extraordinarily far from the infants' growing communicative abilities. At six months, infants have no labels and no linguistic or symbolic representation of the causes of their feeling states, although by this age the infant does have a set of "expectations" about what changes or reduces negative states (e.g. infants quiet at approach of parental figure rather then simply respond to the caregiver's soothing actions, (Lamb & Malkin, 1982). This suggests the beginnings of an understanding of causality. By six months infants do respond differently to changes in intonation in adult speech–thus they are taking some information out of what their mothers' say. Beginning at 8 months, infants begin to respond to particular words, especially their names and the word "no." Between six and eight months also, infants begin to play with language sounds and begin to attempt to imitate words (Sachs, 2000). Given this level of emergent linguistic ability, by clarifying and labeling affective states, mothers are beyond but perhaps within striking distance of the next stage in the infant's language, or symbolic, abilities.

Another kind of developmentally sensitive maternal behavior is evident in mothers' reluctance with all aged infants to focus maternal language on something other than their infants' affects. Mothers rarely used the other function with 6 month olds. Use of the other function increased with age, although mothers of older infants continued to focus most of their attention on infant affect. This is in accordance with Stern's developmental model of relationship. At about 7 months, according to Stern, affect becomes the central medium and message in mother-infant communication. The "domain of inter-subjective relatedness" involves the sharing of mental states in a new

way, where maternal empathy has a new effect for the infant. The process of another feeling for the infant comes into focus. Thus, the mother's explicit focus on affect is especially relevant, in a developmental sense, as a recognition of where the infant is going and what the infant needs at the next level. This focus does not go away as the infant begins to understand words (12 months) and to speak words (18 months.) Mothers do begin to address other topics across the age groups studied but a focus on affect in mothers' responses to infant affect continues into the toddler period.

Another instance of developmentally sensitive use of language to respond to infant affect is revealed in mothers' use of the speech function guide. When mothers use speech to guide their infants, they give their babies "action" directions (i.e. tell them to do something) during their displays of affect. Mothers very rarely do this with their 6-month-olds and not very frequently with their 12- month -olds. By 18 months this is much more frequent. Mothers are telling their 18-month-olds to do something that mothers want them to do, in regard to the affective episode. This suggests that mothers expect 18-month-olds to participate at a symbolic level regarding affect; infants must access the symbolic content of maternal speech to understand what is asked of them. On a simpler level, this reveals a developmentally appropriate strategy because 18-month-olds can, in fact, *do more* than younger children.

There were two other language functions which mothers used in developmentally sensitive ways but were used differently in response to infant pleasure and distress. Mothers used words to elicit or create positive affect more frequently with 6-month-olds than with 18-month-olds, while eliciting negative affect at a symbolic level rarely

occurred. Similarly, mothers used words more frequently to re-orient infants away from distress at 6 months than they did at 18 months.

These last two developmental findings also point to key elements in maternal scaffolds that bring the child from a more passive role toward an active role in symbolizing affective states. By encouraging (eliciting) positive affect with 6- and 12 month-olds, mothers are taking the active role vis-a-vis positive affect, whereas at 18 months mothers no longer focus on eliciting positive states. One way to view this result is that by 18 months, the infants have internalized the kind of structuring that maternal responses create and no longer need this kind of input to sustain positive affective states. Mothers do less eliciting of positive affect, yet the amount of positive affect observed did not differ across the age groups. Perhaps infants internalize how to generate positive states by themselves.[4]

Similarly, the differences in the frequency of re-orienting infants away from distress at 6 and 18 months also show mothers working to increase active infant participation in the regulation of affect. Mothers themselves are quite active at 6-months in containing negative affect, but mothers of 18-month-old toddlers are less active in this way. By not doing so themselves, mothers could be insisting that 18-months-olds regulate their negative affect in a more active way. Mothers, in a sense, demand that their toddlers process the experience and not merely move away from what

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[4]This might be the only explicit and direct evidence in this research that indicates that internalization has actually occurred. Eighteen-month old infants expressed the same amount of positive affect as the 6 month olds, without mothers eliciting it–at least 18-month-old girls did.

caused the negative affect or the feelings themselves. By doing this with and for the infant, mothers are giving the infants the experience of how to do this themselves, or again, mothers are providing the scaffolding which allows the infant to begin to regulate his affect himself. Mothers' words are key elements in the scaffolds that they build. The patterns in maternal use of the eliciting and re-orienting functions show that mothers help contain negative affect and encourage positive affect with younger infants.

Another element in maternal scaffolding, moving infants from passive to active participation, involves the differential use of the guide function. By asking older infants to do something in the context of affect, mothers are requiring an active stance. In addition, as stated above, mothers are requiring more active symbolizing of the affect and its context. To do as they are asked, infants must understand what mothers want them to do. They must understand at a symbolic level.

The final elements of potential scaffolding which could move infants from passive to active roles in symbolizing affects are found in the age-related differences in mothers labeling and clarifying infants affects. Mothers label and clarify infants' feelings much more frequently at 6 months than at 12 or 18 months. In using these functions with younger infants, mothers are essentially "doing all the work" to give the infants information about what and why they are feeling something. By not doing this as often with older infants, mothers seem to be making it possible for infants to do this themselves. The what and why of affect are not given to the infant by the mother; the infant has a greater role in constructing this understanding himself

Infancy

Mother-infant interaction is a complex phenomenon, as the work of infant researchers and theorists of early development have demonstrated in the work of the last 30 years (e.g. Brazelton, Koswolski & Main, 1974; Bowlby, 1969; Mahler, Pine & Bergman, 1975; Sroufe, 1995; Stern, 1974, 1985; Tronick & Cohn, 1985). The present research adds to our understanding of this complexity in several ways. Most directly, it illuminates processes of mother-interaction that support the child's capacities to symbolize affective states. These processes include linking words and affect, redundancy in meaning systems, developmental sensitivity in how words and affects are integrated and for the infant, a movement towards an active role in symbolizing affect. This research tells us that these processes, too, are central components of what mothers do with babies.

These processes are occurring in kinds of interactions that had been characterized by many in the infancy field, as nonverbal or affective processes only. As the preceding review of the literature suggested, words likely play some role in maternal sensitivity (Ainsworth, Blehar, Waters & Wall, 1978), emotional availability (Emde, 1990) and responsiveness (Bornstein, 1989). Words are often part of the maternal behavior characterized as emotionally attuned, sensitive or responsive. What these data suggest is that words are not simply epiphenomena, unrelated to the affective, nonverbal center of mother-infant interaction. Rather, words have important functions in these kinds of interactions. They are there to promote the infant's movement towards the symbolization of affect, a critical capacity in emotional and social development. Of

course, words alone would not suffice. They must occur in the context of appropriate, sensitive, responsive and affectively attuned maternal behavior.

This research also bears on prior work related to mother-child discourse about emotion, most of which looked at the ways that mothers label affective states with toddlers and preschoolers. That work proposed that mother-child conversations utilizing specific emotion words are the origin of the child's ability to talk about emotion. Here the findings indicate that maternal behavior which supports this ability is much broader and begins long before the child is able to label an affective state. In fact, this research showed that labels for specific emotions were a very small proportion of the maternal responses to infant affect.

One finding inconsistent with prior work on mother-child conversation about affect is the lack of gender differences. One possible explanation for this discrepancy is the age range studied. The work that noted gender differences tended to focus on older toddlers and preschoolers. Perhaps parents do not yet differentiate by gender in how they respond to infant affect for infants and younger toddlers. This finding suggests that the very basic capacity to symbolize affective states is supported for boys as well as for girls at this earlier age. [5]

This research is pertinent to several theoretical views of infant development as well, including the theories of Stern (1985), Fonagy, (1991), Winnicott, (1971) and Mahler, Pine & Bergman (1975). During the first three years, said Stern, the infant

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[5] Preliminary analyses of these data considering mothers' region of origin (southern/Texan versus other regions) as a factor in how mothers respond to infants affect do suggest gender differences in maternal support for the symbolization of affect.

quickly develops new capacities and with these comes new kinds of interaction and relationship. Stern postulated that "intersubjective relatedness" is central from about 7 months into the first year. Mothers and infants communicate through affect and about affect. Overlaying this, at the end of the first year is what he called "verbal relatedness." Mothers and infants begin to communicate through a symbolic mode, although the affective relatedness goes on. When the infant has words, new opportunities for sharing diverse meanings becomes possible.

This research clearly addresses this overlay of affective and verbal meaning. It demonstrates that mothers do, in fact, begin to use a symbolic mode while relying on affect to get the message across. It also bears out the idea that maternal behavior serves to bring the infant through intersubjective relatedness to verbal relatedness in the ways outlined above: linking, redundancy, developmentally sensitive responding and requiring the infant to take an active role in symbolizing affective states over time.

Stern (1985) also focused on the infant's developing sense of self that emerge from these different modes of relationship. A central aspect of the self developing during the intersubjective and verbal periods is the sense of being recognized and affirmed by the other. In Stern's words, the infant finds out if experiences are "shareable" (p. 162) and thus validated. What this research shows is that mothers recognize infant experience with their affects, actions and words simultaneously. This might help create a sense of "share-ability" across levels and modes of experience. Of special note in these data was mothers' frequent verbal "acknowledgment" of infant affective states. Specifically the acknowledging function in maternal speech involves the

use of a word or words which recognizes some aspect of the infant's emotional states. It was often observed in a simple "yeah," uttered in whatever tone matched the infant's affective expression. Again, while the affective or prosodic component of this utterance mainly carries the meaning to the preverbal infants, mothers are also saying "yes I get it " or "I see you," with these responses. This likely contributes to the infant's sense of self as "shareable," first on the affective level, and developing on the verbal or semantic level as well.

This research also bears on Fonagy and colleagues' concepts of mentalization and reflective functioning (e.g. Fonagy & Target, 1996; Target & Fonagy, 1998). They argued that the child's developing theory of mind, or the awareness of the feelings and thoughts in himself and others, is a protective factor against the development of psychopathology. They postulated that this process begins in infancy, "through the child's experience of his mental states being reflected on, prototypically through the experience of affect-laden interactions with the caregiver" (Fonagy, Steele, Steele & Target, unpublished, p. 6). The present data show that mothers do reflect infants' mental states in a variety of ways, through differing uses of affect, action and talk with different aged infants. They also show that mothers are using language even early on as a part of their reflecting on infant affect. Examples of this include the frequent use of language to acknowledge, clarify or label the affective experiences of 6-month-olds. In fact, these findings might be construed as documenting, at a micro-analytic level, the extensive support for reflective functioning found in naturally occurring mother-infant interaction.

