Maternal sex-type, child's sex, and infant affect expression

James G. Hanson
Iowa State University

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Maternal sex-type, child's sex, and infant affect expression

Hanson, James G., Ph.D.

Iowa State University, 1994
Maternal sex-type, child's sex, and infant affect expression
by
James G. Hanson

A Dissertation Submitted to the
Graduate Faculty in Partial Fulfillment of the
Requirements for the Degree of
DOCTOR OF PHILOSOPHY

Department: Human Development and Family Studies
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Signature was redacted for privacy.
In Charge of Major Work
Signature was redacted for privacy.
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For the Graduate College

Iowa State University
Ames, Iowa
1994
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ABSTRACT

The present study was undertaken to investigate possible sex-different affective expressions in children ages 16- to 24-months, and to investigate the possible function of child's sex, maternal sex-type, and various demographic variables on any observed differences. The research literature maintains that children as young as 18-20 months have already acquired the first semblance of feeling state words, or the ability to understand and communicate their emotions (Bretherton, Fritz, Zahn-Waxler & Ridgeway, 1986). It was hoped this study could shed some light on the advent of any sex-difference manifestations related to the expression of affect.

The subjects consisted of 30 children, 87 percent of whom were either first- or second-born children. Maternal sex-type was measured using the Personal Attribute Questionnaire (Spence & Helmreich, 1978). The affect and affect-exchanges were measured using an adaptation of the Maternal Availability Scale (Osofsky, Culp, Eberhart-Wright, & Hann, 1990) and the Infant Affect Manual (Osofsky, Culp, Hann, & Carter, 1988). Split-plot ANOVAs were run to investigate main effects for sex of child, sex-type of parent and episode (Baseline, Separation, and Reunion). Pearson product correlation coefficients were computed to investigate relationships
between sex of child, affect expression, sex-type of mother, and various demographic variables (e.g., education of mother, family income).

Significant results show girls to be more expressive of positive affect (Interest, Joy, Excitement) and boys more expressive of negative affect (Anger, Distress, Sadness). Boys and girls differed, too, in which affect they were likely to express as a function of maternal sex-type. Both boys and girls presented less Distress with mothers whose sex-type was similar to the child's biological sex: Boys with Masculine sex-typed mothers and girls with Feminine sex-typed mothers. Education and SES also proved to be significantly related to child affect, with children whose mothers reported less income showing greater Excitement upon mothers' return than their peers with higher reported income. Also, mothers with little academic achievement had children who showed more intense and drawn-out Sadness upon reunion.
INTRODUCTION

We are born twice over; the first time for existence, the second time to life; Once as human beings and later as men or as women.
- Rousseau

Men are different from women. They are equal only in their common membership in the same species, human kind. To maintain that they are the same... is to build a society based on a biological and scientific lie.
- Moir and Jessel

For today's psychologists and other social scientists, the extent to which men and women differ in their behaviors and other characteristics is a controversial issue (Eagly, 1993). From intimate relationships to business, from politics to equity in university/collegiate sports, contention abounds. American society is in the process of reformation. The debate surrounding the topic of sex differences carries with it many political overtones, as it implies socially-differential treatment of, and perhaps negative implications for, women (Eagly, 1993). It was not too long ago when "snips and snails and puppy dogs' tails" was an accepted description of young boys, with girls being described as "sugar and spice and all that is nice" (Santrock, 1994). It also used to be pretty
standard procedure to expect a woman to be both dependent and nurturant, or to expect a man to be independent and aggressive; men were power-assertive and women were not interested in power and control. Society now allows for more diversity, or more correctly, demands more latitude in the roles assigned to the sexes.

Sex different behaviors remain, however. From a cacophony of individual differences available to scientific scrutiny, the bipolar distinction of male and female is the most often used distillate for psychologists studying individual differences. It is a common conception that men as a group have different traits than women. In fact, one common assumption is that just one set of traits characterize men or defines masculinity and a converse set characterizes women and femininity (Connell, 1987). It is apparent that the notion of a natural sex difference is a self-evident proposition to most people and according to Connell (1987), for most people this proposition forms a limit "beyond which thought cannot go" (p. 667). In other words, sex differences are obvious to the general population and thinking otherwise is a painstaking task.

Some psychologists fear the discoveries of sex differences, and so deplore the renewed interest in sex-
difference research (Eagly, 1993). Such fears are replete with what Hare-Mustin and Marecek (1988) have termed "beta bias." This bias denotes a preference to ignore or minimize any differences found, as opposed to an "alpha bias," or a preference for exaggerating the differences. The fear associated with sex-difference research is ostensibly related to the belief that any documented sex differences will cause women to be viewed as inferior to men, that masculine qualities are viewed more favorably than feminine qualities (Eagly, 1993). However, research on gender stereotypes have shown this simplistic argument to be false (see Eagly & Mladinic, 1989; Eagly & Karau, 1991).

In what manner is a child's biological sex important to his or her development? Hetherington and Parke (1975) describe the predicament a psychologist found herself in as she tried to keep observers from knowing whether they were watching boys or girls. The anecdote seems to suggest that biological sex is, indeed, very important to development. Hetherington and Parke (1975) relate an incident in which infant girls, some only a few days old, were already being dressed "sex-appropriately" with pink bows sometimes literally taped to their bald heads, wearing pink overalls, or overalls with ruffles. This indoctrination based on the child's sex
will continue well into the first year (Schaffer, 1988), as parents, relatives, and family friends provide the children with sex-specific clothing, toys, and haircuts/styles.

That people respond differently to males and females is well established. And, the fact that people act differently towards infant males and females is documented in research literature (see Maccoby & Jacklin, 1974; Williams & Best, 1982). Biological differences do exist between the sexes, but the reason for differential treatment of the sexes is much more profound than simply XX (female) or XY (male) chromosome pairings. As each society relegates males and females to different roles (Schaffer, 1988), a part of the socialization process of children necessarily involves the incorporation of these roles into the individual child's self-concept. This controversial process, called sex-typing, involves the acquisition of certain sex-differentiated values, beliefs, and behaviors deemed appropriate for a particular sex by a particular culture.

In an early account of cross-cultural sex-typed behaviors, Parsons (1955) maintained the stereotypical female characterization of being nurturant, or expressive, to be anchored in the biological role of childbearer, where the
woman raises the children and keeps the family unit functioning. Consequently, girls are expected to elicit traits consistent with this task, such as warmth, friendliness, cooperation and sensitivity. On the other hand, boys who will someday face the challenge of providing for, and protecting, the family are encouraged to become more instrumental (aggressive, assertive, independent) in their orientation. Through this mixture of feelings and experiences a "core gender identity" finally emerges for most people (Brazelton & Cramer, 1990).

How parents feel about either maleness or femaleness powerfully influences gender identification in their children (Brazelton & Cramer, 1990). The manner in which parents socialize their children depends on their own definitions of what is appropriate for the child's sex. According to Maccoby and Jacklin (1974), those behaviors that are not regarded as germane to what is seen as masculine or feminine are not differentially socialized by parents. So, it can be intimated that parents actually begin to mold their children's behaviors, at an early age, towards what is deemed sexually appropriate for their culture and cohort. This process can be subtle and indirect, or relatively straight-forward and
purposeful, and the parents' SES, educational status and/or own sex-typed attributes may possibly play a role in this emotional scaffolding process.

Statement of Problem

Many different influences converge to bring about a gendered sense of identity. Though a "core gender identity" does finally emerge for most people, Brazelton and Cramer (1990) remind us that few behavioral differences between the sexes have consistently been born out. Newborn boys are not more active than girls, but merely different in how they act motorically. However, even if these differences are less pronounced than some would maintain (see Moir & Jessel, 1991), they can influence even the earliest of interactions.

Do parents actively mold their children's behaviors towards what is deemed sexually appropriate? This study will investigate possible differential treatment of children by their mothers as a function of the children's sex. More specifically, since folk-knowledge, anecdotal, and scientific evidence points towards sex differences in the ability to identify and express emotions, this study will examine whether mothers differentially respond to their child's expressed inner-states as a function of child's sex; whether the frequency and affective theme of the labeling differs as a
function of child's sex; and, whether maternal self-identified attributes (masculinity, femininity, androgyny) play a role in this process.

This investigation utilized a modified "strange situation" and focused on the parent-child interaction as the mother comforts her infant following the induced stressor (brief maternal absence). A modified strange situation paradigm has been previously used by researchers investigating affect and parent-infant interactions related to attachment (see Lewis & Michalson, 1981; Waters, Wippman, & Sroufe, 1979). The reunion episode that directly follows the brief mother-child separation is thought to be an especially salient opportunity to study maternal differential responses to infants (Lewis & Michalson, 1981).

In psychology, the experimental tradition assumes that with all other factors equivalent except one, that one factor must be responsible for any noted differences. As such, the scientific comparison of the behaviors of men and women is admissible (Eagly, 1993). Hence, if all other factors are held constant and the male and female subjects are exposed to the exact same stimuli, any observed differences must be a function of sex differences.
REVIEW OF THE LITERATURE

Sex Differences and Gender

The sex of a child is a biological fact. Recently, biological sex also has become an important social fact as well. When a child is born, most people immediately ask, "Is it a boy or a girl?" (Maccoby, 1980). We temper our reactions to a child as a function of that child's sex, and according to Maccoby (1980) we sometimes become uncomfortable if we cannot tell a child's sex. Adults tend to show stereotyped perceptions towards newborns based on the perceived or actual sex of the child. Boys are seen to be robust and strong, whereas girls are perceived to be delicate and soft (Rubin, Provenzano, & Luria, 1974).

Socially, biological sex lays the foundation for both personal identity and social division with gender-role stereotypes referring to what the typical members of the socially-defined categories are like (Ridgeway, 1992). For instance, a widely held belief is that men are stronger in their arms and shoulders than women are, and that women are more likely than men to wear a skirt (Maccoby, 1980). Though these beliefs may reflect reality in Western societies, some women are stronger than some men, and in Scotland men have been known to wear skirts (kilts). Some of these differences
are based on sex-linked biological traits (e.g., strength) and no amount of exercise and/or training will change this. Other traits, however, are merely convictions grounded on limited social experiences. According to Connell (1987), the utilization of a purely social theory to explain gender roles then, is "pointless, or at best peripheral if it is true that the basic determinants [of gender] are biological" (p. 64). Consequently, the relationship between the biological (sex) and the social (gender) must be delineated and defined at the onset, to preempt any misinterpretation or misunderstanding.

Gender is a term replete with confusion and plasticity. It can be as misleading as it is all-encompassing. The literature is fraught with the term, and many contemporaries would suggest using it when addressing the behavioral differences between males and females. Descriptors such as gender identity, gender role, or even gender differences abound in an effort to circumvent any implication of biological predestination. Maccoby (1980), however, provides an eloquent defense for the descriptor sex, in place of gender. She intimates the term gender presupposes a social basis to sex-linked behaviors, when in fact, we "cannot yet be sure about the mix of social and biological factors which
underlie a number of the behavioral differences between males and females" (p. 203). Implying a social origin at the onset is ill-advised. Since the study of the differences includes the classifying of children by their biological sex and then comparing behaviors, sex is the major independent variable (Maccoby, 1980). The terms sex and sex difference will therefore be used when discussing differential, sex-linked behaviors, without intending to imply biological causality. The term gender will be utilized only when discussing those roles that have been engendered (assigned) to the two sexes by a given society.

In a sense, sex both influences and is influenced by all interaction. Ridgeway (1992) states that most research efforts focusing on the inequality of the sexes vacillate between perceived causal factors at the more general, structural levels, such as the socioeconomic system and individual, learned behaviors, but neglect interpersonal interaction. However, it is this interaction between individuals that must be investigated for us to better understand the development of societal structures (gender or gender roles) and their correlate behaviors. Individual functioning, after all, is social (dialectical) in origin.
Any function in the child's cultural development appears twice, or on two planes. First it appears on the social plane, and then on the psychological plane. First it appears between two people as an inter-psychological category, and then within the child as an intra-psychological category (Vygotsky, 1981, p. 63).

More simply, to investigate and understand the individual's actions and motives we must first turn our attention outside of the individual (Wertsch & Tulviste, 1992) and look at the inter-individual process.

Sex Differences and Gender-Role Stereotypes

How pervasive is feminine and masculine gender-role stereotyping? According to Williams and Best (1982) gender-role stereotyping is widespread. Data from a study of college students representing 30 different countries indicate that males are more often described as dominant, independent, aggressive and achievement oriented, whereas females tend to be described as affiliative and nurturing. The stereotypical female characteristics are seen to be of less value to the society, but of more help in times of distress (Williams & Best, 1982).
Ultimately research indicates that sex-differences, though most often presented in terms of group means and averages, are invariably individual in nature—a part of the self-definition (Wicklund & Gollwitzer, 1982). In this manner, masculinity and femininity become self-defining attributes for some people but not for others (Maccoby & Jacklin, 1974). However, this self-definition is directly a result of social interaction, a result of the manner in which parents and children interact and the language that is used, and the inner states that are labeled (and perhaps differentially labeled) play a important role. In a society such as ours, the sexes are separated in accordance with socially defined, sex-appropriate behaviors and expectations called gender roles.

According to Jacklin (1989) the "speculation about differences between females and males is a national preoccupation" (p. 127), with gender issues having come to the fore in psychological research in the mid 1960s. Since most research with children includes both boys and girls as subjects, Jacklin (1989) suggests that attempting to summarize gender research would probably overlap the entire field of developmental psychology. Besides, since almost everyone is male or female—with a few exceptions—it is only
natural for psychologists to ask how much variance this polarized factor accounts for among individuals (Maccoby, 1990). In fact, it is not unlikely that, even should Bem's (1978) stated goal of freeing "the human personality from the restricting prison of sex-role stereotyping" (p. 206) become reality, some social scientist or psychologist would parse out the differing attitudes men and women have towards this unshackling.

Bearing in mind the existence of certain sex-different behaviors, Shapiro (1988) warns us of the dangers implicit in celebrating these differences. She suggests that the celebration of these differences may lead to despair, as these differences seem more and more insurmountable. She goes on to assert that if we accept these differences at face value, we may fail to critically examine them. This can result, Shapiro writes, in social conservatism, with feminists "prescribing gender roles, and telling women what counts as authentic feminine behavior" (p. 17).

The classic work on the subject of sex differences is Maccoby and Jacklin's (1974) *The Psychology of Sex Differences*, presenting an exhaustive, critical review of the literature on the topic published from 1965 to 1973. A
prominent feature of this seminal work is the authors' citing of well over 1400 research studies in the area of sex differences. Sherman and Denmark (1978) point out another feature, however: This area of study is extremely biased.

Although psychologists and other empirical scientists take pride in the objectivity of their observations and the creation of value-free models and theories, their personal beliefs and prejudices often find a place in their work (Spence & Helmreich, 1978). That bias is evident in the field of sex differences investigation is an understatement. This lack of objectivity is evident in the work of Shapiro (1988), who simply declares her own "intellectual and political predisposition" (p. 2) against sex differences, and the work of Bem (1978), who pronounces that, although she considers herself an empirical scientist, her "interest in sex roles is and always has been frankly political" (p. 206).

Recent research indicates that men and women of industrialized nations are more likely than their counterparts in less developed nations to identify the similarities between the sexes rather than the differences (Williams & Best, 1989). However, Williams and Best (1989) point out that even in the more technologically advanced cultures, it is the women who perceive more similarity than differences between the sexes.
However politically right it is to deny differences, or to conclude the differences are nothing more than learned behavior, ethnographic evidence does not support the assertion of sameness. In fact, there is no known society where men and women act the same (Layng, 1993).