Winnicott (1951/1992) briefly addressed the use of language in mother-infant interaction and the relation of transitional phenomenon to symbolism in his classic paper on the transitional object. In describing the infant's move from living in a wholly subjective reality to contact with a more external reality, Winnicott proposed "an intermediate area of experiencing." In part he said the move through this intermediate area involves going "between primary unawareness of indebtedness and the acknowledgment of indebtedness ('Say: ta!')"(p. 230). Words, to Winnicott, imply a certain kind of differentiation between self and other-- in fact a certain kind of social role for self and other. His view is that symbolization only becomes possible at the point the infant clearly distinguishes inner and outer reality. The infant's capacity to make this distinction is in part maturational and in part dependent on good-enough mothering.

Consistent with Winnicott's ideas on self/other differentiation, the present research shows that maternal behavior moves the infant towards a more active stance regarding affects. Consider the increase in maternal use of the speech function guide at 18 months. When mothers use words to require action vis-a-vis the toddlers' affective state, they are doing the equivalent of "say ta." Mothers are recognizing the separateness of their toddler–"you do something." This is quite different from what the mother of the 6 month-old does when she simultaneously tells the infant what he is feeling, why he is feeling it and how the mother is going to fix the problem. Throughout it has been argued that this has an important interpersonal function, to give the infant a format of words and feelings to internalize. At the same time, it is also true that the mother of the 6-month-old is talking to herself, as if the infant is part of her. It is as if

the mother believes if she understands and articulates her understanding, then the baby will understand even if she is unable to finding any meaning in her mother's words. This is not true of the mother of the 18 month old who requires action by the other.

In Mahler's theory of separation-individuation (Mahler, Pine & Bergman, 1975), 18 months is a critical point in development. At 18 months, the toddler is in the throes of the "rapprochement" phase of the separation/individuation process. Here the toddler has become all too aware of his separateness and begins to seek, at times, more connection and contact with his mother. In Mahler's view, the ongoing emotional availability of the mother during this phase is critical to the child's development.

The present study shows that in naturally occurring mother-infant interaction at 18 months, mothers are both acknowledging the separateness of their children and staying available to them in a variety of ways. Mothers continue to acknowledge, with affective resonance, their 18 month-olds affects. They go on responding to toddlers' affective states with words, action and frequently, even with affect. At the same time, they do less of "all the work" in regard to the symbolization of affective states, stop actively regulating affect (do less eliciting and re-orienting away from distress) and require that their toddlers do something about affective states. Thus, the ways that mothers scaffold the symbolizing of affective states also support the separation/ individuation process, effectively meeting the needs of the toddler in the rapprochement phase.

More generally, in this research the 18 month old stage of development has been a marker for the point in development at which multi-word speech begins. It is also

close to the developmental level where, according to some authors, the child's language becomes symbolic, about 20 months of age (Bates, O'Connell and Shore, 1979). It is of interest that this level of symbolic ability and changes in maternal support for symbolization of affect coincide with Mahler's rapprochement phase. The capacity to symbolize itself hinges on the capacity to separate the signifier from the signified; there has to be differentiation between a word and that which it represents. Otherwise, one does not stand for the other.

With an ability to symbolize affect, the child also develops a certain level of separation between self and experience. The child also gains a capacity to share and join with others' experiences of affect in new ways. Sad is not just how the child feels at a given moment; it is also how others feel in different contexts and the child gains access to this knowledge with the ability to symbolize affect. This too is a critical process in separation and individuation, for it both promotes differentiation of self and connection of self and other.

Limitations of the Current Research

The first limitation is the nature of the sample which limits generalizeability. The mothers and infants in this research were all from white, suburban, middle to upper-middle class backgrounds. There are clearly many different cultural norms regarding the display of emotion as well as style of speech and beliefs about infants' capacities to utilize speech. Thus, while these data do suggest some ways to characterize the ways mothers scaffold their infants' participation in the symbolization of affect, further research with more diverse samples is needed before these findings could be gernalized

in any way to other groups or cultures.

Another limitation is that this study does not fully describe mothers responses to infant affect in the population under study. By only examining discrete maternal behaviors, this work tells us very little about the flow or sequencing of interaction. It does not tell us how mothers integrate these diverse behaviors in a total response. We do not know, for example, if mothers first acknowledge and then clarify infants' affective states. We do not know if these two functions of maternal speech are correlated or if they might happen in a given sequence, acknowledge first, and clarify second, for example. Rather we know that mothers seem to make fewer verbal clarifications of infant affect to 18-month-olds than they do to 6-month-olds. A qualitative look at several transcripts showed, for instance, that at 6 months mother both asked clarifying questions–"what's a matter?"-and answered them themselves -"you bumped your head? Ouch!" Here the mother is credited with two clarifying utterances. This can be contrasted with the mother of the 18-month-old who looks up when her child begins to fuss, and says "what happened?" She does not answer the question, assuming that the child will provide that information. Thus, she is rated as having made only one clarifying response. These descriptive questions might best be answered by a qualitative study or one that looked for patterns in sequencing or relationships between types of maternal responses to infant affect.

This research also does not tell us about optimal patterns of maternal response. Might not some kinds of responses be categorized as sensitive or empathic and others less so? This is an important question, especially if this research is to be useful in any

sense to those who work with mothers and infants. Similarly, this research does not tell us if individual differences in the kinds of responses mother make to infant affect are related to differing developmental outcomes for children. For instance, which of these maternal behaviors might best support the child's capacity to symbolize subjective states in the future?

This research also does not address the role of infant state in maternal responses to infant affect. When infants were observed in laboratory, they could have been overly aroused, tired or in other ways behavior atypically. Observed infant behavior could also have been due to the infant's experiences prior to the laboratory visit–not enough sleep, minor illness, stress in the mother and so forth, Without a measure of infant state, it is not possible to know if mothers are responding in this context to typical infant behavior, or to infants under stress. Thus, until further research demonstrates that mothers use these behaviors to respond to infant affect across contexts, moods, states of arousal and so forth, the maternal behavior identified here cannot be considered "normative."

Another key limitation is that the effects of the maternal behavior identified here on infant behaviors are not measured. This research only examined a two-step interactional process. Infant express affects and mothers respond. Obviously, maternal responses have an impact on infant behavior in the moment and over time. This research does not tell us anything about either effect. And, to be able to call the maternal behaviors indentified here as "scaffolding", it would be necessary to show that they do in fact, assist the develoment of the child's capacity to symbolize affective states. This research tells us only that these behaviors are available for potential internalization by

the infant.

These questions and issues must be addressed in future research. Although these limitations are signitifant, even in the face of them, these results can add to our understanding of maternal support or scaffolding for the symbolization of affect, and of infant development and the therapist-patient relationship.

Implications of These Results for Adult Psychotherapy

To return now to "two people in a room talking," how might these results support and inform our understanding of psychotherapy? Previous work characterized the parallels between the mother-infant and therapist-patient relationships in a variety of ways. Both operate through empathy, processes of internalization and changing modes of response related to the infant/patient's current capacities. Both also point to something more than empathy, something related to action, that are necessary on the part of mother and therapist and their ongoing support for an active stance by infant and patient in relation to the capacity to symbolize affective states. What was less clear in the work describing these parallels were the specific mechanisms involved in empathy, internalization, developmentally sensitive responding and the move to an active capacity to symbolize. The present study does show some of how mothers do this with infants. What follows will be an application of specific elements in maternal support for the symbolization of affect to the therapeutic context.

At base, in regard to symbolizing processes in psychotherapy, we see that mothers respond to their infants' felt experience with affect and with language. We also see that, with development, mothers rely more on words and less on affect. These

results also show that mothers are quite active with younger infants, giving them much information about their emotional experiences and directing them towards positive affective states and away from negative affective states. In contrast, mothers require their older infants to take action themselves in relation to their feelings, especially their negative feelings. Each of these findings has a particular relevance to the practice of psychotherapy.

Revisiting the themes from earlier in this paper, psychotherapy is an interpersonal relational context for change. One key function of the therapeutic relationship is to foster the symbolization of subjective, felt experience. The recent set of papers by the Process of Change Study Group in Boston (Lyons-Ruth, 1998; Tronick, 1998 & Stern, 1998) pointed to the "something more than interpretation" that promotes therapeutic change. They argued that the texture of the therapeutic relationship,–its stability and reliability, the affective tone and the nonverbal patterning of interactions- are all elements which allow for psychic change. This occurs through the internalization of an "implicit relational knowing." What is curious about their work, however, is that interpretation (what the therapist says) and these other nonverbal elements of psychotherapy seem to be viewed as separate and distinct, almost opposites. What the present research tells us is that these elements naturally co-occur in early development and are likely naturally co-occurring in patient-therapist interaction. Part of what the infant and patient know "implicitly" then, is that words are connected to affective expressions; words are an element in "responsiveness" or in the "moments of meeting." For the preverbal infant, for a patient early in treatment, or for a very fragile

patient, it may not be the content (semantics) of language, but the fact that the words are there that matters. The words of the therapist, like those of mothers, are uttered with variation in tone, intensity, certainty etc. Perhaps we can see that it is the integration of affects with language in what the therapist does, like what the mother does, which promotes a move towards health. Those "other than interpretation" elements are critical, but it is also critical that language, symbolic representation of experience, be well integrated with the affective dimension. Only then is a meaningful, whole, therapeutic experience possible.

Kohut (1977), Loewald (1960), Pine (1985), Eissler (1953, 1958) and Stone (1980), among many others , talked about the need to modify standard psychoanalytic technique with dealing with very fragile patients. To reiterate, it is not accurate to consider very disturbed patients "infants." Yet, it may be accurate to suggest that the developmental level at which the patient's psychic structures operate is, in some respects, like that of the infant. Again, the analogy here is not that borderline or psychotic patients are infants and their therapists should treat them as such. Yet, when psychic structures are not solid or working well, there are parallels between infants' and patients' mental capacities.

The deviations from classical technique suggested by a variety of psychoanalytic thinkers most generally include provision of greater structure by the therapist and the need for greater empathy by the therapist. In regard to structure, certainly with the younger infants in this study, mother did provide more structure to the infant's affective experience–partly by eliciting positive affect and moving the infant away from negative

affect. Perhaps in the beginning of psychotherapy with more disturbed patient, the therapist may have to help the patient regulate affective states in several ways. The therapist might seek to foster a positive transference, as the mother elicits positive affects with the youngest infants. The therapist might also help the patient experience only as much pain or distress as the patient can tolerate at any given time, much as the mother sometimes re-orients the youngest infants away from negative affective states . This could also be stated as it is necessary to accept the patient's pace, especially early in treatment and with more disturbed patients. This is also akin to the general advice given beginning therapists–don't take away a defense unless there is something ready to take its place.