Research has indicated small differences do exist between the sexes (see Maccoby & Jacklin, 1974; Brooks-Gunn & Matthews, 1979; Hade, 1990). In fact sex differences can be seen in the play of boys and girls as early as 12 months of age (Snow, Jacklin, & Maccoby, 1983), with boys opting to play with building/construction toys and cars and trucks, and girls playing with dolls (Fagot, 1978; Sutten-Smith, Rosenberg, & Morgan, 1963). Boys spend more time engaged in rough and tumble play than girls do, especially with pretend fighting and play that involves body contact (DiPietro, 1981). And, even when conscious attempts have been made to eliminate sex differences, they remain salient. Layng (1993) presents evidence from American communes in the 1970s, when a number of the collectives made the abolition of sex-role distinctions one of their highest priorities, that none even came close to succeeding.

However different boys and girls seem to be, they share many more similarities than differences. Hence, we really
cannot know conclusively to what extent the existing sex-typed behaviors are determined by biology or by society. Results of recent meta-analyses (Lytton & Romney, 1991; Eagly, 1993) offer differing interpretations of the available data on sex differences. Of 172 studies that have focused on the socialization of boys and girls, Lytton and Romney (1991) suggested only slight evidence of parents differentially socializing their children as a function of sex. So, together with the primacy of parental socialization practices, Lytton and his colleagues would suggest other factors must be taken into consideration in an attempt to explain the documented sex differences. Lytton and Romney (1991) found that though effect sizes of the 172 studies were often nonsignificant and small, they did increase as the quality of the studies increased. Also, one of the 19 socialization areas in North American studies did show a significant difference: Encouragement of sex-typed activities. This one significant difference is of tremendous importance when considering a socio-cultural (dialectical) approach to sex-typing and gender-role development.

While suggesting that it seems almost unnecessary to utilize such a sophisticated approach to answer the "simple-seeming question of whether a sex difference exists at all in
a set of studies" (p. 424), Eagly (1993) applauds the new meta-analytic methods for investigating sex-different behaviors. Since in many individual studies sex differences often fail to reach any statistical significance due to small sample sizes, evaluating the literature as a whole can identify quite salient sex differences. Further, Eagly presents evidence that disputes the findings from the 1970s, before meta-analytic techniques were being utilized (see Maccoby & Jacklin's classic review), that maintain there are few sex differences between men and women when they are observed under controlled, scientific conditions.

This "no difference consensus" held by the scientific community during the 1970s, according to Eagly (1993), amounts to nothing more than a premature verdict. In fact, when the criterion of whether the means of the individual studies' effect sizes differed from 0.00 was applied to research findings of the 1970s and earlier, findings did suggest that the sexes differ in a number of respects. For example, women do conform to group pressure and agree with others more than men do (Eagly & Carli, 1981; Anderson & Blanchard, 1982) and men are more likely than women to contribute strictly task-accomplishing behaviors (Anderson & Blanchard, 1982). The new-found differences abound, as men and women have been shown
to differ in the character of their relationships/friendships (Hendrick, 1988), their likelihood of giving or receiving social support (Vaux, 1985), how they react to stress (Gove & Colton, 1991), and even moral reasoning (Gilligan, 1982) and managerial style (Rosener, 1990).

Another salient socialization pattern found in Western countries, and apparently performed by parents as a function of their children's sex, includes differential use of physical punishment: Parents apply physical punishment significantly more often to boys than they do to girls (Lytton & Romney, 1991). So, methodological issues aside, the query remains: Are sex differences innate—the result of biology—or learned through experience and differential treatment? Or, since behavioral examples characteristic of males in one culture may be characteristic of females in another (e.g., in the American Southwest the Hopi and Navajo cultures designate weaving as a male or female vocation, respectively), are sex-different behaviors social in nature?

Theoretical Approaches and the Dialectical Model

Logic would suggest that if sex differences are not the product of genetics, then they must be learned. Myriad theoretical approaches offer explanations of how the sex-different behaviors are acquired. Social learning theory, for
example, explains the phenomenon as resulting from parental and societal reinforcement, and modeling. But, there is more to social learning theory than just reinforcement and modeling. The effect reinforcement has on a child is a direct result of his/her perception of how the act is related to the consequence, and perhaps more importantly, the sensitivity of the parent to act contingently and accurately (Maccoby & Martin, 1983).

Observational learning also plays a central role in social learning theory. Infants early on in the first year of life are capable of imitating simple acts, the complexity of which increases with maturity (Maccoby & Martin, 1983). It is reasonable to maintain that parents are powerful models for their children. However, when it comes to sex-typed behaviors, Smith and Daglish (1977) found no mother-daughter or father-son connection. Instead, if sex-typed behaviors are modeled by several same-sex adults, not just by same-sex parents, children will be more likely to replicate that behavior (Maccoby & Martin, 1983).

Cognitive theorists emphasize a more intra-individualistic pattern, referring to a child's growing cognitive abilities and the acquisition of gender constancy, to explain sex-different behavioral patterns (Schickedanz,
Hansen, & Forsyth, 1990). More precisely, cognitive therapies and cognitive behavior modification (CBM) assert that cognition is inextricably intertwined with an individual's emotions and behaviors (see Beck, 1976; Meichenbaum, 1977). In other words, one's beliefs and thoughts dictate how (s)he will interact with the world.

**Dialectical Model.** A more person-environment interactionist (dialectical) model that incorporates both cognitive and social learning perspectives can be applied in explanation of sex-different behaviors. Vygotsky, the noted Soviet psychologist, posits individual development originates in social interaction (Belmont, 1989; Rogoff & Morelli, 1989). Utilizing the dialectical framework consistent with Marxist doctrine, Vygotsky created what can be described as one of the first politically correct theories of development, as it fit nicely into the Marxist beliefs on which the Soviet Union was founded.

The dialectic concept was proposed by Hegel, a German philosopher of the late eighteenth century. It posits that any proposition (thesis) generates an opposite, equally relevant proposition (antithesis). This apparent contradiction is reconciled at a higher level of truth through
a third proposition (synthesis). Vygotsky applied this dialectical formula to child development, and assimilated the Marxist cultural-historical viewpoint as well (Thomas, 1992). To understand how and why children develop as they do we must first understand the unique demands and opportunities specific cultures provide their children. This offers a tenable explanation for the differences in gender roles found in cross-cultural studies.

The dialectic model serves as a template for understanding the social aspects of knowledge. However, the model can also be augmented to show how the more knowledgeable parent (thesis) interacts with the less knowledgeable child (antithesis) and produces socially accepted behaviors (synthesis). It is this sociocultural approach that provides a framework upon which selected maternal factors can be examined as children begin developing self-regulatory behavior (Eisenberg et al., 1991), begin to recognize internal feeling states and use words to describe them (Bretherton, McNew, & Beeghly-Smith, 1981; Dunn et al., 1987), and begin to construct a stable self-concept based on social interaction (Brazelton & Cramer, 1990).
Vygotsky (1979) asserted that the "social dimension of consciousness is primary in time and in fact" (p. 30) and goes on to propose that the dimension of individuality of consciousness is secondary and a derivative of the social dimension. For example, if two children, both male and both 20-months of age, are to participate in a developmental study, at first glance one could assume, based on maturation and similar cultural influences, that their general course of development would be the same. However, when applying the "social dimension" or dialectic template to their respective developmental paths, Vygotsky (1978) maintains it becomes possible to "delineate the child's immediate future and his dynamic developmental state... allowing for what is in the course of maturing" (p. 38). In other words, the interchange between child and culture and child and parent has predictive power. This notion that development is a social construction has only recently come to the fore in Western psychology (Kessen, 1979).

Parent-Child Interaction

The interaction between a mother and child is often-times likened to that of a dance (Maccoby & Martin, 1983), with the actions of each participant closely coordinated with those of the other. The study of parent-child interaction covers a
wide range of variables, from the study of attachment (Noller, 1978), to self-esteem (Baumrind & Black, 1968; Elrod & Crase, 1980), from compliance (Carpenter & Huston-Stein, 1980) to verbal interactions (Cherry & Lewis, 1978). There is a synchrony in their actions, and though infant smiles or frowns may not always be met in kind, there is plenty of data that point to a general match of affective tone between mother and infant behavior. This synchronous, complimentary relationship is evident in the ways parents react to their children's displays of emotions as well. Parental responses have also been found to be related to the child's vicarious emotional responses as well as his/her self-monitoring abilities (Eisenberg, Fabes, Schaller, Conlo, & Miller, 1991).

It does seem as if adults harbor different attitudes and expectations towards their male and female children (Baumrind & Black, 1968; Cherry & Lewis, 1976; Elrod & Crase, 1980; Noller, 1978; Will, Self & Datan, 1976). In a study by Will, Self, and Datan (1976), for example, adult reactions to infants were observed after the adults were purposely misled about the infant's sex. The play behavior of some of the mothers in the study changed as a function of the child's perceived sex. The mothers offered a train to the child perceived to be a boy, whereas a doll was given to the
perceived girl. Cherry and Lewis (1976) noted sex differences in mother-child interaction, intimating that mothers talk more and direct more questions to their 2-year-old girls than to their 2-year-old boys. Elrod and Crase (1980) found that maternal behaviors related significantly to daughters' self-esteem, but not to the self-esteem of sons.

Differential behavior by parents was also noted by Fagot and Hagan (1991) while observing parent reactions to sex-stereotyped behaviors of young children. These investigators observed 12-month-old boys receiving more positive feedback for negative and assertive behaviors than girls. Interestingly, at 18 months of age boys received more negative reactions from their parents for their attempts to communicate, but received more positive reactions for their negative behaviors. Girls, on the other hand, were reinforced when they attempted to communicate, but received many more directives and instructions from their mothers during their interactions than did their male counterparts. If learning is indeed interpersonal—a social event that depends on at least two individuals (Belmont, 1989)—then the above interaction suggests an incidence of instruction in socially-sanctioned behavior.
Due to methodological differences, sampling differences, and the wide range of quality in the research focusing on how parents differentially treat their boy and girl children, results have not consistently supported or refuted differential socialization. Some scholars have found differences, while others report none. For example, fathers have been found to play more physically with their sons than with their daughters (Power & Park, 1982), while mothers have been observed to react differentially to their child's expressed emotions (Haviland, 1982). According to Haviland, mothers matched their infant girls' facial expressions when the child showed pain, whereas the boys' expressions of pain were all but ignored. However, while their sons' expressions of anger were met with expressions of concern and empathy (an empathetic, supportive reaction), mothers once again matched their daughters. They responded with anger to their daughters' expressions of anger. Boys' expression of anger is validated, but not their expression of other feelings; girls are impelled to hide their anger, but be expressive of their dependency. Here, again, the dialectical process of socialization is evident.

It is valid to hypothesize that this early mother-child interaction is a springboard for stereotypical sex-role
development, where acts of aggression and/or passivity are differentially reinforced in accordance to the biological sex of the child. A Vygotskian explanation would validate this hypothetical relationship. Empirical evidence also has established such a relationship between a mother and child. Baumrind (1982) associates child competence with maternal (and paternal) sex-type characteristics, stating that those parents exhibiting traditional sex-types (masculine fathers and feminine mothers) are likely to produce socially responsible, competent children of either sex.

Symbolic interactionism addresses the human pursuit of self-definition (Wicklund & Gollwitzer, 1982) and closely parallels Vygotsky's dialectic process in development. An interesting correlate of self-definition is a sense of having permanent qualities, which in turn, affect future behaviors and patterns of thought. This school of thought seems especially salient to investigating the relationship between language and affect as a function of sex. In particular, affect control theory (Smith-Lovin & Robinson, 1992), a "highly formal version of the symbolic interactionist perspective" (p. 133), is useful as it provides a dynamic framework that ably explains how identity produces specific behaviors during interaction.
Affect control theory assumes that one's self-identity motivates one to act; also, this self-identity must be defended in social interaction. The process is a dynamic one, in that one's identity is a function of the other identities involved in the interaction in terms of relative power, status and expressivity (Smith-Lovin & Robinson, 1992). The basic attitudes one associates with one's identity and behaviors are a part of a culture's core. Smith-Lovin and Robinson (1992) posit that the basic attitudes surrounding gender are built up via early experiences, communicated through "direct comment... through emotional expression... by direct experience... or by indirect observations" (p. 134.). And, since parents are the most powerful socializing agents during early childhood, these earliest basic attitudes are most likely the result of parent-child interactions.

The Study of Mother-Infant Relationships

There have been several schools of thought concerning the importance of the relationship between a mother and her child. In an attempt to explain this parent-child bond, the psychoanalytic/social learning approach compared breast-versus bottle-feeding, feeding by schedule versus on-demand, gradual versus abrupt weaning, and the various methods of toilet training, reflective of the three Freudian stages of
psychosexual development (Lazarus, 1991). This approach posits that the first social relationship, between a mother and child, with its focus on sustenance and nurturance, is the basis for all future social interactions.

Another approach to studying the mother-child relationship, largely ethological, focuses on the adaptive influences of social interaction. In other words, social activity does more than just promote social interaction. According to ethologists, certain species-specific behaviors have evolved to serve society and its maintenance; a species-specific behavior such as smiling helps to start and sustain adaptive social interaction (Lazarus, 1991).

Greatly influenced by the suppositions of ethology, John Bowlby, the British psychiatrist, theorized about motherly love in infancy and its vital role in mental health. This theorizing has led to much research, most notably that which focuses on a child's attachment to his/her mother. The strange situation, a research paradigm that has become the standard for the study of parent-child attachment, was originally designed to assess how infants used adults as a secure base for exploration, how infants reacted to strangers, and how they reacted to separation and reunion (Lamb, Thompson, Gardner, & Charnov, 1985). This "mini-drama" was created to impose gradually escalating levels of stress on the
infant so as to observe the infant's behavior towards the primary caregiver (Bretherton, 1992). It was assumed the variations in attachment security could be best observed in this type of situation (Lamb et al., 1985).

According to Ainsworth (1973), attachment is "an affectional tie that one person forms to another specific person, binding them together in space and enduring over time" (p. 1). One may develop attachments to more than one person but, since attachment implies affect, attachment to many people is not a possibility. Under "ordinary circumstances" the human infant first becomes attached to his or her mother (Ainsworth, 1973), or primary caregiver.

The Strange Situation. The strange situation consists of eight 3-minute episodes, usually conducted in a laboratory playroom with toys provided for the infant and chairs provided for the parent and stranger. This procedure is considered appropriate for children aged 12 to 24 months (Lamb et al., 1985). A central concern in Ainsworth's research is the mother's sensitivity to her infant's signals, and how available the mother is to her infant; this attachment develops over time.

Some sex differences have been found in conjunction with the strange situation paradigm. Ainsworth (1973) posits that "one cannot dismiss the possibility that mothers respond to
the sex of the baby" (p. 51) and continues by suggesting that, whether genetic, cultural, or some other adult bias, one of the salient contributions an infant brings to the parent-infant interaction is his or her sex.