It also suggests that for some patients, the therapist plays a significant role in regulating the patient's affective experience. As with infants, the patient will gradually take this on himself. In another sense, this idea of the stages of affect regulation (other regulation, mutual regulation, self regulation) suggests a process of internalization. Mothers stopped doing as much directing of infants towards or away from strong affects with older infants, yet older and younger infants displayed similar amounts of positive and negative affect. This suggests a process of internalization of the regulating function. This too is a goal of psychotherapy.

As indicated earlier in this paper, Pine focused on both what parents and therapists are (their presence) and what they do (their actions) as important to an understanding psychotherapy. What both the therapist and parent do, can be understood as "interpretation" in its broadest sense; they help the infant/patient make

meaning from ephemeral experiences, like affects, wishes, or unconscious motivation. This study suggested developmental differences in how actively parents "interpret." Mothers of the youngest infants were more likely to provide more information (i.e. clarifying and labeling of affective states) than were the mothers of older infants. Considering the process of therapy over time, perhaps at the beginning stages of treatment , the therapist takes on a more educative role regarding affective states. And, as Pine and Loewald suggested, the educative role of the therapist may help move the patient just a step ahead, as does maternal scaffolding of infants' capacity to symbolize affect.

Prior literature suggests that by 18 months, infants have begun to label affective states. Perhaps their mothers' greater use of labels at earlier stages has supported this ability. This seems quite parallel to the notion that over time, it is the goal for the patient to be able to recognize in himself varieties of affective experience, to talk about these experiences and ultimately, in some sense, to make his own "interpretations." Overall, perhaps, we can say the patient gradually becomes more active, more of an author of the therapeutic process. Certainly this is parallel with what occurs between mothers and infants. As mothers gradually require their infants to become more active participants in talking about their emotional experience, so do therapists also increasingly support a more active stance of patients towards their internal worlds.

Finally, this study of mother-infant interaction showed that symbolization of infant internal experience is an integral part of what mothers do when they respond to their infants cry or laugh. Mothers almost always represent some aspect of the infant's

feeling state, whether it be the causes, consequences or names of those states. Likewise, the therapist strives to do this as well as help the patient do this for herself. What this study suggests is that what might be most helpful to the patient is not always to assume that what needs to be articulated or symbolized is found in the content of what the patient says. Instead, what most needs translation to a symbolic level is the nonverbal, affective elements the patient presents along with his words. This may seem paradoxical in a paper so focused on words; however, the task in psychotherapy is to give words to that which remains unsymbolized.

Winnicott's description of the development of the symbol in the context of mother-infant interaction is typically enigmatic ("Say ta.") Yet his ideas on transitional objects and transitional phenomena may give us the richest, most complex and complete understanding of what is the same in mother-infant and therapist-patient relationships. Empathy, for both mother and therapist, requires leaving the land of certaintly or objective reality and entering an ocean, a constant movement of force without form. The mind of mother and therapist constantly return to solid ground for perspective and apply their knowledge of the tides, currents, weather and coastline of affectivity. Through the relationship and with their words, they attempt to give form to the formless.

This is what I think Winnicott meant when he talked about playing, the swimming out and back. What is different, of course, is that at first the infant literally goes about swimming in the arms of his mother. The patient may not have such external or internal supports. In fact, the patient may already be in over her head, with

no sense of how to find land. In the context of a relationship, where the therapists' words are connected to the affective meaning of experience, the patient may find a life buoy and make it to shore. The therapist has to continually venture into the deepest of seas to keep the patient afloat while the patient learns to swim. This is the goal of therapy, just as the goal for the infant is to swim, not to keep piggy-backing through the water.

By using the word "playing" to describe this process, Winnicott suggested that this movement requires freedom and pleasure in the process to succeed. The present research tells us something about the words that can be this lifeline and road to self-propelled buoyancy. Words can acknowledge, clarify, label and guide one through both ephemeral and overpowering affectivity, but only when they are solidly connected to lived experience. The melding of these two kinds of meaning, in a spirit of freedom and pleasure, is the essence of "playing."

Freedman (1998) postulated that psychoanalysis is an inherently symbolizing activity. The present research also reveals that the mother-infant relationship is an inherently symbolizing activity. In the mother-infant dyad, symbols are made meaningful through their connection to the nonsymbolized, or to direct, lived, felt experience. The creation of symbols imbued with affective meaning is vital to both mother-infant and therapist-patient relationships. This is the most important message of the present research. Symbols (words) are given life by the nonsymbolic (affects). Ultimately, what I hope this paper reveals, is that the creation of symbols, symbols connected with affective meaning, is central in therapeutic and developmental contexts.

Table 1: Summary of Coding Categories in the Literature on Mother-Child Conversations about Internal States

Study	Categories	Description
Malatesta & Haviland (1982)	elicit affect comment on affect discourage affect	elicit & discourage regulate affect; comment gives information about affect
Dunn, Bretherton & Munn, 1987	explain guide comment label	the explain category referred to antecedants & consequences of affect or what could alleviate affective states
Miller & Sperry,1987	verbs of aggression justification of anger self assertion accept suppress	Focusing on anger, most related to language to help children manage anger states; most are action directions, justification of anger states or reference to "why" of the affect
Zahn-Waxler et al, 1993	labels causal statements	Labels of affect, utterances had four functions, comment, explain/clarify, guide behavior and socialization of emotion, i.e appropriateness
Bertherton & Beeghly, 1982	confirm negate/ deny command action causes change/maintain	confirm, negate and deny involve information about appropriateness of affective states. Confirm also recognizes affective states. Command action and change/maintain affect all involve action

Table 1 continues

Capatides & Bloom, 1995	label encourage child action	Action directions in service of maternal goals or child goals

Table 2: Procedures for Different Age Groups/Observations for Infant Affect

Age Group	Procedures				
	Bayley-MDI	Face-to-Face Play	Strange Situation	Free Play	Competing Task
6- Month-Olds	Yes	Yes Coded for Infant Affect (3 minutes)	No	Yes Coded for Infant Affect (15 minutes)	No
12-Month-Olds	Yes	No	Yes	Yes Coded for Infant Affect (15 minutes)	Yes Coded for Infant Affect (3 minutes)
18- Month-Olds	Yes	No	Yes	Yes Coded for Infant Affect (15 minutes)	Yes Coded for Infant Affect (3 minutes)

YES: Procedure during Lab Visit 1 Occurred for this Age Group
NO: Procedure during Lab Visit ! Did Not Occur for this Age Group

TABLE 3
Functions of Maternal Speech During Expression of Infant Positive and Negative Affect

FUNCTION	DEFINITION	EXAMPLES
FACILI-TATE	Refers to comments designed to help the child do something thatshe wishes to do, to either reduce distress or increase positive affect; refers primarily to helping the child reach his/her goal	Six month old is reaching for a toy just out of her grasp; she gets frustrated; mother says, "You can get it; it's not too far."
ALLEVIATE	Refers to statements whose intent is to comfort the child AND to suggestions/questions by the mother for an action the mother could take that would help eliminate the distress	Child is crying. Mother says, "It's okay. It's okay."
CLARIFY	Refers to questions that ask about the antecedants or causes of affective expression; can be clarification of the mother or child's understanding of the eliciting context or affective state itself	Child laughs & smiles at the mother, playing peek-a-boo. Mother says "Do you like this game?" Child crying &mother says "Whatsa matter?" or "Are you mad?"
ACKNOW-LEDGE	Refers to comments and statements which function to notice or share the affective state of the child	Baby starts to cry and mother says "Oh no!" in a feeling tone. Baby squeals with delight & mother says "yes" with enthusiasm
REORIENT	Refers to statements, directions and questions that aim to refocus the child on activities/objects etc. that will change the child's affective state	Baby is crying and flailing her arms while lying on stomach. Mother picks up a rattle and shakes it energetically, saying, "See the funny face; see the funny face."
LABEL	Refers to instances where the mother uses a term identifying the affective state of the child	"This is so frustrating for you." "You really like this." or "Oh so sad."

Table 3
continues

OTHER	Refers to instances where the mother describes what objects or actions unrelated to the affect or context of affective expression in any way	Laughing, the baby is opening and closing book. As the book opens mother points to a picture and says "Red, blue." Child cannot get a toy balls out a bottle & fusses. As mother tries to shake the balls out, she says, "Shake, shake, shake."
GUIDE	Refers to instances where the mother seeks to change the child's behavior--it often occurs in the situation where the mother is setting a limit. Often guide statements are the source of the child's negative distress; directions which serve the mother's agenda.	Child is twirling around and getting very silly. Mother says "Stop that right now." Child takes another toy out and mother says "Put the other one away first."
EVALUATE	Refers to instances where the mother indicates disapproval or approval of the affective expression	Child cries loudly and mother says "shush" with a negative tone. Child is giggling and mother says "It's great to see you laugh."
ELICIT	Refers to instances where the mother says something that aims to induce positive affect, often in a game context (peek-a-boo) or by singing. It includes statements that induce negative affect.	Mother sings or plays peek-a-boo with her child & baby laughs. Mother says "No you can't do that." Child begins to cry.

Table 4
Means and standard deviations for proportion of infant positive and negative affect episodes with each type of maternal response

Response Type	Means (SD)	Means (SD)	Means (SD)	Means (SD)
Positive Infant Affect	Overall	6 months	12 months	18 months
speech				
affect	.89 (.26)	.91 (.27)	.81 (.37)	.94 (.10)
action	.78 (.37)	.80 (.31)	.74 (.38)	.80 (.41)
	.79 (.32)	.76 (.36)	.85 (.21)	.77 (.37)
Negative Infant Affect				
speech				
affect	.96 (.16)	1.00 (.00)	.97 (.09)	.94 (.23)
action	.51 (.40)	.82 (.22)	.29 (.37)	.45 (.41)
	.72 (.37)	.85 (.36)	.80 (.31)	.57 (.38)

Table 5

F ratios, degrees of freedom and significance levels for multivariate analysis of variance (MANOVA) for type of maternal behavior during positive and negative infant affect

Effect	F	df	p
Age	4.03	6,80	.00**
Gender	.59	3,40	.62
Affect Type	15.58	3,40	.00**
Age X Gender	1.20	6,80	.31
Age X Affect Type	2.37	6,80	.03*
Gender X Affect Type	.89	3,40	.46
Age X Gender X Affect	.48	6,80	.82

Table 6
Univariate Analyses of Maternal Response Type by Infant Age and Affect Valence

Maternal Behavior	F	df	p.
Speech			
Age	.75	2,45	.48
Affect Type	3.36	1,45	.07
Age by Affect Type	1.22	2,45	.31
Affect			
Age	4.52	2,45	.02
Affect Type	12.07	1,45	.00
Age by Affect Type	3.38	2,45	.04
Action			
Age	2.24	2,45	.12
Affect Type	.64	1,45	.43
Age by Affect Type	1.38	2,45	.26

Table 7
Means and standard deviations for proportion of maternal utterances in each function category during all, positive and negative infant affect displays by age

Function	M (sd) All ages	M (sd) 6 months	M (sd) 12 months	M (sd) 18 months
CLARIFY	.20 (.03)	.26 (.10)	.18 (.11)	.18 (.10)
positive	.14 (.14)	.23 (.18)	.07 (.11)	.13 (.11)
negative	.25 (.15)	.30 (.13)	.24 (.18)	.23 (.15)
DISTRACT	.10 (.10)	.17 (.10)	.10 (.08)	.05 (.08)
positive	.02 (.06)	.04 (.09)	.00 (.02)	.02 (.05)
negative	.16 (.15)	.25 (.12)	.18 (.17)	.08 (.13)
EVALUATE	.01 (.03)	.01 (.03)	.02 (.04)	.01 (.02)
positive	.01 (.03)	.01 (.03)	.01 (.02)	.01 (.04)
negative	.02 (.06)	.02 (.06)	.03 (.07)	.01 (.02)
LABEL	.02 (.03)	.02 (.03)	.01 (.02)	.01 (.02)
positive	.02 (.04)	.02 (.04)	.00 (.01)	.02 (.04)
negative	.02 (.06)	.02 (.06)	.02 (.04)	.01 (.02)
ELICIT	.17 (.16)	.17 (.16)	.23 (.21)	.12 (.13)
positive	.31 (.27)	.31 (.27)	.43 (.29)	.17 (.16)
negative	.05 (.09)	.05 (.09)	.04 (.07)	.08 (.11)
FACILITATE	.08 (.11)	.04 (.05)	.07 (.10)	.10 (.15)
positive	.09 (.13)	.04 (.08)	.06 (.10)	.14 (.16)
negative	.08 (.14)	.04 (.07)	.08 (.13)	.10 (.18)
GUIDE	.12 (.15)	.02 (.02)	.10 (.09)	.21 (.18)
positive	.11 (.17)	.02 (.03)	.07 (.14)	.21 (.21)
negative	.10 (.14)	.01 (.02)	.09 (.11)	.18 (.17)
ACKNOWLEDGE	.12 (.08)	.16 (.09)	.09 (.09)	.11 (.07)
positive	.11 (.16)	.13 (.13)	.08 (.10)	.12 (.21)
negative	.14 (.12)	.13 (.08)	.14 (.14)	.15 (.13)
OTHER	.14 (.12)	.07 (.08)	.16 (.13)	.11 (.12)
positive	.19 (.16)	.10 (.13)	.26 (.19)	.21 (.14)
negative	.10 (.13)	.06 (.08)	.14 (.19)	.09 (.10)
ALLEVIATE	.04 (.06)	.05 (.05)	.04 (.07)	.03 (.06)
positive	.00 (.02)	.00 (.01)	.00 (.00)	.01 (.03)
negative	.07 (.10)	.10 (.09)	.05 (.08)	.06 (.12)

Table 8
F ratios, degrees of freedom and significance levels for the univariate analyses of maternal speech functions by infant age and affect type

	Age		Affect Type		Age X Affect	
Function	F	(df)	F	(df)	F	(df)
Clarify	4.16*	(2,43)	14.40**	(1,43)	0.81	(2,43)
Distract	5.29**	(2,43)	49.28**	(1,43)	5.62**	(2,43)
Evaluate	0.22	(2,43)	4.25*	(1,43)	1.57	(2,43)
Label	6.02*	(2,43)	0.36	(1,43)	0.66	(2,43)
Elicit	3.65*	(2,43)	55.04**	(1,43)	6.45**	(2,43)
Facilitate	1.30	(2,43)	0.20	(1,43)	0.52	(2,43)
Guide	11.89**	(2,43)	0.11	(1,43)	0.18	(2,43)
Acknowledge	0.85	(2,43)	0.16	(1,43)	0.18	(2,43)
Other	3.90*	(2,43)	8.96**	(1,43)	1.35	(2,43)
Alleviate	0.90	(2,43)	20.51**	(1,43)	1.02	(2,43)

*p < .05 **p < .01

Figure 1: Interaction Effect of Infant Age and and Infant Affect Valence on Maternal Affect

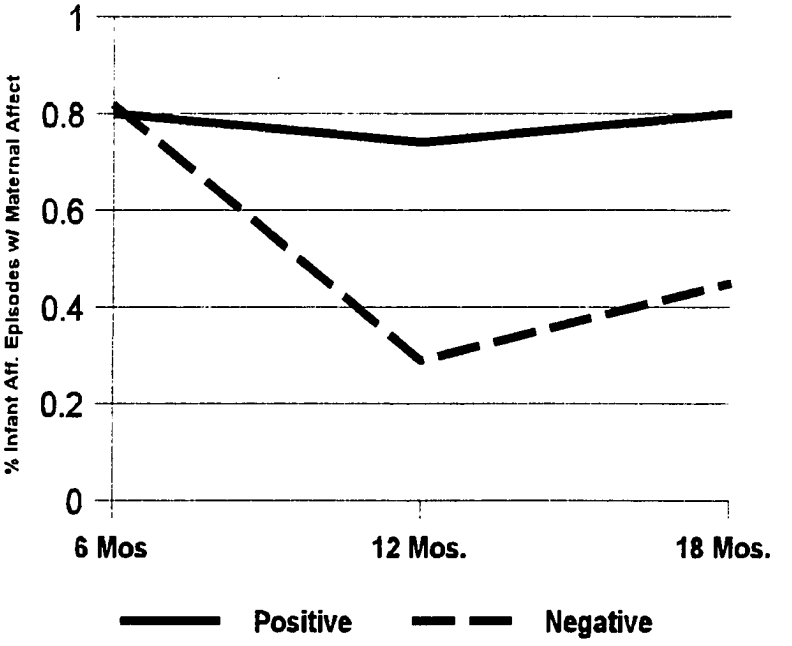
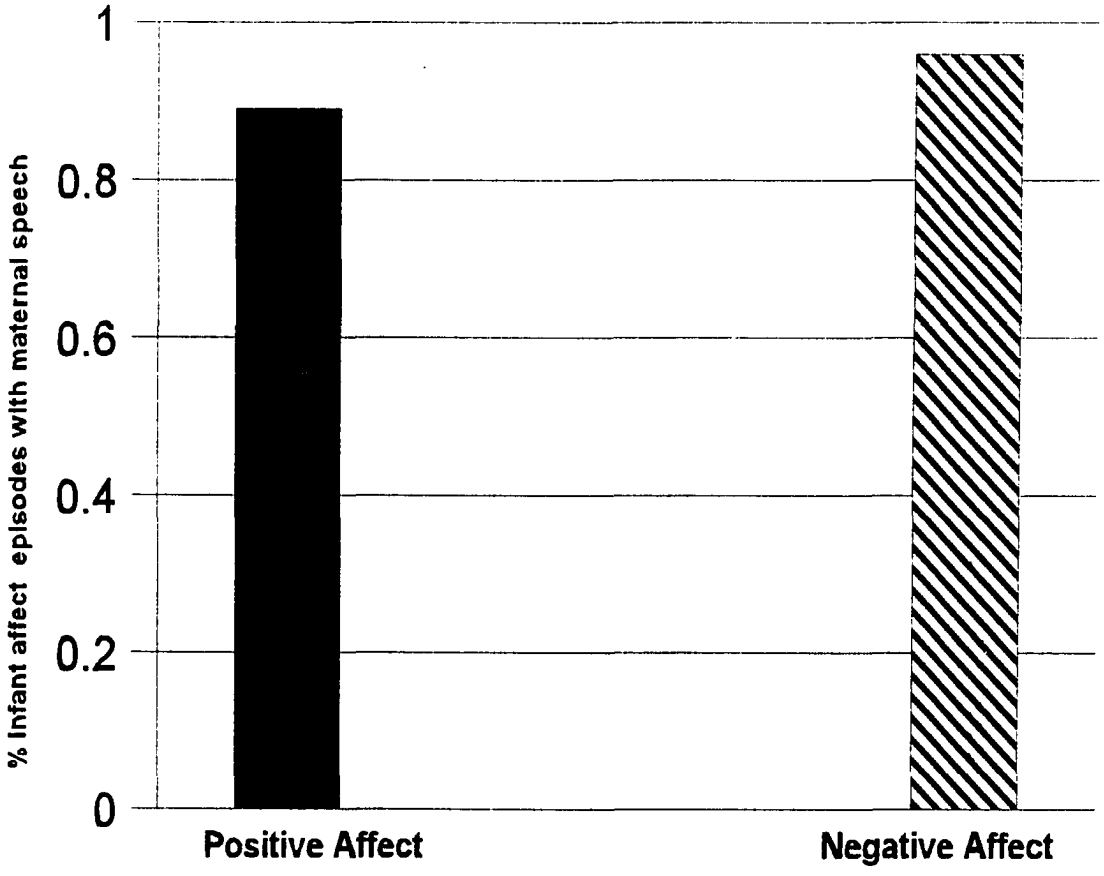