More recently, Fagot and Kavanaugh (1990) noted sex differences in how children respond to the stranger in the strange situation. The strangers who attempted to use direction, instruction or initiation with male children, experienced higher levels of avoidance and resistance (regardless of child's attachment classification). Girls in this investigation received higher levels of direction, instruction, and initiation from the strangers, in general. The girls' avoidance and/or resistance, however, was not related to these behaviors. These results are consistent with evidence suggesting girls from about 18 months of age receive a higher rate of instructions, directions and initiations at home (Fagot, 1980).

Sex-Typing

Huston (1983) submits that gender will probably never become irrelevant in social and personality development. Females can bear children, and this fact of biology clearly impacts the lives of both men and women. However, some gender socialization "messages" overlap the biological and cultural
domains. This overlapping, according to Maccoby (1988), influences to what degree existing patterns of social behavior can be eliminated, reversed, or modified to change with the times. We are just now beginning to understand some of the biological and social variables and interactions that affect the behavior of males and females.

In an effort to help "free the human personality from the restrictive prison of sex-role stereotyping" (p. 206) and to help create an understanding of mental health that is no longer shackled by cultural definitions of what is masculine and what is feminine, Bem (1978) began to focus her attention on the study of sex roles. Challenging the notion that masculinity implies the absence of femininity and vice versa, Bem and others (see Spence & Helmreich, 1978) have argued that people can be androgynous. In other words, a person can be both expressive and instrumental, both sensitive and assertive. This dualistic rather than bipolar conception suggests that masculine and feminine characteristics are not related negatively to each other; the possession of masculine characteristics does not preclude the possession of feminine characteristics as well. Both masculine and feminine attributes evidence themselves in each sex and these
manifestations appear to be separate and orthogonal dimensions (Spence & Helmreich, 1978).

Contrary to the traditionally argued stance that masculinity and femininity are at opposite poles of a single dimension, Bem (1978) and Spence and Helmreich (1978) posit that femininity and masculinity actually occupy two distinct dimensions. A person exhibiting more masculine characteristics than feminine is defined as being masculine sex-typed, whereas a person with relatively few masculine, but many feminine characteristics is feminine sex-typed. Those individuals possessing relatively large amounts of both masculine and feminine characteristics are defined as androgynous. This viewpoint is consistent with the psychoanalytic tradition of animus (masculine) and anima (feminine) that Jung proposed to be important properties of the psyche (Spence & Helmreich, 1978). Also, it is stressed that the psychological dimensions of femininity and masculinity have little to do with the actual manifestation of gender roles (Spence & Helmreich, 1978). Gender is proscribed by society and is not a psychological construct.

Bem (1974, 1978) and Spence and Helmreich (1978) have developed objective self-report instruments—the Bem Sex Role
Inventory (BSRI) and the Personal Attribute Questionnaire (PAQ), respectively—to measure the psychological aspects of masculinity and femininity. Both instruments are thought to compliment and supplement each other (Spence & Helmreich, 1978). In one large scale investigation of college students, Spence and Helmreich (1978) found that approximately 33 percent of their respondents were sex-typed (either masculine males, or feminine females), and that between 27 and 33 percent of the respondents were classified as androgynous. The remaining respondents could be classified as either undifferentiated—that is, low in both masculinity and femininity—or "sex-reversed" (masculine sex-typed females, or feminine sex-typed males).

In similar fashion, while Bem was formulating and validating the BSRI, normative data were collected from a sample of over 2000 undergraduates from a university and a community college. Her results, too, indicate approximately one-third of males and females can be classified as sex-typed (masculine males and feminine females), another one-third can be classified as androgynous, and less than 10-percent would fit into the sex-reversed category (Bem, 1978).

Both the BSRI and the PAQ contain many similar items. However, the BSRI gives trait descriptions (e.g., independent)
and the respondents are asked to rate how characteristic it is of them, using a 7-point Likert scale, ranging from 1 (never or almost never true) to 7 (Always true or almost always true). The PAQ consists of bipolar Likert scales (e.g., independent - dependent), and the respondents are asked to identify the position on the 5-point scale (scored 0 to 4) that most describes them. The scale is physically positioned between the two descriptors.

There are other important differences between these two scales that must be clarified. For the PAQ, the different items assigned to the M and F scales have been judged to be socially desirable traits for both men and women, but are believed to occur more often in males and females, respectively (Spence & Helmreich, 1978). The M scale on the Bem instrument, on the other hand, utilizes trait descriptions that had been judged more favorable for men than women. Conversely, the F scale on the Bem instrument contains traits judged to be more favorable for women than men (Bem, 1978). The PAQ adds a third scale, the M-F scale, which represents characteristics identified to be socially desirable for one sex, but not socially desirable for the other. Originally called the "sex-specific" scale (Spence & Helmreich, 1978), it has since been designated the M-F scale to more accurately
represent the bi-polar nature of masculinity and femininity not found in the M or F scales.

It seems a paradox to maintain the belief that masculinity and femininity occupy two separate dimensions and then include a bi-polar (one dimensional) scale as well. Reassigning items to either the M or F scale would "do violence" to the definition of masculinity and femininity as being socially desirable in both sexes but characteristic of only one or the other (Spence & Helmreich, 1978). Also, what these data indicate is that social desirability on these items differs between sexes. The M-F items are more related to each other than to either the M or F scale items, and more information--not available from the M and F scales--can be collected with their inclusion.

Spence and Helmreich (1978) adamantly dislike any form of "androgynous" terminology, preferring the somewhat pedantic, albeit more richly descriptive "dualistic approach to psychological masculinity and femininity" (p. 109). They cite negative reactions by feminists and nonfeminists alike to the term "androgynous," due in part to its hermaphroditic implications. And, though they are willing to adapt it as a label for those individuals scoring high on both the M and the F scales of the PAQ, their data do not indicate "androgynous"
individuals utilizing more effective behavioral patterns, as Bem maintains (1975, 1978). They maintain, therefore, a model that is "open, evolving, [and] dualistic" (p. 109). Baumrind (1982) echoes this dislike for the term "androgynous," stating that though androgyny was well chosen for its propagandistic purpose to confront the assumptions of those studying sex roles, the time has come for a "less evocative and more denotative term to describe" what is in fact being measured; that the archetypic and mythical meaning of the androgyne has become "manifestly debased" (p. 71). Parenthetically, there have, in fact, been numerous alternative suggestions for the scoring of androgyny that include considering not only those individuals scoring high on masculinity and femininity, but also those individuals who score well below the median scores (Bem, 1978). Differences in the scoring and analysis of the data have also been recommended (see Strahan, 1975; Baumrind, 1982).

Individuals can be classified by means of a 2 by 2 table in accordance with their position above or below the median group scores for each of the scales (see Figure 1). This four-way classification can also be expanded and made into an eight-way classification if one divides the individuals in
Figure 1. Scheme for classifying individuals on masculinity and femininity scores by double median split.

each of the four cells into those falling above or below the median score on the M-F scale (Spence & Helmreich, 1978).

Utilizing the PAQ (Spence & Helmreich, 1978), Hort, Fagot, and Leinbach (1990) assessed the sex-typed perceptions of 400 undergraduates. One hundred female subjects were asked to describe males; one hundred male subjects were asked to describe females; and then, 100 subjects of each were asked to describe their own sex, males describing males, and females describing females, respectively. Results indicated that both males and females perceived males in much more stereotypical terms than females.
Susser and Keating (1990) assessed the relationship between adult sex-role orientation and the perception of aggressive behavior between boys and girls. Interestingly, sex-typed adults—masculine males and feminine females—judged boys' aggression to be more intentional than girls' aggression, and proposed more severe reprimands as a result. Conversely, the androgynous adults recommended more severe reprimands only for the aggressive girls.

Research focusing on sex differences often-times deals with differential socialization processes of males and females, as well. All known societies have used biology as an important distinction in their social systems (Levin, 1983). Levin states that "socialization is anticipatory" (p. 319), in that societies in general—and parents in particular—begin preparing their children for adult roles long before such responsibilities must be faced. This preparation includes gender roles and sex-different behaviors.

In a classic cross-cultural study, Barry, Bacon, and Child (1957) looked at dozens of countries with distinct gender-roles and found that more than 80% of the groups pushed girls into "nurturant" roles, while less than 20% pushed both sexes equally to be nurturant. No groups pushed the boys to be more nurturant. Boys, however, were pressed to be self-
reliant. Here, less than 20% did not differentiate, but none of the groups studied stressed self-reliance for girls. This is discouraging since, as Kohlberg (1966), it is shortly after children acquire gender permanence that they begin to equate gender with their place in society, and the cultural view becomes personalized.

Schemas are sets of ideas, forever changing and evolving, that allow people to organize and filter information, and, gender schemas result from all the information a child has gathered—-from behavior, to attitudes, to feeling states—-that has anything to do with gender (Jacklin, 1989). Gender schema theory, then, deals with how the concept of gender in our culture takes precedence over other organizing possibilities. According to Bem (1983), the theory also effectively deals with the ways in which information is differentially processed for boys' and girls' behavior. Briefly, Bem (1983) asserts that adults seldom take notice or comment on the strength of a little girl or the nurturance of a little boy, but do not hesitate in pointing out (reinforcing) these attributes when they are performed by the appropriate sex.

Language Development

The synchronous behavior between mother and child lays the groundwork for later social behaviors, including speech.
Speech and socialization are inextricably related. It is this ability to share information about behavioral intentions, thoughts, and internal feeling states that plays such a substantive role in human social interaction. By the end of the first year of life most infants are able to communicate and understand non-verbal messages concerning emotions and behavioral intentions (Beeghly, Bretherton, & Mervis, 1986). It is the ability to verbally label and communicate these emotions and intentions, however, that must be mastered if young children are to effectively communicate them to others. How is this massive undertaking accomplished?

Vygotsky's analysis of the function of language, similar to his analysis of individual psychological processes, is also clearly social in origin. What begins as an inter-individual process later becomes internalized, and intra-individual. In fact, the social derivation of language presupposes a dialectical (interactional) psychological process, as well. People utilize the concepts, gleaned inter-individually, to categorize and/or describe their various objects and life experiences. It begins as a means of communication between the child and other persons in his/her environment. Once the language becomes internalized it functions to organize thought (Vygotsky, 1978).
Following this line of thought, it is not hard to see how the learning of concepts is related to the specific experiences of a child. Language—and education through this medium— influences the degree to which a child develops his/her conceptual thinking. Thought and language have their genesis in two separate domains, or functions, representing nonverbal thought and nonconceptual speech, respectively (Thomas, 1992). Eventually, these disparate domains merge, and verbal thought predominates. The two domains never quite fuse, or become one, but do become more and more conjoint as the child develops (Thomas, 1992). More salient to this issue, as a child grows up his/her environment is surrounded with language and the ideas conveyed through language. The child, in turn, will begin to think in a way fashioned by the language of his or her environment. Children raised in environments infused with varied and complex concepts will inevitably think in varied and complex ways, whereas those experiencing a restricted or deprived environment will think accordingly (Thomas, 1992).

This sounds as if language is able to distort or influence how a person experiences the world. The Sapir-Whorf hypothesis (Siegler, 1991) contends that language does, indeed, shape thought. Briefly, this hypothesis asserts that the language of a culture dictates how members of the culture
understand the world. In fact, the language categories we have learned may actually influence the way we see. Objects and situations, and perhaps even emotions, may seem much more distinctive because of the linguistic categories used to describe them (Whorf, 1956). It appears, then, that language (words and/or labels) not only organizes how we think, but may also influence how we experience the world.

Language use also plays a part in creating one's social identity (Smith-Lovin & Robinson, 1992). Both men and women are socialized to perform different societal roles, and this differential socialization is evident in language use. For example, scholars investigating gender differences in language use report women using tentative, unsure patterns and tag questions (Lakoff, 1973), qualifiers, and other methods of speech reflecting less specificity and difficulty (Thorne, Kramerae, & Henley, 1983), except for color terms (Warren-Leubeker & Bohannon, 1989) which are far more delineated than with men. In contrast, the conversational style of men is often seen to be direct and strong (Smith-Lovin & Robinson, 1992). Similarly, girls use language skills to maintain relationships, showing consideration and support, whereas boys' talk is more self-centered, and used to establish and maintain social positions (Smith-Lovin & Robinson, 1992).
Language can be seen as *psycho-behavioral*, as it does not refer to either behavioral or mental domains in the true sense (Dunn, Bretherton, & Munn, 1987). In other words, there are few incidents in which behavioral expressions do not also infer the intent, motive, or affect of the individual. And likewise, words indicating specific emotional states are often-times used as action words (i.e., harass, upset, anger). In conjunction with the Sapir-Whorf hypothesis (above) this seems to suggest that the specific words one chooses to indicate emotional states may influence, even dictate, what actions are undertaken.

**Language - Affect Relationship**

An important and often over-looked aspect of emotional development and expression is understanding and differentiating emotional labels. Adjunct to this process is understanding how one acquires an emotional lexicon (Lewis & Michalson, 1982). To steer a productive course though social interactions of all kinds, one must be able to dissect the subtleties of various internal states and express them concisely to others. However, we know very little about how one labels or decides on the use of specific affect terms.

If language indeed structures thought (Vygotsky, 1978; Whorf, 1956), then the terms used in discussing a child's
affect, and perhaps more importantly the terms a child uses to express affect, become quite important. The label transforms the abstract and vague into the concrete. In fact, Cain (1979) forwards the notion that labels are also instrumental in experiencing smells. According to Cain, labels both help people remember a smell and also influence how people experience the smell.

As a child's proficiency with language remains minimal, (s)he may not be able to verbalize the correct lexical term, but none-the-less is still able to express the emotion in some verbal fashion. For instance, Lewis and Brooks-Gunn (1978) present an example of a 33-month-old child who had recently moved to a new home. When asked how he liked his new house one week after the move, he responded that the house "doesn't taste good" and stuck out his tongue. Using the lexical terms available to him, this communicated affect is not difficult to interpret. Not unlike the beginner musician's effort to communicate a musical phrase to others by incessantly pounding on one or two keys of a piano and then through practice and experience is able to masterfully manipulate the keyboard, emotional expression begins with simple differentiations en route to a more skillful differentiation and communication of inner-states.
We know that a child's ability to recognize emotions surpasses his/her ability to appropriately label them (Lewis & Michalson, 1982). Knowledge of how a child acquires and uses affect labels, then, is important if we are to understand children's emotional experiences more completely. In 1979, research by Zahn-Waxler, Radke-Yarrow, and King suggested that children as young as two-years-old were beginning to understand and produce affect labels. However, where these affect labels come from and their relation to the child's experience of those emotions is only now beginning to be touched upon.

As language development is related to the language use of people interacting with children, studying the acquisition of affect language should focus on the use of such language by the children's care-givers, or parents (Lewis & Michalson, 1982). Since maternal affect language is more likely to occur in some incidents than in others, it becomes necessary to restrict or control the situations in which this interaction is to be studied. As such, a "strange situation" paradigm is the situation of choice, as it is likely to elicit the requisite affect terms. According to Ainsworth, Blehar, Waters, and Wall (1978), this restricted environment elicits a spontaneous sample of the mother's language, is more likely to
elicit affect terms due to the induced stress on both mother and child, and is predictive of other situations the mother and child may find themselves in.

Recent research relating language and affect indicates that many children acquire the first semblance of feeling-state words at approximately 18-20 months (Bretherton, Fritz, Zahn-Waxler, & Ridgeway, 1986). Also, according to Bretherton and Beeghly (1982), mothers report that their children are able to talk about feeling states at about 28 months. Research in this area ranges in scope from documenting infants' ability to differentiate emotions (Harris, 1989), to when children first use feeling state words in conversation (Bretherton, McNew, & Beeghly-Smith, 1981), to infants' affective communicative skills and how adults support the integration of expressive and referential talking (Adamson & Bakeman, 1985).