Figure 2: Main Effect for Maternal Speech by Infant Affect Valence



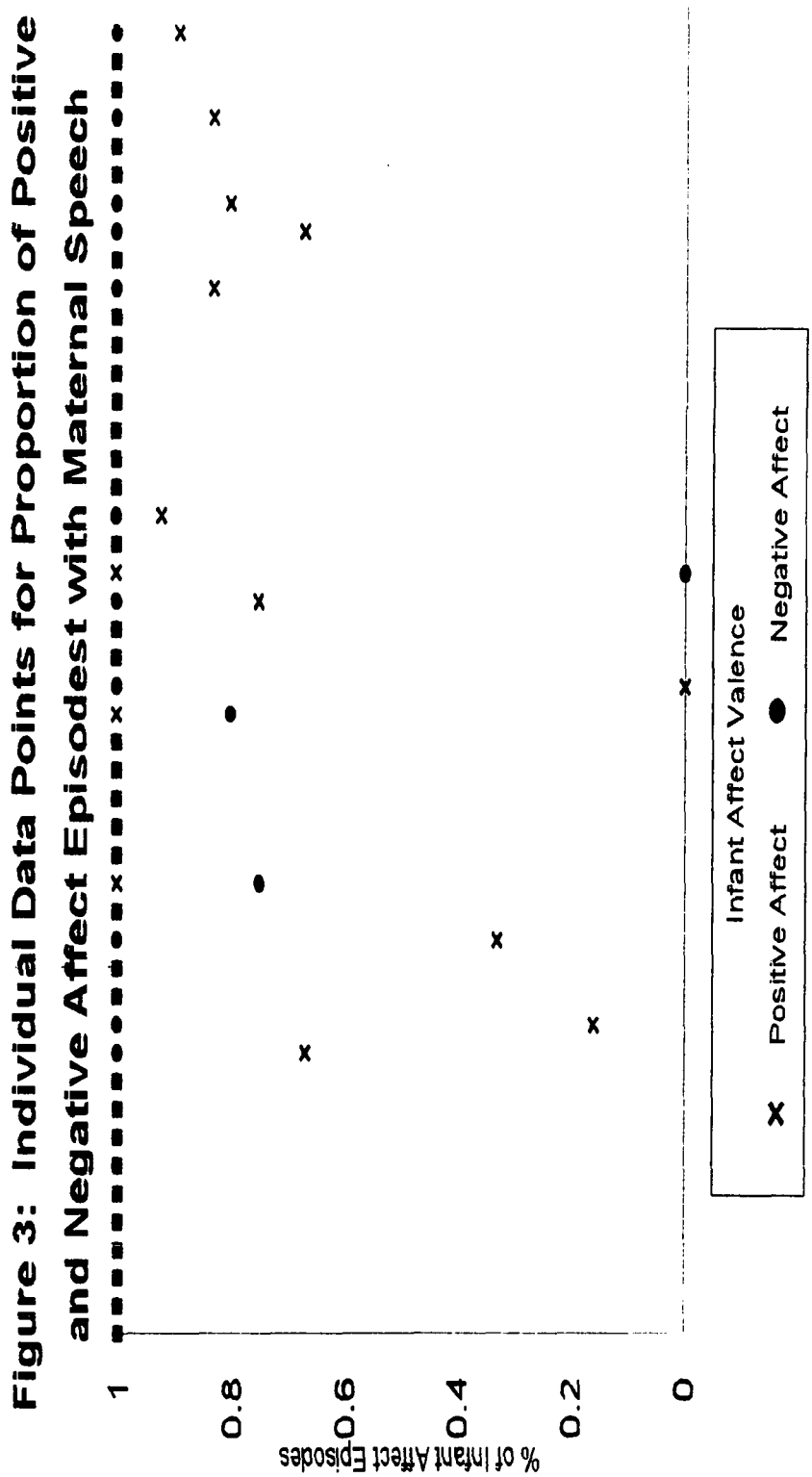


Figure 4a: Maternal Speech Functions During Positive Infant Affect

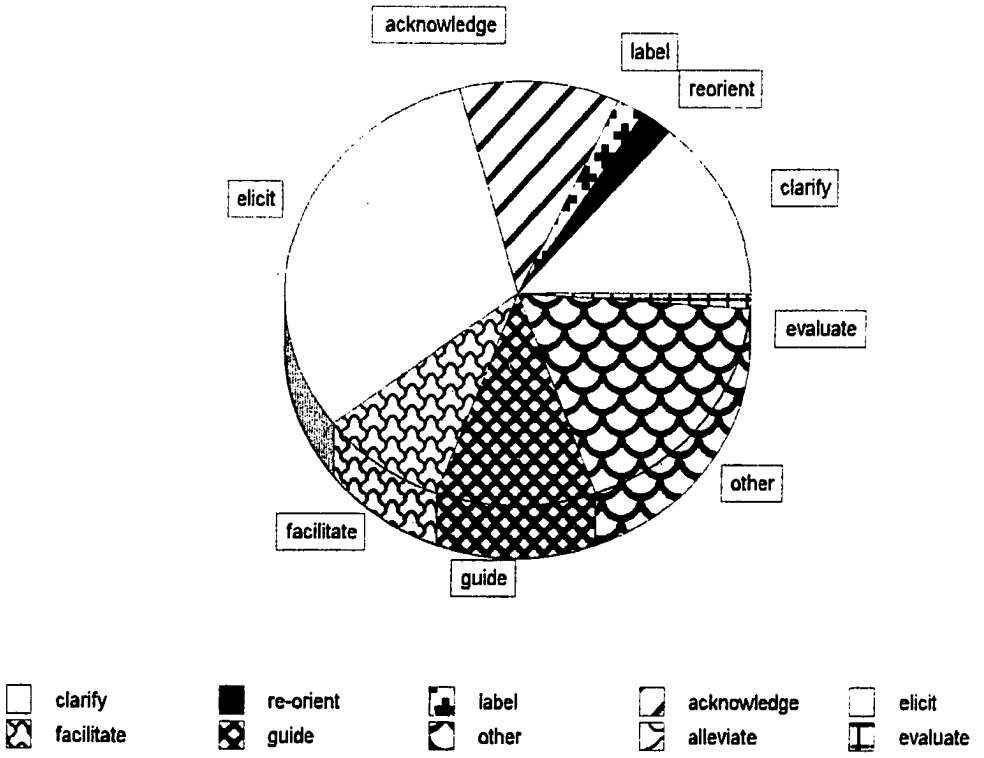


Figure 4b: Maternal Speech Functions During Negative Infant Affect

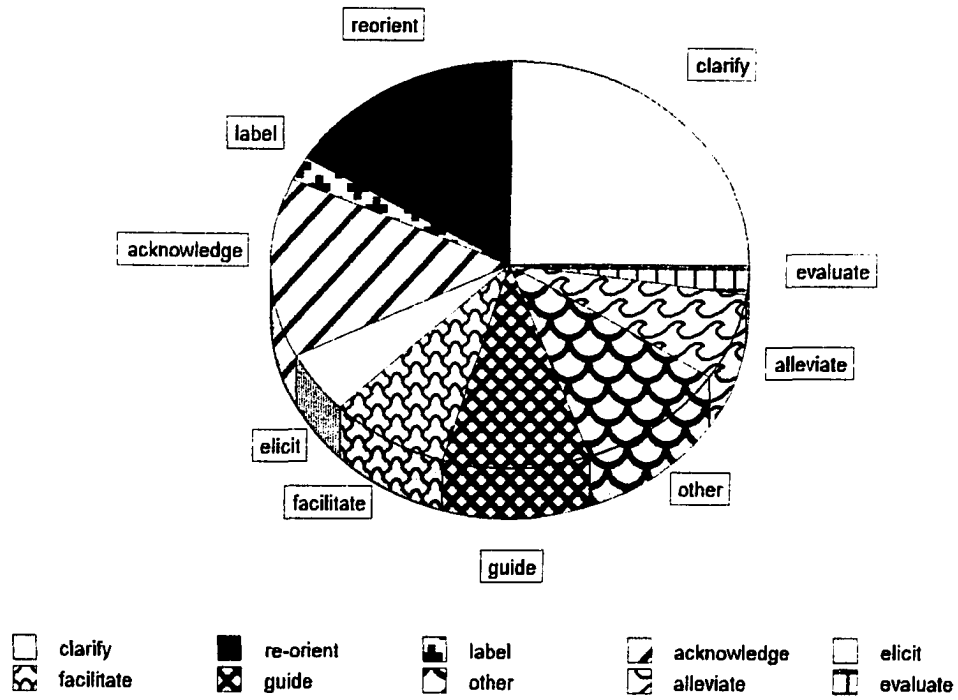


Figure 5: Main Effects for Age By Language Function

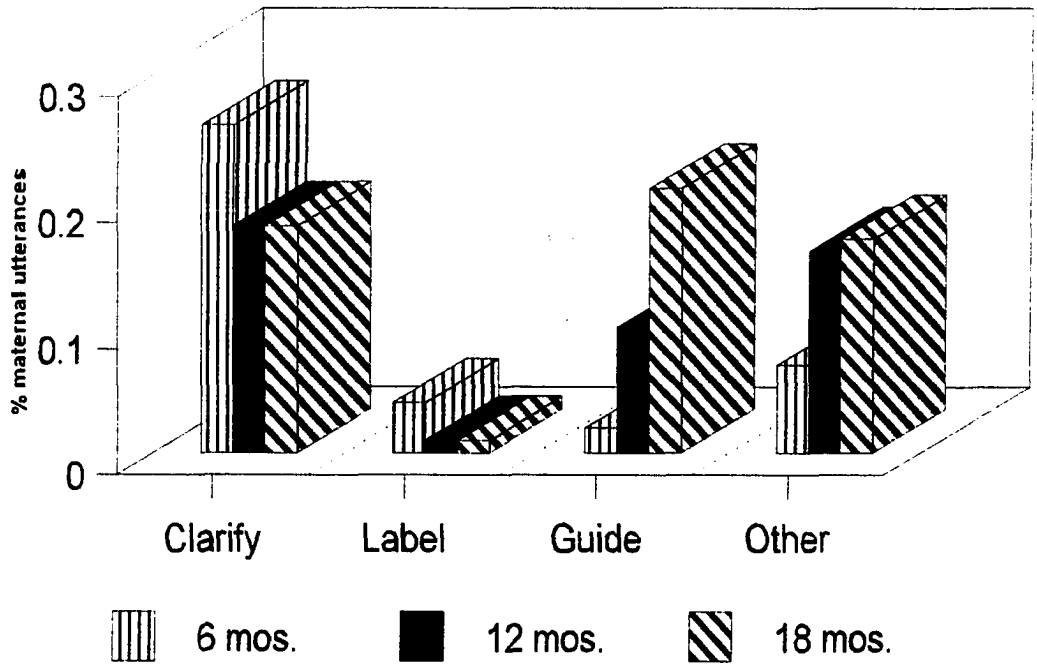


Figure 6: Main Effects for Affect Valence Maternal Speech Functions

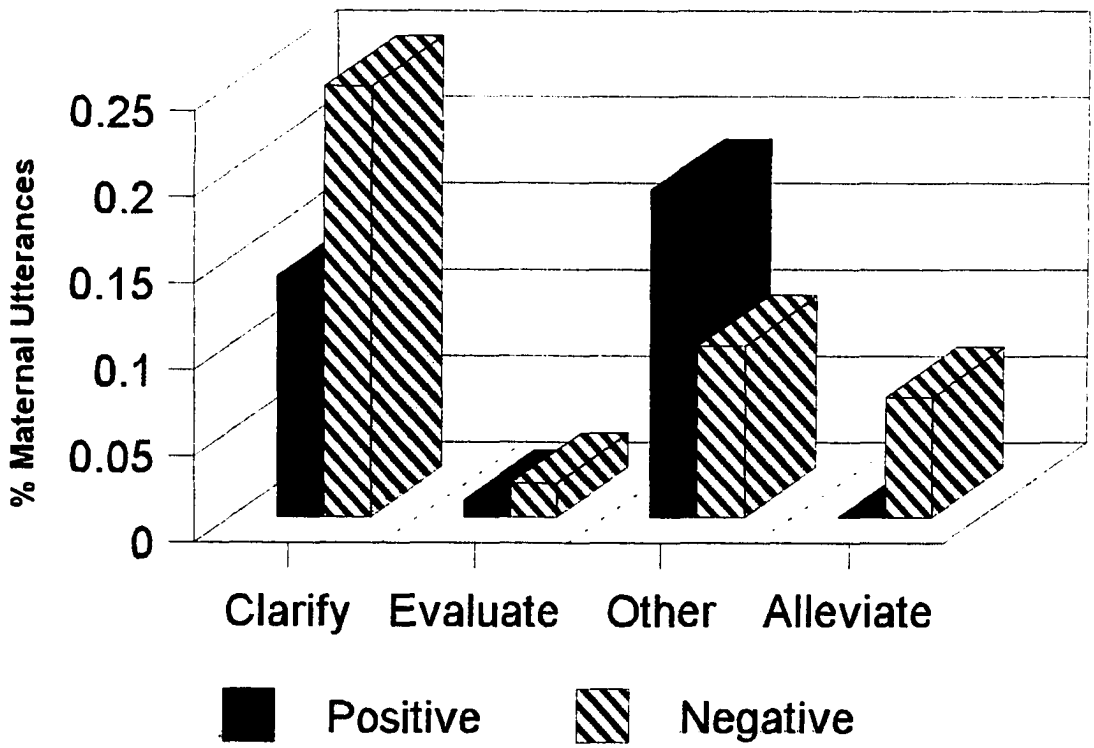


Figure 7: Infant Affect by Age Interaction

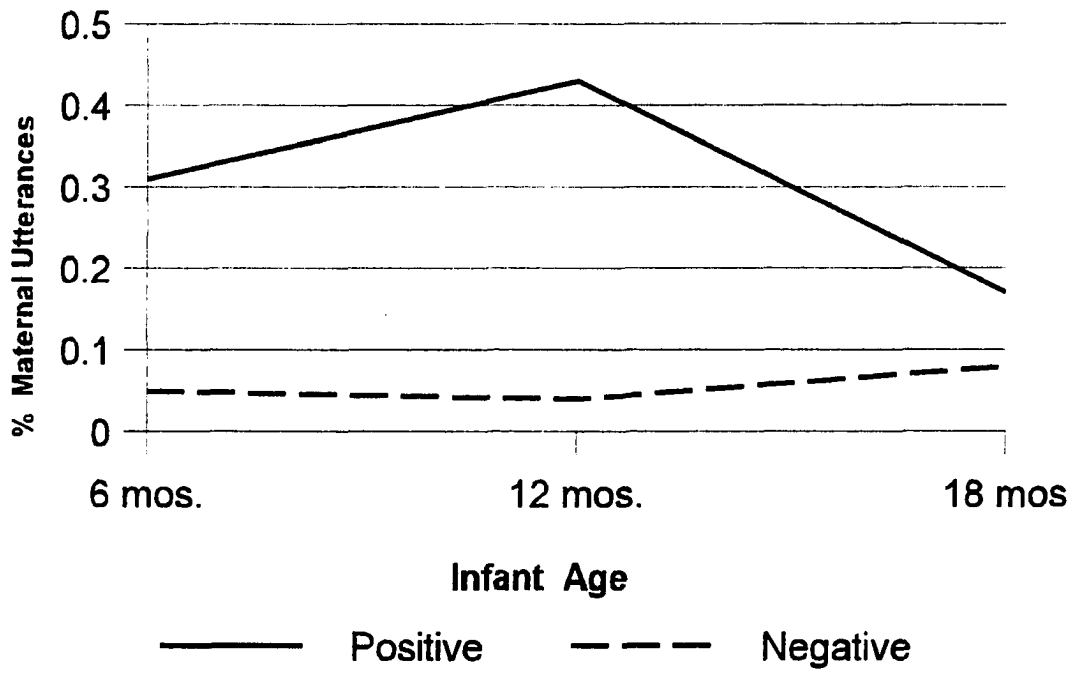
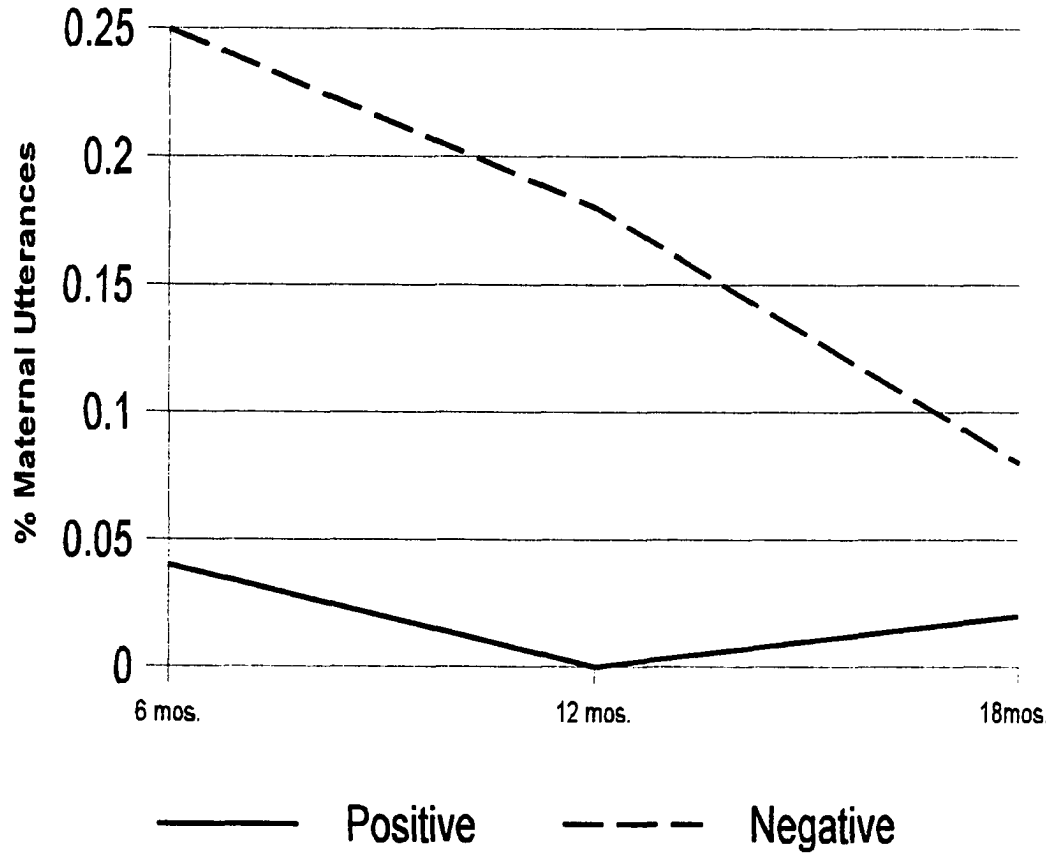


Figure 8: Affect by Age Interaction



APPENDIX A: CODING MANUAL FOR INFANT AFFECT

Adapted from R. Thompson Infant Affect Scales

You will code 15 minutes of free play and 3 minutes of face-to-face play for the 6-month-old infants and 3 minutes of the competing task episode for the 12 and 18-month-old infants. You will code each five second for presence and valence (positive or negative affect).

Facial Expressions

These expressions are shown in schematic from the Thompson scales on the following page.

Positive Expressions

1. Bright, high intensity smile or full, open mouth smile

2. Grin or Faint Smile (denotes clearly pleasureable but muted response)

Neutral expression

3. This may be an attentive receptive expression indicating interest, low levels or surprise or low levels of wariness

Negative Expressions

4. Wary Brow, pout or partial cry face

5. Full or angry cry face

Vocal Expressions

When you cannot see enough of the baby's face to code from facial information, you will have to rely on vocal cues. It is important to realize the individual child's "baseline" intonation to determine if vocalizations are positive, negative or neutral. The following guidelines should be helpful in determining vocal affect:

-Instances of laughter or positive shrieks that indicate excitement and enthusiasm are always coded positive.