Studies pertaining to recognition and/or understanding of emotions in preschool aged children indicate individual differences in how children respond to distress (Cummings, Hollenbeck, Ianotti, Radke-Yarrow, & Zahn-Waxler, 1986), talk about their emotions (Dunn, Bretherton, & Munn, 1987), and understand the situational antecedents of emotion (Denham, 1986). And, infants as young as 6 months of age are able to
use previously learned affective expressions as they learn and develop new interpersonal skills (Kaye & Fogel, 1980). But whether male and female infants react differently to similar internal feeling states, or experience different internal states when confronted with similar situations, is unclear.

Maternal speech can influence how children come to understand their emotions (or affect). This is not debated. In fact, an often cited rationale for the differences seen in childhood understanding of emotional states is the manner in which adults verbally explain or talk about emotions (Dunn, Brown, Slomkowski, Tesla, & Youngblade, 1991). Dunn, Bretherton and Munn (1987) report that, while talking with their infants, mothers in their study routinely labeled such things as psychological states (e.g., boredom), physiological states (e.g., dizziness), and emotional states (e.g., happy). By age two, many children were able to use many of these inner state words themselves, like "sleep", and words typically used to describe pleasant and unpleasant feelings. Of interest here, the study also reveals differences in maternal behavior based on the child's sex. Dunn and colleagues (1987) report mothers consistently used more affective labels with their daughters than with their sons. Also during the investigation, the daughters spontaneously referred to feeling
states more often than did the sons. So, even at age 2 there are documented differences in both maternal and childhood use of affective labels as a function of the child's sex.

Although the research by Dunn et al. (1987) and Beeghly, Bretherton, and Mervis (1986) has illuminated the importance of the mother-infant dyad in children's development of the verbal ability to communicate internal feeling states, research on sex-differences in this area is, at best, inconclusive. Beeghly et al. (1986) performed two studies focusing on how mothers talk about internal states with their language-learning toddlers during social interactions. Dunn et al. (1987), in similar fashion, analyzed the verbalizing of feeling states between mothers and children in naturally occurring conversations within the home. Although Beeghly et al. indicated no sex-differences in maternal speech about internal states, Dunn and her colleagues did find sex-differences. What has not been investigated is whether mothers differentially refer to feeling states as a function of the child's sex and whether specific maternal psychological attributes play a role.

**Genderlect**

Another important characteristic of language must be mentioned: Genderlect. The English language—especially
American English--contains sex-role stereotypes for appropriate speech patterns (Berko Gleason, 1989). Although much of the evidence to support these sex-differences in speech is anecdotal, stereotypes have been observed. Most notably, polite forms, requests and tag questions have been observed in female speech, whereas males use more commands (Lakoff, 1973). Lakoff (1973) reports that women also tend to use more standard phonetic forms than do men, pronouncing the /-ing/ at the end of words like standing, whereas men leave off the /g/ and pronounce the word as if it ends in /-in/.

Despite a lack of empirical evidence to support such claims, many English speakers do believe gender-appropriate speech exists (Berko Gleason, 1989). In a study of first-, third-, and sixth-grade children and adults, researchers asked whether specific sentences would most likely be spoken by a male or female speaker (Ervin-Tripp & Mitchell-Kernan, 1977). Both the children and the adults maintained the stereotypes of genderlect, with the stereotypes of the children more closely resembling the adults as their age increased. Ultimately, the factor most likely to influence a child's acquisition of sex-appropriate speech is differential treatment from adults.
The Development of Emotions

Perspectives: James and Schachter-Singer

In 1884, American psychologist-philosopher William James presented a new perspective from which to view emotion (Plutchik, 1980). Simply stated, there are bodily changes that directly follow a perception of an exciting event. How these bodily changes feel is what James would call the emotion. To illustrate, we do not feel morose because someone close to us has died. Instead, according to the Jamesian perspective, we feel bad because we are crying. Similarly, we feel afraid because we are running, or feel angry because we are fighting. It is physiological arousal that is the basic element in emotional states.

Another version of the physiological arousal thesis has been presented by Schachter and Singer (1962). These investigators posit that arousal is, in general, diffuse. There is little evidence that a specific emotion in any way corresponds to clear-cut, or unique, patterns of arousal. Maintaining that a state of physiological arousal must be present, Schachter and Singer speculate how emotions are labeled. According to their hypothesis, a state of arousal can be interpreted as happiness, anger, or frustration, depending on one's perspective. With only one kind of
physical excitement, or arousal, the emotional state becomes a function of the interpretation. This implies that someone who is physically aroused on a roller-coaster ride, during a fist-fight, or in the throws of passion, will experience the same thing, physiologically. However, the label that is attached to this feeling hinges on the individual's interpretation of the situation, and can be either thrilling (roller-coaster), anger (fight), or excitement (passion), respectively.

It was proposed decades ago that newborns show a general excitement and only begin to differentiate their emotions as they grow older (Bridges, 1932). For example, distress and excitement are differentiated at about 3-weeks of age, anger from distress at about 4-months, and disgust from anger at 5-months, etc. More recently, however, observations by Campos, Barret, Lamb, Goldsmith, and Stenberg (1983) provide evidence that emotions and emotional differentiation in infants may in fact occur in different fashion than first suggested by Bridge. In fact, most contemporary theories of emotional development no longer embrace Bridge's idea that specific emotions differentiate from a general level of excitement, and instead posit that emotional development depends on cognitive development (Lazarus, 1991).
Parent-Child Interaction and the Development of Emotions

Haviland (1976) suggests that Western people—and especially psychologists—expect infants to be void of affect. In explanation, Haviland offers that "pleasurable affects are thought to be 'gaseous' until linked to eye contact and the mother's smile" (p. 375). However, typical infant facial or vocal behaviors that are interpreted by care-givers to be emotional expressions and are responded to as if they were emotional expressions, terminate as a result of the care-givers' interventions (Emde, 1980). This increases the likelihood that similar sequences of behaviors will be enacted in the future. Malatesta (1985) hypothesizes that, in the unlikely event that an infant's distressed behaviors, whether vocal or facial, were mistakenly interpreted to be pleasurable or meaningless behavior, this behavior would gradually become extinct. So, a parent-child interaction is necessary to imbue a socialized expression of emotion.

Geertz (1973) subscribed to the notion that both ideas and emotions are "cultural artifacts" (p. 81), both being subject to the forces of socialization. Observations of mother-child interactions suggest an interaction of individual and cultural proclivities in the socialization of rules governing the expression of emotions (Lewis & Michalson, 1985). For example, looking at mother-infant interactions
during the first two years of life, Brooks-Gunn and Lewis (1982) found mothers to be less responsive to crying male infants than to equally expressive female infants, inferring a socialization rule that boys should not cry.

Research indicates that differential socialization occurs as a function of child's status, as well. For example, handicapped infants were less likely to have their crying behaviors reinforced as an appropriate expression of distress (Brooks-Gunn & Lewis, 1982). Brooks-Gunn and Lewis (1982) note that their data suggests differential maternal responsiveness may also differ as a function of child's developmental level and that these differential socialization patterns of specific emotional expressions are in need of further exploration.

Differences in Emotional Expressiveness

Boys experience greater emotional lability than do girls in the first few months of life, and continue to manifest heightened arousal and lability during infancy (Malatesta, 1985). Infant boys also indicate a greater proclivity for grimacing and other facial emotional expressions than do girls (Phillips, King, & Dubois, 1978; Malatesta, 1980). It is also evident in the literature that males indicate a more readily manifested "startle response" whether asleep or awake.
(Feldman, Brody, & Miller, 1980), are more irritable with higher incidents of intense crying (Phillips et al., 1978), and once the crying has begun, research indicates males are much more difficult to calm than are females (Malatesta, 1985).

It also appears that, from neonatal assessments to at least the first two years of life, boys and girls differ in their responsiveness to social stimuli. Female infants show a greater responsiveness to the human face when assessed neonatally (Malatesta, 1985), have more frequent and sustained eye-contact with care-givers, and show more interest interacting with their mothers than their male counterparts do (Sorce & Emde, 1981; Stoller & Field, 1982). Boys, conversely, tend to avert their eyes more frequently than girls do, and this is evident from birth to at least two years of age (Hittleman & Dickes, 1979; Haviland & Lewis, 1976).

The sex differences evident in early expressiveness and sociability have a possible connection. Haviland (1985) suggests the emotional lability of male infants sets up the male to be less sensitive to environmental cues. Crying uncontrollably of necessity precludes attending to any external stimuli. As such, it is interesting to speculate about the origin of these differences documented above. A
dialectical model may offer insight: A genetic predisposition to emotional lability (thesis) generates a specific social response, or lack thereof (antithesis) resulting in a sex-linked socioemotional behavior (synthesis).

Biological Differences

In the past ten years or so there has been renewed interest into the scientific research of sex differences. For example, research indicates higher androgen levels in prenatal males from 8 weeks gestational age to approximately 24 weeks gestational age—and again during the first six months following birth—than there are in similar-aged females (Smail, Reyes, Winter, & Faiman, 1981). Another important biological distinction between the sexes is the greater physically vulnerability of males—very pronounced at both the beginning and the end of life (Jacklin, 1989). The popular "weaker sex" description often-times attached to the female of the species is a misnomer.

Researchers have begun delving into the biological, as well as sociological, implications. In fact, one such chronicle of research in sex-differences (Moir & Jessel, 1989) maintains that "the sexes are different because their brains are different" (p. 5), and that continuing to assert that men
and women possess similar aptitudes, skills and behaviors is a scientific lie. In 1982, de Lacoste-Utamsing and Holloway reported the corpus collosum to be wider, greater in area, and more bulbous in women than in men, especially if one considered this relative to total brain size. Differences in specific subregions of the corpus collosum have since been reported (see Reinarz, Coffman, Smoker, & Godersky, 1988; Witelson, 1989).

**Biology and Behavior**

Moir and Jessel (1989) posit that man "keeps his emotions in their place; and that place is on the right side of his brain, while the power to express his feelings in speech lies over on the other side" (p. 48). The brain structure, according to Moir and Jessel, makes it more difficult for a man to express emotions verbally. Again, it is this difference in brain structure that allows for better emotional expression in females; the emotional side is more integrated with the verbal side of the brain. Moir and her colleague continue, asserting that "girls learn to speak earlier because they have more efficient brain organisation for speech" (p. 57). As such, girls speak their first words earlier than boys, and often-times develop better vocabularies. At the age of three, approximately 99-percent of girls' speech is comprehensible—it takes boys about one year longer, on
average (Moir & Jessel, 1989). Although there is strong
evidence that hormones play a part in brain development, and
one reason for identifying sex differences in the structure of
the human brain may be to identify specific areas responsible
for sex different behaviors, the biological influences do not
operate in a vacuum. Biological influence is not separate
from social influence. It is the interplay of these
biological and environmental forces that determine eventual
human behavior.

Recent developments in the neurosciences, in particular
the work focusing on the development of synaptic connections
within the brain, seem especially salient here. According to
Seigler (1991), synaptic growth in many parts of the brain
follows a specific developmental course of initial
overproduction followed by a later thinning-out, or pruning
process. The initial overproduction makes cognitive growth
possible. The specific pattern of growth, however, is
determined by experience. In other words, it seems that those
neural connections that are used are maintained and
strengthened, whereas those that are not are thinned-out
(Greenough, Black, & Wallace, 1987). This thinning-out
process allows for more efficient cognitive processing in the
future. Biology and environment are working in tandem.
Certain cognitive abilities, behaviors or aptitudes tend to be ascribed to learning if they are not acquired by all cultures, by all individuals, or by all age groups. Similarly, such attributes are ascribed to development when they are, indeed, universal and consistently occur at specific ages (Siegler, 1991). At this point, it is prudent to make a distinction between experience-expectant and experience-dependent processes. Greenough, Black, and Wallace (1987) submit that synaptic overproduction is developmentally regulated in experience-expectant processes; normal (species expected) experiences at the normal time maintains the normal neural connections. The initial overproduction is dependent on normal, species specific experiences for synaptic maintenance. A dearth of such experiences results in non-typical structures. Depictions of feral children (Berko Gleason, 1989) serve as examples of the necessity of relevant experiences during sensitive periods in development.

The experience-dependent processes are those most often thought of as "learning." Here, various individual experiences determine when and if these connections are made. These synaptic connections appear in response to previously unsuccessful information processing attempts. Again, more synapses are produced than are needed and the thinning-out process occurs. Those synapses that are maintained are those
that are subsequently reinforced through future activities. It is these experience-dependent processes, working in tandem with the differential hard-wiring of the brain as subscribed to by Moir and Jessel (1989), that seems to determine male-specific and female-specific behaviors.
METHOD

Subjects

This study was conducted in a midwestern university community. After securing permission from the Iowa State University Human Subjects Review Committee, two pilot studies were conducted to validate the observation/coding process, to serve as training material for the two coders, and to deal with mechanics such as the best camera angle, configuration of the episodes, and room setup.

Fifteen mothers and their daughters (aged 16 to 24 months), and sixteen mothers and their sons (aged 16 to 24 months) participated in this investigation. Initially, subjects were solicited through the community newspaper. However, the newspaper advertisement resulted in only two responses, of which neither party chose to participate. Consequently, the participants were identified through birth announcements in back-dated issues of the local newspaper. The investigator then identified 112 families with children in the 16 to 24 month age range. Some identified families had moved and some phone numbers were no longer in operation. Thus, of the original 112 families identified, 52 were contacted by phone and 33 consented to participate. Two did not come for their scheduled appointment and efforts to reach them and reschedule appointments were unsuccessful.
After the initial phone contact was established, the participants were sent a follow-up letter reiterating the focus of the study (see Appendix A). The participants also received an *Informed Consent* form (see Appendix B) with instructions to bring the completed form with them to their scheduled appointment.

Participant parents (mothers) ranged in age from 21 to 40 years, with an average of 31.9 years. Mothers of male infant participants averaged 32.8 years of age (range: 21 to 40 years), while mothers of female participants averaged 31.7 years of age (range: 23 to 38 years). The average infant participant age was 19.9 months of age, with males averaging 20.1 months (range: 17 to 22 months) and females averaging 19.8 months of age (range: 17 to 23 months).

**Measures**

**Instruments**

*Parent Information Questionnaire.* The *Parent Information Questionnaire* was developed by the author to gather demographic information from the mother about each of the participants. Variables include: age and sex of child, mother's age, number of children, adoption status of the child, mother's marital and employment status, approximate family income, day-care status (and the number of hours per
Personal Attributes Questionnaire. The Personal Attributes Questionnaire (PAQ) (Spence & Helmreich, 1978) is a self-report instrument consisting of a number of bipolar trait descriptions (see Appendix D). It was utilized to measure the psychological dimensions of masculinity and femininity of the mothers. Each item of the PAQ describes a characteristic that is stereotypically believed to differentiate the sexes. The instrument is divided into three separate scales, labeled Masculinity (M), Femininity (F), and Masculinity-Femininity (M-F). The Masculinity scale contains items representing socially desirable characteristics for both sexes, but believed to be held in greater abundance by males than females. The Femininity scale, conversely, also contains socially desirable characteristics of both sexes, but these characteristics are believed to be more abundant in females. The third scale, Masculinity-Femininity, contains those socially desirable characteristics that appear to vary in the sexes.