-When vocalizations are not clearly laughter, then the key to determining how to code is intensity; changes in the child's baseline pitch that has a rising intonation are coded positive.

-Crying sounds and sounds of mild to moderate distress are ccded negative.

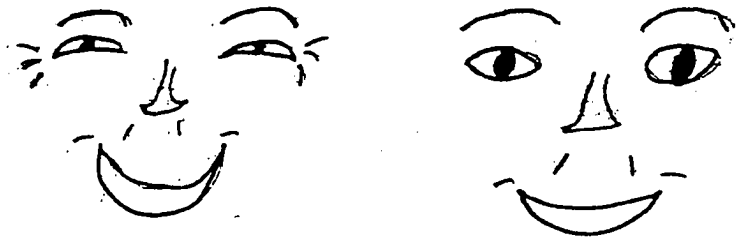
-Vocalizations very close to baseline that express intereste or are just "chatter" are neutral.

If you cannot see the baby's face and there are no vocal cues to expressiveness, and/or there is no distinctly positive or negative features, code 3.

If you see mixed positive and negative affect in one interval record them both with a slash between, like 2/4.

If you see an expression at the very end or edge of an interval and after viewing 3 times, cannot tell which interval it belongs to, code it as occuring in both.

1.



2.

4.

5.

THOMPSON INFANT AFFECTS SCALES

Facial Expression Measure

This measure is designed to appraise the characteristic quality of infant facial expressions of emotion. These rating categories consist of broad clusters or gestalts of readily-identifiable facial cues which can be observed in freely-moving infants in a laboratory playroom. Generally speaking, two areas of the face contain the greatest amount of emotional information. First and primarily is mouth region: the shape of the mouth and lips, whether the mouth is open or closed, and other factors contribute to easily-identified smiling, pouting, frowning, or the cryface. Second is the eye-forehead region: whether the eyes are wide, narrow or crinkled (as in smiling); whether the eyebrows are raised (creating furrows in the forehead) or pursed (creating wrinkles between the eyebrows just above the nose), and related features. Other features of the face – including the appearance of naso-labial folds from the nose to the corners of the lips – also contribute to the constellations of facial characteristics denoted by this measure.