Scoring Manual for Parent-Child Interaction Study. This manual (see Appendix E) is an adaptation of The Infant Affect
Scale (Osofsky & Culp, 1986) and The Emotional Availability Scale (Osofsky, Culp, Eberhart-Wright, & Hann, 1987). The manual identifies six affective expressions rated for presence or absence during 30 second intervals of infant-mother interaction. The six expressions are: Joy, Interest, Excitement, Distress, Sadness, and Anger. The manual also includes a 4-point rating scale for measuring both positive and negative hedonic tone of the infant (overall affective tone) and the infant's range of expressed emotion.

The Scoring Manual also includes the physical, verbal, and affective behavior of the mother during 15 second intervals, and the affective interchange between the mother and child. Nine categories are used to code positive, negative, and mixed affect exchanges as well as infant alone, mother alone, and no affect exchange (neither mother or infant displayed affect). Both physical and verbal domains are rated on a 6-point scale every 30 seconds, with 0 representing the "non-occurrences" of affective categories, and 5 representing responsive and/or appropriate behaviors.

Procedure

Fifteen mothers and their daughters and sixteen mothers and their sons (aged 16 to 24 months) consented to participate
in this investigation. One mother-son dyad was not used in the analysis due to a congenital birth defect that significantly skewed the mother-child interactional pattern, leaving a total N of 30 mother-infant pairs.

After contacting the mothers (see description in Subjects section) appointments were scheduled, based on child's routine and/or maternal job responsibilities, at the convenience of the subjects. Consequently, some data collection took place in the evening, some on weekends, and some during week-day mornings and afternoons. All interactions were conducted and video-taped at the Child Development Building, Iowa State University.

The mothers and infants were videotaped during an abbreviated "Strange Situation," an especially rich research paradigm for the study of affect and parent-child interactions (Lewis & Michalson, 1981). This abbreviated model consisted of three episodes and was rated for type and quality of affective interchange. All three episodes, Baseline, Separation, and Reunion, were coded for infant affect. The third and final episode, Reunion, was also coded for maternal emotional availability. This "Strange Situation" paradigm is particularly useful during the mother-infant reunion episode, following a brief separation (Lewis & Michalson, 1981). The
current modification of one separation and one reunion episode is similar to that utilized by Waters, Wippman, and Sroufe (1979).

Immediately upon arriving for their scheduled research appointment, the participants were met at the door by the investigator and ushered into the investigation room where the videotaping took place. The mother/child dyads were given approximately 5 minutes to situate themselves (take off coats, etc.) and take their places behind the table. At this time, the investigator briefly explained the procedure, described the three episodes (Baseline, Separation, Reunion), and explained that after the Reunion episode, the investigator would join them both and the mother would then complete a short questionnaire.

To afford the greatest similarity across subjects and situations, all mothers were then handed a scripted Directions sheet that stated: "I am interested in the parent-child relationship, especially mother-child interactions. As you already know, part of this study involves a short videotaped session. Afterwards, there is a short questionnaire to complete. For the videotaped portion, you are to remain together in this room for one (1) minute. When you hear the bell, you will leave the room for three (3) minutes. When
you hear the bell again, you may return to your child. If at any time you feel your child is too distressed, you may return promptly, BEFORE THE BELL SOUNDS. Thank you for participating in this study" (see Appendix G).

After reading the Directions sheet, the mothers were asked if they had any questions about the procedure. If there were questions about the procedure, the investigator answered them at this time. The investigator did not answer questions about the purpose of the study or what results were hoped for. If questions were directed to these ends, the investigator informed the mothers that a full explanation would be rendered upon completion of the questionnaire, after the Reunion episode.

The investigator then left the room, reiterating to the mother that when the bell sounded, she was to leave for 3 minutes. The mothers were also counseled at this time about the door to the investigation room. Since during the pilot studies the door sometimes did not close completely and then slammed shut during the separation episode and frightened the children, the mothers were instructed to turn the knob and allow the door to close all the way before they released their grasp.
Approximately 30 seconds after departing, the investigator commenced the videotaping of the mother-infant pairs. One minute later, a small bell was sounded, indicating the mother was to exit the room, and leave her child for approximately 3 minutes. Each mother was invited to join the investigator in the observing area, and watch her child through the one-way glass and television monitor. All mothers accepted this invitation.

On only three occasions did a mother decide to rejoin her infant before the 3-minute time interval had expired. Since scoring of affect involved the recording of the clearest expression of affect and was not the result of a cumulative score, mothers who rejoined their infants earlier than the 3-minute standard, did not hinder the investigation in any way.

During the 3-minute separation episode, while viewing her child with the investigator, the mother was again reminded that after she rejoined her child the investigator would join both of them approximately 2 minutes later with the questionnaire. After the mothers completed the questionnaire, the investigator explained the purpose of the study, and how the videotaping and questionnaire would be used. They were thanked, reminded that they would be receiving a summary of
the results in the mail, and were offered a short tour of the Child Development Building facilities.

**Materials**

The testing room was equipped with two microphones, placed three and one-half feet apart, directly above a 4' X 2' table. Facing the table were two children's sized chairs (one for the mother and one for the child). On the table were four types of play items: a doll, 3 plastic vehicles, 7 pop-blocks already linked together, and 7 solid-wood blocks of different shapes. The toys were chosen to represent masculine (plastic vehicles and building blocks), feminine (the doll) and neutral (pop-blocks) play materials.

All play materials were placed within reach of the children, towards the front of the table, prior to the subjects' arrival. The chairs were positioned to allow for the best possible viewing angle by the two wall-mounted cameras, assuring that both the mother's and the child's faces could be seen from one or the other camera. Mothers were instructed to "try" to keep the child near the table at all times, so as to not exceed the capabilities of the videotaping equipment.
Videotapes

Each videotaped scene was superimposed with the subject number (e.g., M102 or F201) signifying the sex of the child via both number and letter to avoid any confusion during coding. In addition to the subject identification, each episode also incorporated a superimposed "time" element (Hours : Minutes : Seconds) to better facilitate the two scorers' reliability during coding. Both the time and the subject numbers were seen in the lower left-hand corner of the television screen, and did not inhibit the view of the scorers during the coding process.

Coding

A coding map shows how all variables in this study were coded (see Appendix H).

Reliability

Pilot studies established reliability coefficients of .92 for Emotional Availability and .79 for Infant Affect. The coders met two additional times during coding of the data to test for reliability, achieving an average of .91 for Emotional Availability and .82 for Infant Affect. Reliability was determined using the number of agreements divided by the number of agreements plus the number of disagreements (Osofsky et al., 1990). Osofsky et al. (1990) suggest the reliability
should be approximately 85 percent agreement using this formula.

**Infant Affect**

The first two episodes (Baseline and Separation) were coded for infant affect alone, and the Reunion episode was coded for infant affect and maternal emotional availability (see Appendix E for scoring criteria). Using continuous 30 second intervals, infant affect was coded for presence or absence. After coding the presence or absence of specific affective expressions (joy, interest, excitement, distress, sadness, anger), the coders then determined the clarity of the expression on a 5-point scale. The clarity of affective cues has to do with the strength of the child's expressions, not the scorer's certainty of the affect being expressed. These scaled scores were used in the analysis.

**Maternal Emotional Availability**

The concept of emotional availability, according to Osofsky et al. (1990), refers to the mother's availability to her child as a "beacon of orientation," providing information and confidence to continue play and exploration behaviors. This measure indicates how accessible the mother is to her child. Each domain of maternal emotional availability (visual, touching, talking) was coded every 15 seconds using a
continuous interval technique. Availability was coded for presence or absence and then rated on a 6-point scale, ranging from 0 (not applicable), to 5 (high level of availability). A rating of 0 was included in the scoring process to represent those situations in which a particular domain of maternal emotional availability was not present. The original 5-point scale (Osofsky et al., 1990) included a "no response" category that suggests a purposeful act on the part of the mother to not respond to child. A code representing a "not applicable" category was seen as a necessary revision/addition to the coding scheme for the occasions when the mother does not respond to her child in a specific manner due to other parenting responsibilities, because she is already engaged with her child in another capacity, or when she is simply unaware a response was necessitated (e.g., looking in the opposite direction). The "not applicable" category, then, does not infer purpose or intent.

Complimentary domains of affect exchanges were also coded during the Reunion episode. These exchanges were rated according to the vocal and facial expressions of BOTH the mother and the child. These exchanges were coded for the presence/absence of positive or negative expressions. The coding does allow for the observation and scoring of no affect
exchanges (None - No exchanges observed). Raw numbers, representing the actual observed number of exchanges, were used for the coding of Affect Exchanges and were used in the analysis.

Affect Change Scores

Affect change scores were calculated for each of the six affect categories. A total of twelve affect change scores, six positive (joy, interest, and excitement) and six negative (distress, sadness, and anger) were calculated. Affect change scores for positive affect expression were calculated by subtracting the strength of expression scores at episode 1 (Baseline) from those at episode 2 (Separation) and again, subtracting the strength of expression scores at episode 2 (Separation) from those at episode 3 (Reunion). This procedure resulted in two sets of affect change scores for the three positive affect expression categories.

Affect change scores for negative affect expression were also calculated by subtracting the affect expression scores attained at episode 1 (Baseline) from those at episode 2 (Separation) and again, subtracting those expression scores at episode 2 (Separation) from those at episode 3 (Reunion). This procedure resulted in two sets of affect change scores for the three negative affect expression categories.
Hedonic Tone

Two global affect ratings were made for the infants. These global ratings described the overall positive (positive hedonic tone) and overall negative (negative hedonic tone) expressed by the infant. The positive and negative hedonic tone was based on the highest possible level of positive and negative affect present during the entire six minutes of scored interaction, regardless of duration or frequency.

The positive hedonic tone scores were based on a 4-point scale from 1 (hedonic tone is negative or neutral) to 4 (vigorous smiles, with clarity of 3 or higher). The negative hedonic tone scores were based on a 4-point scale from 1 (hedonic tone is positive or neutral) to 4 (marked distress, with clarity of 3 or higher).

Data Analysis

A 2 X 3 X 3 split-plot analysis of variance (ANOVA) using the SAS general linear model was performed to determine the effects of child’s sex (male or female), mother’s sex-type (masculine, feminine, or androgynous) and episode (baseline, separation, and reunion) on child affective expression. A 3 X 2 analysis of variance using SAS general linear model were performed to determine the effects of maternal sex-type
(masculine, feminine, or androgynous) and sex of child (male or female) on infant affect expression (joy, interest, excitement, sadness, distress, and anger) during each episode (Baseline, Separation, and Reunion).

The Pearson product moment correlations were used to determine relationships among demographic variables, and between demographic variables and affect scores, affect change scores, and maternal sex-type categories. Pearson partial correlations were used to determine the effects of daycare status on infant affect expression. The effects of maternal employment status, educational status and reported family income were partialled out.
RESULTS

The purpose of the study was to examine the influences of child's sex, maternal sex-type, and assorted social variables on mother-infant interaction. Of special import is how these variables relate to affect and affect expression of children.

Subjects

All subjects classified themselves as White on the Parent Information Questionnaire. The ages of the children ranged from 17 to 23 months (M = 19.9 months). Mothers' ages ranged from 21 to 40 years (M = 32.2 years) (see Table 1). Of the 15 male and 15 female infants who participated in the study, all were the biological children (not adopted) of their mothers.

Table 1. Description of subjects.

<table>
<thead>
<tr>
<th>Subjects</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>16</td>
<td>17 mos.</td>
<td>22 mos.</td>
<td>20.1</td>
</tr>
<tr>
<td>Females</td>
<td>15</td>
<td>17 mos.</td>
<td>23 mos.</td>
<td>19.8</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td></td>
<td></td>
<td>19.9</td>
</tr>
<tr>
<td>Mothers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>of sons</td>
<td>16</td>
<td>21 yrs.</td>
<td>40 yrs.</td>
<td>32.8</td>
</tr>
<tr>
<td>of daughters</td>
<td>15</td>
<td>23 yrs.</td>
<td>38 yrs.</td>
<td>31.7</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td></td>
<td></td>
<td>31.9</td>
</tr>
</tbody>
</table>
Over 77% of the children in this study were either first- or second-born children and over 90% of the mothers were married at the time of the study, with 84% in their first marriage. Of the mothers, 42% indicated they worked fewer than 20 hours per week; 19% indicated they were not employed at the time of the study. Almost half (42%) of the mothers indicated an approximate gross family income of $31,000 - $50,000. Of the children, 61% were enrolled in some type of daycare arrangement, with over 30% enrolled 30 or more hours per week. All mothers reported at least a high school education; 58% had a college or other professional degree.

Infant Affect Expression

The six levels of the dependent variable specified 6 child affective states representing 3 positive and 3 negative emotions. These include: 1) Joy, 2) Interest, and 3) Excitement, and 4) Distress, 5) Sadness, and 6) Anger.

Episodes

The six affective states were measured at three different episodes, Baseline, Separation, and Reunion. Results of a $2(\text{sex of child}) \times 3(\text{maternal sex-type}) \times 3(\text{episode})$ analysis of variance using the SAS general linear model indicated statistical significance for all six affect categories as a function of episode.
Table 2 illustrates how children express both positive and negative affect differently as a function of episode. All positive affects, joy, interest and excitement, were expressed more powerfully during Baseline and Reunion episodes than during Separation. Conversely, the three negative affects, distress, sadness and anger, were more resolute during Separation.

Table 2. Means, F-values and significance levels for six categories of infant affect by episode.

<table>
<thead>
<tr>
<th>Affect</th>
<th>Episode</th>
<th>F-Value</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Positive</td>
<td>Means</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joy</td>
<td>1.97</td>
<td>0.27</td>
<td>2.67</td>
</tr>
<tr>
<td>Interest</td>
<td>4.83</td>
<td>4.10</td>
<td>4.90</td>
</tr>
<tr>
<td>Excitement</td>
<td>0.50</td>
<td>0.06</td>
<td>1.13</td>
</tr>
<tr>
<td>Negative</td>
<td>Means</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distress</td>
<td>0.17</td>
<td>2.50</td>
<td>0.73</td>
</tr>
<tr>
<td>Sadness</td>
<td>0.00</td>
<td>2.07</td>
<td>0.17</td>
</tr>
<tr>
<td>Anger</td>
<td>0.00</td>
<td>0.80</td>
<td>0.10</td>
</tr>
</tbody>
</table>

Note: Episodes: 1=Baseline, 2=Separation, 3=Reunion

Sex of Child

A 2(sex of child) X 3(maternal sex-type) X 3(episode) ANOVA revealed a significant effect for sadness, one of the negative affects, as a function of sex, F(1,48) = 3.95, p <
.05. Boys (M = 1.02) expressed significantly more sadness collapsed across episodes than did girls (M = 0.46).

Distress, another negative affect, also proved to be significant as a function of the interaction of sex and episode $F(1,48) = 4.41$, $p < .05$. A 2(sex of child) X 3(maternal sex-type) X 3(episode) ANOVA indicated that boys (M = 2.92) expressed significantly more distress during Separation than did girls (M = 1.64). An examination of the means for boys and girls by episode shows that boys were more expressive of negative affect as a function of episode and girls were more expressive of positive affect as a function of episode (see Table 3).

Table 3. Affect expression means by episode for boys and girls.

<table>
<thead>
<tr>
<th>Sex of Child</th>
<th>Affect Expression</th>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Joy</td>
<td>Interest</td>
</tr>
<tr>
<td>Boys</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>1.69</td>
<td>4.89</td>
<td>0.78</td>
</tr>
<tr>
<td>Separation</td>
<td>0.00</td>
<td>3.92</td>
<td>0.00</td>
</tr>
<tr>
<td>Reunion</td>
<td>2.62</td>
<td>4.85</td>
<td>1.15</td>
</tr>
<tr>
<td>Girls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>2.14</td>
<td>4.71</td>
<td>0.57</td>
</tr>
<tr>
<td>Separation</td>
<td>0.57</td>
<td>4.36</td>
<td>0.00</td>
</tr>
<tr>
<td>Reunion</td>
<td>2.79</td>
<td>4.93</td>
<td>1.14</td>
</tr>
</tbody>
</table>
Figure 2. Expression of affect means for boys and girls collapsed across episodes.
Figure 2 shows how boys and girls differentially express emotions collapsed across episodes.

Infant Affect Expression and Affect Change

Marital Status, Family Income, and Daycare Status were associated with the quality of infant affect expression, and infant affect change across episodes. Table 4 shows the significant relationships among maternal marital status, reported family income, child’s daycare status and infant affect expression and infant affect change variables.

Marital Status

Marital status was correlated with children's increase in joy from episode 2 to episode 3 (r = .39, p < .05). Children of mothers currently married exhibited a significantly greater change in the affect joy from Separation to Reunion. This suggests that children whose mothers were married during the study increased their expression of joy when reunited with their mothers.

Marital status was also associated with infant affect expression, with children of mothers who were currently married expressing significantly more distress during Baseline (r = .37, p < .05) than children of single mothers. Children of married mothers also expressed significantly less joy at
Table 4. Pearson correlations among marital status, family income, and daycare status, and significant infant affect expression and infant affect change scores.

<table>
<thead>
<tr>
<th>Demographic Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Marital Status</td>
<td>--</td>
<td>.41*</td>
<td>.09</td>
<td>.37*</td>
<td>-.36*</td>
<td>-.07</td>
<td>-.43**</td>
<td>.39*</td>
</tr>
<tr>
<td>2) Family Income</td>
<td>--</td>
<td>.19</td>
<td>.26</td>
<td>-.25</td>
<td>-.35*</td>
<td>-.15</td>
<td>.34</td>
<td></td>
</tr>
<tr>
<td>3) Daycare Status</td>
<td>--</td>
<td>-.35*</td>
<td>-.02</td>
<td>-.27</td>
<td>-.09</td>
<td>.08</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Affect Expression</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>4) Distress (Baseline)</td>
<td>--</td>
<td>.25</td>
<td>.17</td>
<td>-.37*</td>
<td>.09</td>
</tr>
<tr>
<td>5) Joy (Separation)</td>
<td>--</td>
<td>.11</td>
<td>.09</td>
<td>-.50***</td>
<td></td>
</tr>
<tr>
<td>6) Excitement (Reunion)</td>
<td>--</td>
<td>.24</td>
<td>.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7) Interest (Reunion)</td>
<td>--</td>
<td>-.27</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Infant Affect Change</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>8) Joy (Episode 2 to 3)</td>
<td>--</td>
</tr>
</tbody>
</table>

*p < .05. **p < .01. ***p < .005.
Separation ($r = -0.36, p < 0.05$), and less interest at Reunion ($r = -0.43, p < 0.05$).

Mothers who were married were more likely to engage in reciprocal physical contact with their infants ($r = 0.41, p < 0.05$). Reciprocal physical contact refers to those incidents when the mother responds to the child's physical contact with appropriate, nonaversive physical contact.

**Family Income**

Family income is associated with infant affect expression during Reunion. Children of mothers indicating less income tended to express greater excitement when reunited with their mothers ($r = -0.35, p < 0.05$) than did their more affluent peers. Mothers reporting higher income were also more likely to be married at the time of the study ($r = 0.41, p < 0.05$).

**Daycare Status**

The child's daycare status was associated with the negative affect, distress. The more hours a child participated in daycare per week, the less distress the child expressed during the Baseline episode ($r = 0.35, p < 0.05$). This suggests that children in daycare may be used to novel situations and different environments, thereby feeling less distressed.
Maternal Sex-type

The literature on sex-typing (see Bem, 1978) has suggested that individuals classified as undifferentiated (or gender aschematic) be included in the androgynous category (also gender aschematic), as both instances reflect an "evenness" or nonpreference for sex-typed sex roles. In the current study mothers classified as androgynous and undifferentiated were collapsed into one androgyny category. Although at two different extremes, with androgyny typically representing high levels and undifferentiation representing extremely low levels of masculine and feminine psychological traits, this transformation is especially salient to this study, since only three mothers (one with a daughter and two with sons) were classified as undifferentiated. With such a small number in that cell (n = 3), it also would have been appropriate to simply delete those subjects from the data set altogether. However, with the small number of subjects (N = 30), all subjects were retained.

Analysis of the data reveals that maternal sex-type was significantly related to the quality of affect exchange between mother and infant. Table 5 indicates the significant relationships between maternal sex-type and the quality of affect exchange between mother and infant. No significant relationships were found for Affect Exchange—None, Positive
Affect Exchange, or Mixed Appropriate Affect Exchange. Gender schematic (feminine typed) mothers (n = 7) were more likely to be engaged in interchanges with their infants in which the infant did not respond ($r = .36, p < .05$).

Masculine typed mothers (n = 9) were more likely to be engaged in exchanges with their infants in which the children did respond ($r = -.35, p < .05$). A one-way (mother) affect exchange occurs when the mother initiates an affective gesture, but is not responded to by her child. This type of interaction was least likely to occur with masculine-typed mothers and their children. In other words, the masculine sex-type was associated with child responsiveness. Mothers classified as masculine were also more likely to utilize mixed questionable affect exchanges in attempts to calm, or redirect their upset infants ($r = .43, p < .05$).

Table 5. Maternal sex-type and mother-infant affect exchange.

<table>
<thead>
<tr>
<th>Sex-type</th>
<th>n</th>
<th>One-way</th>
<th>Affect Exchanges</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mother</td>
<td>Child</td>
</tr>
<tr>
<td>Feminine</td>
<td>7</td>
<td>.36*</td>
<td>.22</td>
</tr>
<tr>
<td>Masculine</td>
<td>9</td>
<td>-.35*</td>
<td>.28</td>
</tr>
<tr>
<td>Androgynous</td>
<td>14</td>
<td>.02</td>
<td>-.44**</td>
</tr>
</tbody>
</table>

* $p < .05$. ** $p < .01$. 
Androgynous mothers (n = 14) were the least likely of the three sex-type categories to be involved in one-way child expressions. That is, mothers classified as androgynous were highly responsive to their children's affective overtures ($r = -.44, p < .01$).

**Child's Sex and Maternal Sex-type Interaction**

Separate 2(sex of child) X 3(sex-type of mother) ANOVAs were performed to determine the effects of child's sex and mother's sex-type on infant affect expression. Results indicate a main effect for sex of child at Separation for the negative affect, distress, $F(1,29) = 5.09, p < .03$ (see Table 6a). The data indicate that boys are more expressive of distress when they are separated from their mothers than are girls. Data also indicate an interaction between maternal sex-type and sex of child when expressing excitement during Baseline, $F(2,24) = 3.32, p < .05$ (see Table 6b). Boys

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>1</td>
<td>17.80</td>
<td>17.80</td>
<td>5.09</td>
<td>.03</td>
</tr>
<tr>
<td>Sex-type</td>
<td>2</td>
<td>1.12</td>
<td>0.56</td>
<td>0.16</td>
<td>.85</td>
</tr>
<tr>
<td>Sex X SexType</td>
<td>2</td>
<td>12.93</td>
<td>6.46</td>
<td>1.85</td>
<td>.18</td>
</tr>
<tr>
<td>Error</td>
<td>24</td>
<td>83.98</td>
<td>3.49</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 6b. Effects of child's sex and maternal sex-type on infant expression of excitement during baseline.

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>1</td>
<td>0.03</td>
<td>0.03</td>
<td>0.04</td>
<td>.85</td>
</tr>
<tr>
<td>Sex-type</td>
<td>2</td>
<td>0.99</td>
<td>0.49</td>
<td>0.54</td>
<td>.59</td>
</tr>
<tr>
<td>Sex X Sex-type</td>
<td>2</td>
<td>6.17</td>
<td>3.09</td>
<td>3.32</td>
<td>.05</td>
</tr>
<tr>
<td>Error</td>
<td>24</td>
<td>22.29</td>
<td>0.93</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

expressed more excitement with androgynous mothers, whereas girls were more expressive of excitement with masculine mothers.

A 2(sex of child) X 3(sex-type of mother) ANOVA, with infant affect collapsed across episodes, was performed and showed significant main effects for sex of child in the expression of distress, $F(1,89) = 3.79, p < .05$. Boys were much more expressive of this negative affect than are girls (see Table 7).

Table 7. Effects of maternal sex-type and child's sex on the expression of distress collapsed across episodes.

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>1</td>
<td>10.04</td>
<td>10.04</td>
<td>3.79</td>
<td>.05</td>
</tr>
<tr>
<td>Sex-type</td>
<td>2</td>
<td>2.44</td>
<td>1.22</td>
<td>0.46</td>
<td>.63</td>
</tr>
<tr>
<td>Sex X Sex-type</td>
<td>2</td>
<td>9.70</td>
<td>4.85</td>
<td>1.83</td>
<td>.16</td>
</tr>
<tr>
<td>Error</td>
<td>84</td>
<td>222.35</td>
<td>2.65</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Other Findings

Frequency data show that mothers were observed to practice either prolonged visual regard (looking at child for longer than 5 seconds) or reciprocal visual regard (child and mother look and break-off looking in tandem) over 87% of the time. Conversely, observed behaviors indicated only 6.5% of the physical contact between mothers and their children were of the reciprocal type. At least 22% of the verbal interactions between the mothers and their children constituted reciprocal talking, with almost 70% of the verbal interactions interrogative or reciprocal in nature.

On no occasion did a mother-child dyad present negative exchanges of affect. In fact, 74% of the children presented warm smiles and laughter when with their mothers.

Pearson partial correlations were used to determine the effects of infant daycare status on infant affect expression. The effects of maternal employment status, maternal educational status, and reported family income were partialled out. No differences were indicated.
DISCUSSION

Psychologists have found consistent sex-different behaviors in children and adults for decades (see Maccoby & Jacklin, 1974; Moir & Jessel, 1991; Eagly, 1993). Recently, there has been an influx of developmental data from the field of biology and psychobiology (see de Lacoste-Utamsing & Holloway, 1989; Moir & Jessel, 1989) documenting the actual structural differences in the brains of men and women. Biological sex is related to language development, with girls speaking earlier than boys and developing larger vocabularies (Moir & Jessel, 1989). And, it is now known that many parts of the brain follow specific developmental sequences of synaptic overproduction followed by a thinning-out process that is largely determined by experience (Seigler, 1991). As biology and environment work in tandem, these structural differences found in the male and female brains may be the product of society's training which has its genesis in the mother-child relationship.

The literature is replete with studies documenting parental differential treatment of their children from birth onward (Maccoby, 1980; Rubin, Provenzano, & Luria, 1974). Parents differentially treat their children, and society as a whole differentially treats its members, according to their
biological sex (Ridgeway, 1992). This has been confirmed by scientific and casual observations alike. The present study attempted to determine if this differential treatment is a function of the child's sex, a function of maternal sex-type, or a dialectic relationship between both the child's sex and maternal sex-type. Other descriptive variables (e.g., family income, educational status of mother) were included in the analysis.

Affect Expression

Sex of Child

Results of the data analysis do not indicate that mothers interact differently with their children as a function of the child's biological sex, except in the exchange of positive affect. Mothers engaged in more positive affect exchanges with daughters than with sons. This manner of interaction is reciprocal in nature in that the affect is exchanged between the mother and child. This seemingly sex-different interaction is most likely not the result of differential socialization practices on the part of the mothers, but instead is a function of the boys' behavior. Boys were more expressive of negative emotions, especially distress, and as Malatesta (1985) points out, they also experience greater emotional lability and are more difficult to calm.
It has also been suggested by Fagot and Hagan (1991) that mothers reinforce negative or aggressive behaviors in boys, but act to inhibit this expression in girls. Although this may be the case for the participants in the current investigation as well, the small N and restricted observation (6-minutes) in an unnatural setting make this explanation conjecture.

Boys in this study were more expressive of negative affect. This is consistent with previous research (see Malatesta, 1985). In this study, boys not only express more distress during separation, but express more distress collapsed across episodes.

Episodes

Results of this study suggest that children are more likely to express differing degrees of specific emotions as a function of the various types of episode. That is, the children in this study expressed negative affect more intensely during a brief separation from their mothers and expressed more positive affect during their times with their mothers. This finding is consistent with the literature on attachment and mother-infant interaction (see Ainsworth, 1973; Ainsworth et al., 1978; Waters et al., 1979; Lewis & Michalson, 1981). Infants this age tend to express much distress and sadness when their mother is absent. This
distress is often an indicator of attachment strength and type.

**Demographic Variables**

**Marital Status.** Children of mothers who reported they were married during the study, indicated more joy when their mothers were with them than did their peers whose mothers were not married. Paradoxically, these same children expressed more distress during the baseline episode. These children were apparently wary of their new environment regardless of the presence or absence of their mothers, but happier when mother was near.

Married mothers were also more likely to engage in physical contact with their children in a reciprocal manner. This "higher order" touching refers to nonaversive, appropriate responses to child-initiated contacts. Mothers who were married during this study appeared to be much more responsive in this domain.

**Family Income.** Reported family income proved to be significantly related to the child's expression of excitement when reunited with mother. The lower the reported income, the more excitement was expressed. A possible interpretation for this surprising finding could be related to the children's face-to-face interactions with their mothers. More clearly, since the lower the reported income the lower the observed
excitement at Reunion, one could speculate that those children of mothers reporting less income have more en face time with their mothers due to fewer toys, or less separation time from their mothers as a result of employment responsibilities.

**Daycare Status.** The number of hours a child spent in daycare, per week, was also associated with infant affect expression. More specifically, children who spent more time in daycare during the week expressed less distress during the baseline episode. It is possible that the children’s experience in novel situations—going to daycare settings outside the home—has played a role in their experience of the experimental setting as well. Novel situations are no longer frightening, so they express much less distress than their peers who have less experience with separation.

**Maternal Sex-type**

Differential treatment of children may not be a function of the child's biological sex. Both the male and the female children in this study seemed to differentially express certain emotions as a function of maternal sex-type. Previous research (Baumrind, 1982; Bem, 1978; Susser & Keating, 1990) suggests that sex-type does affect parental behavior towards children. In fact, Baumrind (1982) maintains that androgynous mothers are more field-dependent and use more guilt induction than their sex-typed peers, whereas sex-typed mothers
(feminine) are more loving, responsive and involved, and masculine typed mothers are less loving and tend to be more ill-tempered.

The data suggested that feminine-typed mothers engaged in affective gestures that were not responded to by their children, but that those mothers classified as masculine were less likely to become involved in such an interaction. If masculine mothers are more ill-tempered and less loving, it would behoove a child to respond when overtures are made by mother. However, consistent with the literature, observational data suggests that masculine mothers were less demonstrative of affection in general, sometimes even failing to soothe their sobbing child upon reunion.