The assessments of facial expressions employing this measure can be conducted in two ways: (1) through time-sampling of facial behavior at 5-second intervals throughout the observational period, and (2) through identification of specific parameters of facial behavior (e.g., initials onset of a particular emotion; peak expression; etc.). Both procedures will be used in this study. In both cases, assessments of facial expressions should be conducted with the audio off. This will enable the rater to focus on the baby's facial activity independently of vocal expressions of emotion.

When rating infant facial activity, be sure to take the baby's characteristic "at rest" neutral facial display into account. Ratings of either positive or negative emotion should be noted when facial activity deviates from this "at rest" display. In particular, when infants are attentive or orienting to an event, the corners of their lips are frequently downturned somewhat. When this occurs the baby should not be rated as pouting; rather, such rating should be reserved for instances in which the lip corners are noticeably downturned beyond the baby's usual "at rest" position. This will ensure greater accuracy in the use of this measure.

RATING CATEGORIES

0 No assessment possible. The baby is out of range or otherwise cannot be observed facially for the entire rating period. If the infant can be observed for any portion of the scoring period, rate on this basis. If the infant cannot be rated for the entire period, provide an inference of the baby's facial expression in parentheses – that is, your best guess of the baby's expression (e.g., 0(2), 0(4), etc.).

Positive expressions

1 Bright smile. This expression is similar to the "full smile" (#2), in that the infant is showing a full smile with lips pulled back and turned up, the mouth is open, and clear naso-labial folds are apparent (i.e., folds running down from the nose to the outer edge of the mouth beyond the lip corners), often with puffy cheeks. In addition, this high-intensity smile is accompanied by a narrowing of the eyes and, sometimes, the appearance of crows-feet crinkling at the outer edges of the eyes. Sometimes the nose is scrunched-up as well. In short, the distinguishing characteristic of this expression is the participation of the eyes region in the smile, conveying the impression of a bright, animated pleasure response.

(Note: Occasionally eye-narrowing or squinting is due either to the peek-a-boo cloth moving across the baby's face or to being touched or tickled with the puppet in the face. Discount these instances of eye-narrowing, since they may be due simply to the facial stimulation which is involved, and not really reflect a high-intensity pleasure response.)

2 Full smile. In this expression, the infant displays a full, open-mouth smile, with the lips pulled back and turned up, puffy cheeks, and clear naso-labial folds. Occasionally dimples may appear. Eyes are usually focused and attentive.

3 Grin or faint smile. This expression denotes a clearly pleasurable but muted response in either of the following ways:

a. There is a small upturning of the corners of the mouth, sometimes barely enough to be called a smile. In contrast to the full smile, there is little or no pulling back of the corners of the lips, and thus little puffing of cheeks or naso-labial folds.
b. The baby grins with a small, closed-mouth smile or a narrow open-mouth smile. The lip corners are pulled back somewhat and are turned up, resulting in some naso-labial folds. However, the lips are not pulled back sufficiently to produce the open-mouth expression characteristic of a full smile.

3a

3b

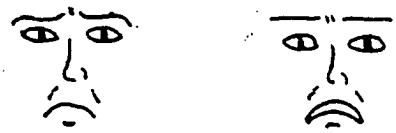
3b

4 Attentive, receptive expression. This category includes facial expressions which lack distinctly positive or negative expressive features; quite often these occur when the infant is attending to some event. Usually the eyes are widened, and the mouth is straight (or, for some babies, the corners of the mouth may be slightly downturned). Mouth may be either closed or opened slightly. Naso-labial folds are absent. Eyebrow position can be variable: either straight but drawn together toward the middle (4a), narrowed a bit toward the middle (4c) (both indicating focused attention or interest), or raised (indicating surprise) (4b).

Distressed expressions

5 Wary brow. The distinguishing characteristic of this category is the eyebrows: they are drawn close together and slightly raised where they meet at the center of the forehead, resulting in ridges over the baby's eyes and in the middle of the forehead. Use this category when the wary brow is unaccompanied by any other signs of distress in the baby's face; when other distress cues co-occur with the wary brow, use higher rating categories.

6 Pout. This expression denotes low-level fear or distress, and it is denoted by a mild turning-down of the corners of the mouth and/or a jutting lower lip. The mouth may be either open or closed, and naso-labial folds may be apparent. The pout may or may not be accompanied by the brow furrowing described in the preceding category (#5)



7 Partial cryface. Expressions included in this category show elements of the cryface described below, but the face is not entirely screwed-up, and the eyes are open and focused. The eyebrows are furrowed and drawn together at the center of the forehead. The mouth may assume a pout with a jutting-out of the lower lip. More typically, however, the mouth is open and round or kidney-shaped (as in the illustration), with the corners downturned. Naso-labial folds are apparent. Together, these cues indicate definite distress in the baby.

8a Angry cryface. Expressions in this category are distinguished from those which are rated as a typical cryface (#8b) in either of the following ways:

a. The eyebrows are drawn down together in the middle of the forehead, with vertical lines appearing between the brows and, usually, ridges evident higher in the forehead.
b. The mouth is open and is squarish or box-shaped rather than turned-down at the corners or kidney-shaped. Naso-labial folds are apparent.

In the angry cryface, the facial features are generally screwed-up, although often not as much as in the more typical cryface expression. In particular, eyes are likely to be open and focused.

8b Cryface. Expressions in this category are characterized by the screwing-up of facial features: eyes are narrow and compressed by brow-furrowing, with the result that the infant's gaze is squinted and often nondirected; the nose is wrinkled; the mouth is open (and may be kidney-shaped) with naso-labial folds apparent; eyebrows are lowered in the forehead and narrowed. The infant looks clearly distressed.

Vocalization Measure

This measure is designed to appraise the characteristic quality of infant vocal expression of emotion. For rating purposes, vocalizations include all instances of vocal activity which have an implicit signaling or communicative capacity. This encompasses all forms of crying or calling, as well as laughing, babbling, whining, squealing, and cooing. It excludes simple instances of audible inhalation (except in the special case of category 7, "distress gasps"), vocal sounds which are an accompaniment to motor exertion (such as grunting), and behaviors such as hiccups.

The vocalizations encompassed in this scale differ from one another in a number of important ways. The intensity or loudness of the baby's vocal activity is one dimension, which primarily reflects how hard air is being forced from the lungs through the vocal cords. In general, more intense pleasurable as well as distress expressions are louder. The rhythmicity of the vocalization has to do with the alternation of vocal activity and inhalation: is it regular or irregular? Generally speaking, milder forms of distress crying, for example, are arrhythmic or irregular, while the more intense forms of crying are characterized by a more rhythmic alternation of crying and inhalation. A third dimension concerns whether the vocalizations are continuous or intermittent: do they occur in short bursts, or in longer bouts? The pitch of the baby's vocal activity is a fourth dimension: is it high or low? Pitch is especially useful in distinguishing among vocalizations denoting pleasure in the baby. Finally, there is the assessment of the sound quality of the baby's vocalizations: does the infant sound excited? angry? distressed? anxious? is the cry imperative or demanding?

The assessments of vocal activity employing this measure can be conducted in two ways: (1) through identification of specific parameters of vocal behavior (e.g., initial onset of a particular class of vocalizations; peak expressions; etc.), or (2) through time-sampling of vocal activity at 5-second intervals throughout the observational period. Both procedures will be used in this study in the order noted above. In both cases, assessments of vocal expressions should be conducted with most of the video material (except for the time information at the bottom of the screen) masked. This will enable the rater to focus on the baby's vocal activity independently of facial expressions of emotion.

RATING CATEGORIES

0 No vocalization was heard at any time during the scoring interval.

1 Intense delight. This includes sustained bouts of laughter (which can sound like coughing, especially in younger infants), squealing, and other vocalizations denoting high-intensity delight in the baby. These are typically of high pitch, are loud and piercing in sound intensity, arrythimic in temporal pattern. They characteristically occur in "runs" which persist over most of the scoring episode.

2 Positive arousal. This includes more intermittent, brief squeals, laughs, shrieks, shouts and similar vocalizations denoting excitement and delight in the baby. These occur briefly and irregularly over the scoring interval, and do not characterize the majority of the period. They are typically high in pitch, loud and piercing in intensity, and arrhythmic.

3 Mild pleasure. These include vocalizations denoting low-levels pleasure, such as cooing (i.e., vowel-like sounds, such as "ah" or "oo") which has a high but variable pitch. These vocalizations tend to be more continuous in their temporal pattern, and do not have the piercing quality which is characteristic of more intense expressions of infant delight. Most vocalizations in this category have a variable, lilting pitch, with a slight rising inflection of the pitch at the end of the expression. However, some expressions convey pleasure through their exuberance rather than pitch alone.

4 Neutral vocalization. This includes babbling (i.e., consonant-vowel combinations, such as "ba, ba") and other vocalizations which have neither a distressed nor a positive quality. Like pleasure vocalizations, these are also characteristically intermittent, of brief duration, and discontinuous in quality. Whereas the pitch of most pleasure vocalizations is characteristically lower and less variable.

5 Mild distress. This includes brief, mild whines, squeals of frustration or anguish, mild wails or sobs, momentary fretting and other vocalizations which have a distinctly negative quality. These are characteristically intermittent, discontinuous, arrhythmic, and of brief duration; generally, most have a low and noninflected pitch. While not full-fledged crying or calling as such, they nevertheless indicate mild or low-level intensity of distress in the infant.

6 Calling. This includes vocalizations which seem intended to signal or summon the caregiver, as they have a distinctly negative or distressed quality. Like protest crying, there is an imperative tone to this kind of vocalization. In contrast to protest, however, calling is of brief and intermittent duration, is more discontinuous, and convey much milder distress. Pitch is generally low and noninflected.

7 Distress gasps. The infant's breathing has become audible and the rate has increased; the baby is taking breaths in short, quick gasps. What has become audible is the breathing; there is no cry accompanying this. Often, but not always, gasping of this kind occurs as a prelude to a full-fledged cry, or immediately follows a long bout of sobbing.

8 Fussing or whimpering. The cry is partial or intermittent rather than continuous over the scoring interval, conveying the impression of moderate distress in the baby. In particular, the pattern of breathing and crying is arrhythmic, in contrast to the more rhythmic alternation of crying and

inhalation which is more characteristic of sobbing. In fussing, the cry is more intermitt4ent and discontinuous; crying is frequently interrupted. The cry also has a distressed rather than an angry or anxious character. Pitch may vary widely, but generally is moderate of low.