Although speculation at this point, one might suspect that the loving, involved and responsive style typical of feminine-typed mothers may at times overwhelm or become intrusive, necessitating the child to ignore or not respond to the advances of the mother. Observational data tends to confirm just such an interpretation; some feminine-typed mothers provided a nearly constant barrage of labeling, imploring and communication strategies.

Androgynous mothers were likely to engage their children in affective exchanges and were responsive to them. This is consistent with previous research. In this study, the
androgynous classification was associated with responsiveness. If the mother was so classified, she was the least likely of the three sex-type classifications to not respond to her child's affective overtures. Androgynous mothers are said to be field dependent so this tendency may aid in their responsiveness. Taking the environmental as well as infant facial and behavioral cues into account, the androgynous mother was exceptionally responsive to her child.

Child's Sex and Maternal Sex-type Interaction

According to Baumrind (1982), parents of different psychological sex-types act very differently from one another. In the current study, feminine sex-typed mothers proved to be either avoidant and questionable in their visual regard for their infants, or at least inconsistent, and androgynous mothers were very responsive. Masculine-typed mothers more likely to be responded to by their infants, but were less responsive, overall, than their other sex-typed peers. Masculinity is associated with instrumentality and assertiveness. Perhaps the masculine-typed mothers felt the need to assert and show what they could do, taking charge of the event, and making sure they had control of the observed interactions.
Conclusion

The present study was undertaken to investigate possible sex-different affective expressions in children ages 16- to 24-months, and to investigate the possible function of child's sex, maternal sex-type, and various demographic variables on any observed differences. The data from this study appear to suggest that there is, indeed, an interaction between the mother and child in infant affect development. Sometimes, it may even be that the child is "leading" in the mother-child interaction. As a function of sex-type, boys and girls are apparently different in their affective expression. The "dance" is never more evident than in this sex-type-sex interaction.

The subjects consisted of 30 children between the ages of 16- and 24-months. Research has indicated that children as young as 18-24 months have already acquired the first semblance of feeling-state words and the ability to understand and communicate their emotions (Bretherton et al., 1986). These youngsters' ages represent the ages just prior to and immediately after the age range when the first understanding of feeling states is likely to occur.

In this study, girls were more expressive of positive affect (interest, joy, and excitement) and boys were more expressive of negative affect (anger, distress, and sadness).
This finding is consistent with previous research (see Malatesta, 1985) that consistently shows greater male irritability and lability of mood.

Consistent with previous research on sex-typing and maternal behaviors (see Baumrind, 1982; Bem, 1978; Susser & Keating, 1990), mothers in this study did present different patterns of interacting with their children as a function of sex-type. Gender schmatic mothers (feminine) were less likely to be responded to by their infants, whereas masculine-typed mothers were more likely to be responded to. The androgynous mothers in this study were the most responsive to their children.

Maternal education and reported family income were associated with child affect expression. Those children whose mothers reported less income presented more excitement when reunited with their mothers than did those children whose mothers reported more income. Those mothers with lower educational attainment had children who showed a greater change in the expression of sadness from separation to reunion. These children expressed high levels of sadness when separated from their mothers, but dramatically changed this negative affect when reunited with their mothers. This change was more extreme than that of their peers whose mothers indicated higher educational achievement.
Limitations of the Study

Hade (1990) intimates several variables that can come to play in the investigation of sex differences. Many apply to this investigation, as well. For example, the limited time frame of the observations (approximately 6 minutes) may have influenced the kind of behaviors that were observed. However, since this study concerned itself with the type of response and not the number of responses, this argument may not be valid.

Another possible and, in this case, more probable extraneous variable is the subjects knowing they are being observed (the two-way mirror and video-cameras). The Hawthorne Effect, knowing that one is being observed and hence changing one's behaviors as a result, may have had an effect here: Mothers with lower educational attainment behaved differently than their more highly educated peers. This may be a direct result of knowing one is being observed and not wanting to do the "wrong thing." This effect would not be a reasonable explanation for the sex-different child expressions, however. The children were much more concerned with mothers' absence than with being observed.

Most behaviors seen in laboratory situations, it is often argued, vary dramatically from what one would observe in a more natural setting. However, since both sexes in this study
experienced the exact same environment, any observed differences had to be due to the sex of the children, the sex-type of the mothers, or a combination of the two. All other factors were held constant. In essence, although the exact type of behavior one would see in the "natural" environment may in fact differ from the type of behavior observed in a "laboratory" environment, the fact that sex-different behaviors are observed is still significant. That they may be different from those found in a more "natural" setting is not argued. They probably are different. But, the fact that these differences are found in the laboratory suggest that some type of differences may in fact exist in the natural environment as well. How they manifest themselves may well be the subject of future research endeavors.

Of course the replication of this study with a larger sample size would be desirable given the sample size of this investigation (N = 30 mothers; N = 30 infants) was admittedly small. Also of importance, since all subjects represented white middle class families, any attempt of generalization to other populations is not permitted.

It would also be of interest to include fathers and fathers' sex-types in future investigations of this sort. This investigation purposefully chose only the mother-child
interaction because of its primacy. However, inclusion of the father as well would add interesting and valuable information to the continually growing corpus of socialization literature.

The coding system, albeit extensive and well researched, fails to offer validity and reliability benchmarks. Though the inter-rater reliability for this study was quite high, not knowing the validity and reliability of the instruments is unsettling. Consequently, with such an abundance of variables to consider, some of the findings may be by chance regardless of statistical significance.

Suggestions for Future Research

The area of sex differences offers a wide array of possible topics for future study. With the advent of high powered technologies capable of looking inside the human brain (MRIs and CT-Scans) future research will likely be collaborative in nature between psychology and biology as the inter-play between nature and nurture is further delineated.

The specific area of psychological sex (sex-typing) seems especially fruitful for future research endeavors as well. With the relationship between maternal sex-type and parenting style or child affective expression found in the present study, future researchers may wish to investigate how this social interaction comes to encourage different patterns of emotional expression in males and females. Perhaps
longitudinal studies would be of value to more clearly understand the developmental function of emotional development and parental sex-type.

Some would argue that any differences found between the sexes should be down-played, or ignored (see Eagly, 1993; Shapiro, 1988) because of possible misuse or misinterpretation of the findings, that biology is destiny. However, instead of thwarting social and personal growth, the consistently found differences between the sexes can be beneficial. Instead of structuring a society based on the "scientific lie" of sameness (Moir & Jessel, 1989) or enduring years of frustration and anxiety because of social proscriptions, finding and explaining sex-different behaviors can potentially be more of an "unshackling" for society than either the denial of differences, or the misguided attempts to create uniformity.
REFERENCES


ACKNOWLEDGMENTS

So much goes into the researching and writing of a dissertation. It takes a lot out of a people; both the person doing the work and those he interacts with. As such, I need to thank my lovely wife, Rachel, and equally lovely daughter, Megan, for all they have put up with, missed, and simply endured during the past year or so. Thank you. It will get better.

Sedahlia Crase has also been wonderful and supportive—not just through the dissertation, but my whole program of study. I have really enjoyed working with you and consider myself lucky to have chosen you as my major professor. Thank you for all you have done, and I hope we can continue to work together in the future.

My whole committee worked well together. Thank you Dr. Littrell, Dr. Hegland, Dr. Stockdale, Dr. Strahan, and Dr. Crase for your time, comments, and direction.

I want to say a special thank you to Delora Hade, without whom much of this would still be going on. Delora assisted in the coding of many videotapes. To you, Delora, I will be forever grateful. Because of you, I am done!
APPENDIX A. LETTER TO MOTHERS
Dear Parent:

Thank you for your interest in my research, and for agreeing to participate in this project. As I told you on the phone, I am a doctoral student in the Department of Human Development and Family Studies, at Iowa State University, majoring in Child Development. I have particular interests in the parent-child relationship. More specifically, I am interested in the many factors that influence the connection between mothers and their child(ren).

Mothers have a unique relationship with their children. Beginning at birth, and enduring throughout the life-span, this relationship is maintained and continues to evolve. For this study, however, the interactions between mothers and children who are just beginning to understand and use language are of interest.

The information you provide will assist me as I seek to understand the unique mother-child interactions at this age. I will use a questionnaire and a short video-taped interaction of not more than 20 minutes to gather information. All information identifying you and your child (i.e., name, address, phone number) will remain confidential, and will not be used in the data analysis.

Should you have questions about this study, or your role in it, please feel free to call me at my office (294-8016), or at my home (233-6083), or contact Dr. Crase at (294-3040). We'll be happy to answer any questions you might have.

I appreciate your participation in this research study. Thank you for your time.

Sincerely,

Jim Hanson
Doctoral Student

Sedahlia Jasper-Crase, Ph.D.
Major Professor
APPENDIX B. INFORMED CONSENT FORM
Informed Consent Form

I have discussed the research project with Jim Hanson and/or Sedahlia Crase and I am willing to participate in this study.

I understand that:

a. I will be asked to complete a questionnaire during the investigation. The questionnaire will relate to parent-child interactions and to aspects of the project.

b. My child and I will be taped with a video camera during the investigation for not more than 20 minutes, at a time that is agreeable to me. All interactions will be video-taped within the confines of the Iowa State University Child Development Building.

c. I am free to inquire about any aspect of the project at any time and I will receive full information about it.

d. Results of the study will be provided upon its completion.

e. I may withdraw my consent and discontinue participation in the project at any time without any repercussions from the project personnel.

f. All information gathered during this investigation will remain confidential. The video-taped interactions will not be used for any purposes except those pertaining to understanding, and study of, the parent-child relationship.

Name: ____________________________________________
Address: __________________________________________
Date: ____________________
Telephone: ___________________________
APPENDIX C. PARENT INFORMATION QUESTIONNAIRE
Parent Information Questionnaire

Please answer as accurately as possible.

1. Your child is: _____ Boy _____ Girl

2. Your child's age: _____ (months)

3. Your age: _____

4. Race: _____ (white) _____ (Black) _____ (Hispanic) _____ (Asian) _____ (Native American) _____ (Other, please indicate)

5. This is my _____ first child. _____ second child. _____ third child. _____ fourth child. _____ fifth or more (please indicate number).

6. Is your child adopted? _____ Yes _____ No

7. Your current marital status is: _____ Single (living alone) _____ Single (living with someone) _____ Married (first marriage) _____ Divorced (not remarried) _____ Remarried

8. Which of the following best describes your employment status?
   _____ Not employed
   _____ Self-employed
   _____ Part-time (less than 20 hours per week outside the home)
   _____ Part-time (more than 20 hours per week outside the home)
   _____ Full-time employed (40-hours or more per week outside the home)

9. Please indicate approximate family income (before taxes):
   _____ less than 10,000
   _____ 10,000 - 30,000
   _____ 31,000 - 50,000
   _____ 50,000 - 70,000
   _____ more than 70,000

10. Is your child in day-care? _____ Yes _____ No
    a. If yes, approximately how many hours per week?
       _____ 0 - 10 hours
       _____ 11 - 20 hours
       _____ 21 - 30 hours
       _____ 31 - 40 hours
       _____ other (please indicate number)

11. Please indicate your highest level of education:
    _____ grade school
    _____ junior high school
    _____ some high school
    _____ high school graduate
    _____ some college/university, or technical school
    _____ college/university graduate
    _____ graduate degree or other professional degree
APPENDIX  D. PERSONAL ATTRIBUTES QUESTIONNAIRE (PAQ)
**Personal Attributes Questionnaire**

*(Spence & Helmreich, 1978)*

The items below inquire about what kind of person you think you are. Each item consists of a *pair* of characteristics, with the letters A - E in between. For example:

<table>
<thead>
<tr>
<th>Not at all Artistic</th>
<th>A .... B .... C .... D .... E</th>
<th>Very Artistic</th>
</tr>
</thead>
</table>

Each pair describes contradictory characteristics—that is, you cannot be both at the same time, such as very artistic and not at all artistic.

The letters form a scale between the two extremes. You are to choose a letter which best describes where *you* fall on the scale. For example, if you think you have no artistic ability, you would choose A. If you think you are pretty good, you might choose D. If you are only medium, you might choose C, and so forth.

1. Not at all aggressive  
2. Not at all independent  
3. Not at all emotional  
4. Very submissive  
5. Not at all excitable in a major crisis  
6. Very passive  
7. Not at all able to devote self completely to others  
8. Very rough  
9. Not at all helpful to others  
10. Not at all competitive  
11. Very home oriented  
12. Not at all kind  
13. Indifferent to others' approval  
14. Feelings not easily hurt
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Not at all aware of feelings of others</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>16</td>
<td>Can make decisions easily</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>17</td>
<td>Gives up very easily</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>18</td>
<td>Never cries</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>19</td>
<td>Not at all self-confident</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>20</td>
<td>Feels very inferior</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>21</td>
<td>Not at all understanding of others</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>22</td>
<td>Very cold in relations with others</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>23</td>
<td>Very little need for security</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
<tr>
<td>24</td>
<td>Goes to pieces under pressure</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
</tbody>
</table>
APPENDIX E. SCORING MANUAL FOR THE MOTHER-CHILD INTERACTION STUDY
SCORING MANUAL for PARENT-CHILD INTERACTION STUDY

(Jim Hanson, 1994)

(Adapted from Osofsky, Culp, Hann & Carter, 1988; Osofsky, Culp, Eberhart-Wright & Hann, 1990)

Affect was rated for infants aged 16 - 24 months using continuous interval coding. The accurate scoring of infant affect required the observation of both facial and verbal cues.

I. Infant Affect

Affect on the infant's face is rated by determining which emotion is expressed. In order to score any affect the rater has to be able to see the infant's face.

Six emotions are rated and include: joy, interest, excitement, distress, sadness, and anger (see Table 1). Also, graphic representations of interest, joy, surprise, sadness, fear, anger, and two affect blends are included (see Appendix ). Raters are to refer to these definitions AND pictures when determining affect on an infant's face.

A continuous interval coding technique using 30 sec. intervals is used for indicating the presence/absence of infant affect. When an affect is observed during a 30 second interval, the rater places the highest level of Cue Clarity of the particular affect in the appropriate 30 second row. The rater also indicates in the appropriate column on the score sheet to whom the affect was directed (M - mother; T - toy; U - unknown). In essence, there is Affect by Direction coding at each 30 sec. interval. Only one number per person/direction is indicated (the highest Clarity of Cue observed during the interval) even if the infant displays the affect more than once in that direction during the 30 seconds. For example, if an infant smiles at a toy twice in one interval, this would be indicated by only one number (a 0 - 5 indicating the overall clarity of the affect) in the joy by toy area. If the infant's face cannot be seen, and no affect can be reliably scored, no affect is scored for that 30 sec. interval.

To help determine affect and clarity of affect, vocalizations are used in combination with facial cues, with positive vocalizations considered when scoring "joy" and "excitement" and negative vocalizations considered when scoring "distress", "sadness" and "anger".

Clarity of Cues is determined for each affect, with a 1 indicating low clarity and 5 indicating high clarity of the affect cue. At the end of each episode, the rater indicates the overall clarity by determining the predominant clarity score (see Table 2). These scores refer to how easy it is to "read" the child, and the intensity of the expression, not the confidence of the rater in the ratings.