9 Whining. The quality of this cry conveys the kind of moderate distress which is also characteristic of fussing; in contrast to fussing, however, whining denotes anxiety or frustration rather than distress alone. This is conveyed especially by the tone and pitch of the cry: whining has a moderate to high itch and is strident. Whining also has a demanding or insistent character, due largely to its persistence over time. Fussing and whining are similar in that they are intermittent, arrythmic, discontinuous kinds of cries; they are distinguished primarily by pitch and stridency.

10 Protest. This is a hard cry which sounds as much like shouting as it does crying, and conveys an angry, imperative quality. The cry is typically of strong intensity; the pitch is characteristically low or moderate. They cry is usually continuous, with the pattern of cry and inhalation somewhat rhythmic, but not always. An imperative, demanding cry.

11 Sobbing. A full-fledged cry denoting clear-cut distress. It lacks the angry imperative character of protest. Sobbing is continuous and of moderate-to-long duration; its rhythmicity is reflected in the regular alternation of crying and inhalation. Sobbing may occur at a range of intensities. Pitch is usually medium to low.

12 Screaming. An intense, abrasive cry of high pitch and intensity; the infant sounds almost as if in pain. This is characteristically a hard cry, and its abrasiveness derives from the high pitch. The cry is usually continuous, and the pattern of cry and inhalation somewhat rhythmic. Usually there are longer bursts of crying than is usually the case with sobbing, and similarly lengthened breathing pauses. Sometimes the baby breaks into high-pitched scream during the exhalation phase of a normal sob, creating a siren-like sound. The infant clearly sounds distressed rather than, say, angry.

13 Panic cry. This cry characteristically comes in three distinct stages: first a long sob which is of greater than usual duration; then a long (almost interminable) pause in which the infant is continuing to exhale but no sound can be heard; and finally an audible inhalation before the next sob. Crying is intense, continuous and rhythmic.

14 Hyperventilated cry. A cry denoting very intense distress, due largely to the rapid alternation of cry and inhalation at a rate which is faster than normal sobbing. They cry is also very intense, continuous and rhythmic, but often has a choppy quality because of the baby's hyperventilated breathing rate.

APPENDIX B

Maternal Response Type Coding Manual –Revised May 1993

What to code:

Examine the infant affect sheets for episodes of infant affect. These should be outlined in colored pencil on the side of each set of five second intervals that are counted as an episode. Transfer the time of the episode onto the maternal response type coding sheet.

Coding Categories.

Maternal speech. This can be taken directly from the transcripts of Lab Visit 1. If there is no speech transcribed during the episode you are coding, mark down an zero on the response type coding sheet. If you are not certain when exactly an utterance occurred, mark this on your coding sheet and examine the videotape for the intervals in question. If there is no maternal speech in the five second preceeding the onset of infant affect through the 5 seconds after the end of infant affect, then there was no maternal speech during this episode. DO NOT COUNT AS MATERNAL SPEECH ANY MATERNAL VOCALIZATION THAT DOES NOT INCLUDE WORDS RECOGNIZABLE TO YOU. If there is no semantic content in an utterance, then it does not count as maternal speech.

Maternal Action

This must be coded from videotape. This refers to anything the mother does in relation to the infant during an episode of infant affect. Some common examples are:

touching or picking up the infant
giving or taking an object (Toys, bottles, blankets, items of clothing) from the infant
acting on an object that the infant is using (e.g. steadying the shape box while the child puts the toy in
moving toward or away from the infant

Do not include actions such as yawning, smiling, turning head away etc. It has to be an action that is conceivably related to the infant's affect or behavior and not refer to maternal affect, as that is the next category.

Maternal Affect

This refers to expressive behavior of the mother. Here you must examine each five second interval, paying attention to maternal facial expressions, and vocal quality–for any of you who coded infant affect, this is quite similar. Does the mother smile or laugh? Smiles refer to upturn of the mouth and may be slight or big–a big smile using includes a change in the shape of the eyes, so that it conveys a "sparkle'. Laughter you can both hear and see. Negative affect is shown by down turned lips, eyebrows drawn in or furrowed (wrinkled) brow. It is also most evidence in sharp, disapproving and/or loud vocal quality. While it is important to pay close attention to these feature of the maternal face and voice to know if affect is present, again, if you are not reasonable sure after two

viewings of each 5 second interveal; then code no maternal affect in the episode.

In general if you are not sure if a given behavior occurs or not, do not include it. This coding system is not meant to capture subtle variation in maternal responses. Rather, here we want to know if on a common sense level you can see the mother talking, doing something in relation to the infant or showing emotion of her own. We are looking to see if these maternal behaviors are present in the 5 seconds before, during and after the episode of infant affect.

APPENDIX C

Functions of Maternal speech to infants/toddlers during expression of child positive and negative affect 1/15/94 version

FACILITATE

Refers to comments designed to help the child do something that he or she wishes to do which will either reduce distress or increase positive affect; suggestions or directions for child action/ response related to affective state; also includes encouragement of action of this kind; refers primarily to helping the child reach his/her goal in the situation. Stated another way, this involves getting the child to do something that will help the child reach his/her goal in the situation and either maintain positive state or reduce negative affect.

Example: Six month old is reaching for a toy just out of her grasp; she gets frustrated; mother says "you can get it; it's not to far"

Example: 18 month old is crying. Mother says "can you tell mommy what happened?" (Notice the distinction between this and clarify which is "what happened?" The "can you" turns this into a facilitating behavior

Example: child is trying to climb up on the chair and is fussing because she is having trouble; Mother says "put the other leg up there."

Example: Child makes the toy squeak by pushing on it and laughs. mothers says "again." and child laughs again.

ALLEVIATE/COMFORT

Refers to statements whose intent is to comfort the child AND to suggestions/questions by the mother for an action the mother could take that would help eliminate the distress . Comments that simply aim to make the child feel better. Specific behaviors most often coded as alleviate are giving the child juice or a pacifier--when the child is upset--or offering physical contact when the child is upset, although tone of voice must also be taken into account.

Example: Child is crying. Mother says "it's okay. It's okay"

Example: Child is trying to buckle her shoe and failing. Then begins to whimper and cry. Mothers says "do you want Mommy to put on your shoe?"--the implication being this will help you--not used when mother seems to be genuinely seeking information about the affective state--an action suggestion in the form of a question

Example: child is crying and mother gets the pacifier and as she puts it in the child's mouth she says "here you go."

CLARIFY

Refers to questions that ask about the causes of affective expression and descriptions of the situations that provoke the affect; can be clarification of the mother or child's

understanding of the eliciting context or affective state itself
There needs to be affect on the part of the child and the remarks the mother makes are related to the affect in some way. This category also refers mothers explanation of child affect. (Child is crying and mother says "you're tired').

Example: Child is laughing and smiling at the mother playing peek-a-boo. Mother says "do you like this game?"

Example: Child is crying and mother says "whatsa matter?" or "are you mad about this?"

Example: Child is crying and pulling on the door handle. Mother asks "you want to go bye bye?"

Example: Child is frustrated about trying to buckle her shoe. Mother says "those are little tiny holes that are hard to do."

ACKNOWLEDGE

refers to comments and statements which function to notice or share the affective state of the child

Example: Baby starts to cry and mother says "oh no!' in a feeling tone.

Example: Baby squeals with delight and mother says "yes" with enthusiasm in her voice

Example: Baby laughs and mother says "this is great."

Example: "good" in response to child smiling, depending on mother's tone.

DISTRACT/RE-ORIENT

This refers to statements, directions and questions that aim to refocus the child on activities/objects etc that will change the child's affective state; this is different from saying something or taking an action that will make the child <u>feel</u> better. (When this occurs it would be considered alleviation.) The distract/re-orient category refers to remarks which function to substitute one type of experience for another. One issue is the possible transition from distract to elicit--that is the mother succeeds in changing the child's affect from negative to positive. In order for mother's utterances to become elicits rather than distracts, there must be 2 successive intervals of positive kid affect and NO return to negative affect during that episode.

Examples: Baby is crying and flailing her arms while lying on her stomach. Mother picks up a rattle and shakes it energetically, saying "See the funny face; see the funny face;"

Example: Baby is fussing and mother says "want to play peek-a-boo? Let's play peek-a-boo."

LABEL

This refers to instances where the mother uses a term identifying the affective state of the child.

Examples: "This is so frustrating for you"; "You really like this"; "Oh so sad"

Less obvious labels include "better," "hard" and "bad time."

NARRATE/OTHER

This refers to instances where the mother describes what she or the baby is doing in a way that does not relate to the affect or context of affective expression in some way. Typically this involves description of objects or aspects of the environment that are not related to the affect in any way OR neutrally toned description of actions/behaviors of either mother or child .

Example: Child is laughing while opening and closing a book. The mother labels the colors on the pages the child opens and closes, although the child pays not attention to this.

Example: Mother is kissing and tickling the child's feet. the child is laughing hard; while they are playing this game the mother says "now I get to kiss your feet," IF said in a neutral tone.

Example: Child is frustrated that she cannot get the balls out of the milk bottle. As mother tries shake the balls out, she says "shake shake shake" --again said in a neutral tone.

"There you go" is a typical narrate (unless juice, pacifier etc are involved) when said in an unexaggerated way.

GUIDE

This refers to instances where the mother seeks to change the child's behavior--it often occurs in the situation where the mother is setting a limit. Often guide statements are the source of the child's negative distress and then are double coded as guide/elicit. Or they may aim to change behavior when the mother thinks the child is behaving inappropriately (e.g. too silly or out of control) and expressing positive affect. Directions which serve the mother's agenda.

Example: Child is trying to climb under the couch. mother says "come out of there."

Example: Child is twirling around and getting very silly. Mother says "stop that right now."

Example: Child takes another toy out and mother wants child to finish

Example: "look over here"--a direction of the child's attention.

EVALUATIONS

This includes instances where the mother indicates disapproval or approval of the affective expression; the approval or disapproval may be expressed through directions to stop or continue the expression of emotion.

Example: child cries loudly and mother says "shush" with a negative tone

Example: child is laughing wildly and throwing toys around; the mother says "stop being so silly' with a negative or harsh tone

Example: child is giggling and mother says " it's great to see you laugh," or "you have such a nice laugh"

ELICIT/PROVOKE

This includes instances where the mother says something that aims to induce positive affect, often in a game context (peek-a-boo) or by singing. Anything can be an elicit if said in an exaggerated form--intonation is key. Elicit also includes statements that induce negative affect, like "no you can't do that." In the case of negative affect, utterances are often doubled coded as elicit/guide when the mother's action directions precede the child's fussing. It's also important to consider if the maternal utterance changes the child affect--does the child start smiling/laughing or fussing in response to maternal utterances? Of course, the child might also continue to show affect in response to what mom says too.

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