II. Modified Strange Situation Configuration

There are three (3) episodes during this modified Strange Situation paradigm. Infant affect is rated for each episode.

1. Baseline Episode

The Baseline Episode is defined as the last 60 seconds before the mother and infant separate. The exact duration of this episode may vary from subject to subject. Baseline is coded only for the last 60 sec. of the first episode.
2. **Separation Episode**

At the sound of a bell, mother leaves the room for three minutes, and the infant is left in the room to play. The episode begins when the mother closes the door. This episode may of may not last for three minutes; however, no more than three minutes are coded. (If, at any time, the mother feels her infant is too upset, she may return before the three minutes are up.) Though the mother is not present, the infant who goes to the door is presumably directing emotion to the mother outside the room. If the infant throws a toy down in anger, the emotion is directed at the toy, even if a result of mother leaving.

3. **Reunion episode**

Mother returns to the room and joins her infant at the start of this episode. The episode begins either when the mother enters the room or when the infant first sees her ( whichever comes first). This episode lasts for two minutes, at which time the investigator enters the room and the mother completes a short questionnaire.

III. **Positive Hedonic Tone of Infant**

(Rated for the highest possible level of positive affect during the entire six minutes.)

4 - Laughter (vigorous smiles with laughter and other clearly positive vocalizations)

3 - Smile (warm smile accompanied by eye contact and/or pleasant vocalizations, but not laughter or screeches)

2 - Interest (fleeting smiles without eye-contact; excited body movement without accompanying smiles or positive vocalizations; may include neutral vocalizations)

1 - None (none of the above; tone may be neutral or negative)

IV. **Negative Hedonic Tone of Infant**

(Rated as the highest possible, regardless of duration or frequency)

4 - Marked (marked distress in face and voice; crying accompanied by appropriate facial expressions)

3 - Fuss (whimpering or fussing; includes strings of negative vocalizations, not just a single burst)

2 - Frown/Protest (pouting, frowns, brief negative vocalizations)

1 - None (none of the above; may be positive or neutral)
# TABLE 1

(Adapted from Izard, 1983; Hiatt, Campos & Emde, 1979)

## Positive Emotions

<table>
<thead>
<tr>
<th>EMOTION</th>
<th>FEATURE</th>
<th>POSITION OR MOVEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joy/Enjoyment</td>
<td>eyebrows</td>
<td>slightly raised, and forehead is fairly smooth</td>
</tr>
<tr>
<td></td>
<td>eyes</td>
<td>Bright, partially closed, wrinkles form in outer corners</td>
</tr>
<tr>
<td></td>
<td>mouth</td>
<td>Corners lifted. In smiling, they may be closed or open; in laughter, pulled back and up. Teeth show; upper lip is tense.</td>
</tr>
<tr>
<td>Interest</td>
<td>eyebrows</td>
<td>Slightly lifted or drawn together</td>
</tr>
<tr>
<td></td>
<td>eyes</td>
<td>Exaggeratedly open or fixated. Lower eyelids may be raised</td>
</tr>
<tr>
<td></td>
<td>mouth</td>
<td>Lips may be parted; lower jaw may be dropped slightly</td>
</tr>
<tr>
<td>Excitement</td>
<td>eyes</td>
<td>Eyes are opened wide; need to include positive vocalizations and body movements</td>
</tr>
</tbody>
</table>

## Negative Emotions

<table>
<thead>
<tr>
<th>EMOTION</th>
<th>FEATURE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distress</td>
<td></td>
<td>No specific facial features; this is coded for occurrences of crying/fussing</td>
</tr>
<tr>
<td>Sadness</td>
<td>eyebrows</td>
<td>Inner corners are drawn up; the skin below is triangulated, with inner corner up</td>
</tr>
<tr>
<td></td>
<td>eyes</td>
<td>upper corner is raised</td>
</tr>
<tr>
<td>Emotion</td>
<td>Area</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>--------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Anger</td>
<td>eyebrows</td>
<td>Drawn together and down; a &quot;furrowed&quot; brow</td>
</tr>
<tr>
<td></td>
<td>eyes</td>
<td>Open wide, fixated, pupils are contracted; eyes may have a staring/bulging appearance; the upper lid may not be lowered by the furrowed brow and is tense or eyes may be shut (in the case of a temper tantrum)</td>
</tr>
<tr>
<td></td>
<td>mouth</td>
<td>Lips are either 1) pressed firmly together with corners straight of down, or 2) lips are open and the mouth is squared; rigid jaw and lips (sometimes teeth are clenched).</td>
</tr>
<tr>
<td></td>
<td>nose</td>
<td>Nostrils are distended</td>
</tr>
<tr>
<td></td>
<td>neck</td>
<td>Muscles are strained and rigid</td>
</tr>
</tbody>
</table>
### Clarity of Cues

(from Osofsky et al., 1988)

#### III. Clarity of Cues

<table>
<thead>
<tr>
<th>JOY</th>
<th>1</th>
<th>Fleeting and unsure, may appear to be just a brightening of the face</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>Unsure, but appears to have some up-turning of the mouth</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Brief, but clearly a smile</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Smile that lasts longer than 5 seconds &amp;/or is accompanied with pleasant vocalizations</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Smile that is longer than 5 seconds &amp; is accompanied with laughter</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INTEREST</th>
<th>1</th>
<th>The child appears to be dazed looking; unsure if child is actually looking at anything specific, or seeing anything</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>The child appears to be dazed looking</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Neutral looking with some focused looking at objects or mother</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Focused looking at an object or mother</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Focused looking and active involvement with object or mother</td>
</tr>
</tbody>
</table>

| EXCITEMENT | 1 | Brief, with body movements only                                                                                   |
|            | 2 | Brief, with body movements and neutral vocalizations                                                              |
|            | 3 | Brief, with body movements and clearly positive vocalizations                                                     |
|            | 4 | Continues for greater than 5 seconds, with body movements and clearly positive vocalizations                        |
|            | 5 | Continues for greater than 5 seconds, with body movements and laughter                                            |

| DISTRESS | 1 | Whine, complaint, protest (short bursts, very brief)                                                               |
|          | 2 | Fretting                                                                                                           |
3 - Whining cry (may include a whining vocalization)
4 - Crying
5 - Crying and Screaming

SADNESS
1 - Only the mouth or eyes express sadness
2 - Blend with anger
3 - Brief sadness
4 - Sadness for greater than 5 seconds &/or with distress of 1 or 2
5 - Sadness for greater than 5 seconds &/or with distress of 3 or greater

ANGER
1 - Just the mouth in anger
2 - Blend with sadness (Sad mouth and angry eyes)
3 - Brief anger
4 - Anger for greater than 5 seconds &/or with distress of 1 or 2
5 - Anger for greater than 5 seconds &/or with distress of 3 or greater
Maternal Emotional Availability and Affect Exchange

(adapted from Osofsky, Culp, Eberhart-Wright, & Hann, 1990)

Both the emotional availability and affect exchanges are rated only during the Reunion Episode of this investigation. The Reunion Episode is divided into continuous 15 second intervals, and requires both the mother and child to be visible on the videotape.

To begin scoring, the rater writes the starting time for the first interval on the score-sheet and fills out the consecutive times down the appropriate column. (Reliability is to be determined using the # of agreements divided by the # of disagreements plus the number of agreements—disregarding mutual omissions.) Reliability for Verbal and Physical domains should be 85% or higher, and for the affect exchanges which occur at a lesser rate, reliability approaching 70% is acceptable (Osofsky et al. 1990).

I. Emotional Availability

Scoring for emotional availability is focused on the mother at all times, especially when child is initiating interaction or in need of some assistance. Availability is equivalent to contingent and appropriate responsiveness by the mother to her infant.

Emotional availability is measured across three domains: Visual Regard, Touching (physical contact), and Talking. Only the mother is scored for each domain, although "reciprocal talking/touching/visual regard" infers BOTH mother and infant participation.

A five point scale has been developed (Osofsky et al., 1990) with 1 indicating a general level of unresponsiveness; 2 indicating at least a functional availability; a score of 3 representing a mixture or middle ground; a score of 4 signals the mother's initiative in communicating her availability to her infant; and 5 represents the mother's contingent responsiveness to her infant. Each coding represents the best performance rated during the time intervals.

**Domains**

- **Visual Regard**

  1 - No response, or no visual regard

  The mother does not respond to child's attempts to make eye-contact; it may be that the mother does not know of the attempts.

  2 - Questionable looking

  The mother's looking in the direction of the child has a dazed quality to it. May be looking in the direction of the child, but has a "spaced-out" quality to it.

  3 - Inconsistent Visual Regard

  Mother looks at child, but glances away for no apparent reason OR glances away for a reason and does NOT resume looking at the child.

  4 - Prolonged Visual Regard
Mother looks at child for greater than 5 seconds OR glances more than once at the child while attending to caregiving tasks, sharing toys, etc.

**5 - Reciprocal Visual Regard**

Child looks at mother and mother looks at child. If child breaks the look, mother responds by not looking at child; if child resumes looking, mother responds in kind. (If mother breaks the looking and/or does not resume the looking, she cannot be scored a 5.)

**Touching (Physical Contact)**

1 - No response

Mother either does not respond to child's elicited cue, or physically withdraws from child.

2 - Functional Contact

Mother comes in to physical contact with child to complete some caregiver task or to help the child to complete a task. (Also for all cases of maternal aversive contact.)

3 - Hold

Mother chooses to hold or carry child, not offering any affectionate contact (mother acts more like a chair), OR mother passively accepts contact from child.

4 - Nonfunctional/Affectionate Contact

Mother displays nonfunctional contact with child, without any kind of cue from the child (Mother initiated).

5 - Reciprocal Physical Contact

Mother responds to child's physical contact cue with appropriate, nonaversive physical contact. (If it is aversive, or functional, it cannot be scored a 5.)

**Talking**

1 - Quiet

Mother does not respond verbally to child's vocal sounds, words or communicative efforts.

2 - Directive Talking

Mother gives directions, and does not provide meaning to child's experience. Also, any instance of unintelligible speech or aversive talking.
3 - Expressive Talking

Mother gives meaning to child's experience via labeling objects, explaining, laughing, validating, providing exclamations. (Given to talking NOT scorable as 2 or 4.)

4 - Interrogative Talking

Mother asks child questions in a nonaversive manner

5 - Reciprocal Talking

Mother responds with nondirective talking (see 2) to child's verbal cue

II. Affect Exchange

Affect exchanges occur in reciprocal fashion when mother and infant look at, touch, or talk to one another. In the domain of talking, the TONE of voice takes precedence over words used.

Affect exchange is rated according to the interactive pattern of the mother AND the infant. Categories for affect exchange include: 1) None (no affective exchange was noted in observation), 2) Positive (affective exchange between mother/infant was positive in nature), 3) Negative (affective exchange between mother/infant was negative in nature), 4) Mixed Appropriate (the two parties don't convey the same kind of emotion), 5) Mixed Questionable (the affects are not similar, and the interchange doesn't appear to be appropriate), 6) One-Way Mother (no response from infant), and 7) One-Way Infant (no response by mother),

Affect Exchanges

None - No exchanges were observed (Neutral exchanges, or those that do not communicate affect/emotions are coded here.)

Positive - While interacting, the mother AND child display positive affect (facially and vocally)

Negative - While interacting, the mother AND child display EITHER negative facial expressions, or negative vocalizations.

Mixed-Appropriate - Mother and child exchange affective expressions that do not convey the same kind of emotion, but it seems appropriate.

Mixed-Questionable - Mother and child exchange affective expressions that are mixed (see 4), but DO NOT appear to be appropriate.

One-Way Mother - Mother expresses an emotion and the child makes no response (positive or negative). The child may not be looking at the mother. (The rater records the TONE of the expression with a "+" or a "-".)
One-Way Child
- Child expresses an emotion and the mother makes no response (positive or negative). The mother may not be looking at the child. (The rater records the TONE of the expression with a "+" or a "-".)
APPENDIX F. DIRECTIONS SHEET
GENERAL INSTRUCTIONS FOR PARENT-CHILD INTERACTION PROJECT

I am interested in the parent-child relationship, especially mother-child interactions. As you already know, part of this study involves a short videotaped session. Afterward, there is a questionnaire to complete. For the videotaped portion of the study, you will remain with your child, in this room for approximately one (1) minute. At the end of one (1) minute, you will hear a bell. When the bell sounds, you will leave the room (and your child) for three (3) minutes. If, at any time, you feel your child is too distressed, you may return promptly, before the bell sounds again. When you hear the bell a second time, you are to rejoin your child in this room. I will then join you both two (2) minutes later and at that time ask you to complete a questionnaire. Thank you for participating in this study.
APPENDIX G. CODE MAP
<table>
<thead>
<tr>
<th>Card</th>
<th>Column</th>
<th>Variable</th>
<th>Variable Label</th>
<th>Variable Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1-3</td>
<td>ID</td>
<td>Subject number</td>
<td>ID number (01-30)</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>SEX</td>
<td>Sex of child</td>
<td>Assigned no. (1,2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1=boys</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2=girls</td>
</tr>
<tr>
<td>1</td>
<td>5-6</td>
<td>AGEC</td>
<td>Age of child</td>
<td>Raw number (months)</td>
</tr>
<tr>
<td>1</td>
<td>7-8</td>
<td>AGEM</td>
<td>Age of mother</td>
<td>Raw number (years)</td>
</tr>
<tr>
<td>1</td>
<td>9</td>
<td>ORDC</td>
<td>Child's birth order</td>
<td>Assigned no. (1-5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1=first child</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2=second child</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3=third child</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4=fourth child</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5=fifth or more</td>
</tr>
<tr>
<td>1</td>
<td>10</td>
<td>RACE</td>
<td>Race or ethnicity</td>
<td>Assigned no. (1-6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1=White</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2=Black</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3=Hispanic</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4=Asian</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5=Native American</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6=Other</td>
</tr>
<tr>
<td>1</td>
<td>11</td>
<td>ADOP</td>
<td>Adoption status</td>
<td>Assigned no. (1,2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1=yes (adopted)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2=no (not adopted)</td>
</tr>
<tr>
<td>1</td>
<td>12</td>
<td>MARST</td>
<td>Marital status</td>
<td>Assigned no. (1-5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1=single (living alone)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2=single (living w/someone)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3=married (first marriage)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4=divorced (not remarried)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5=remarried</td>
</tr>
<tr>
<td>1</td>
<td>13</td>
<td>EMPM</td>
<td>Mother's employment</td>
<td>Assigned no. (1-5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1=not employed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2=self-employed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3=part-time (&lt;20-hrs/wk)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4=part-time (&gt;20-hrs/wk)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5=full-time (40+hrs/wk)</td>
</tr>
<tr>
<td>1</td>
<td>14</td>
<td>INCF</td>
<td>Family income</td>
<td>Assigned no. (1-5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1=less 10,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2=10-30,000</td>
</tr>
</tbody>
</table>
1 15 DCAR Child's daycare status
3=31-50,000
4=50-70,000
5=more than 70,000
Assigned no. (0-5)
0=No daycare
1=0-10 hr/wk
2=11-20 hr/wk
3=21-30 hr/wk
4=31-40 hr/wk
5=other (indicate #)

1 16 EDUM Mother's education
Assigned number 1-7
1=grade school
2=jr. high
3=some high school
4=HS graduate
5=some college/Univ
6=college/Univ grad
7=graduate degree or other prof. degree

1 17 PAQ Sex-type of mother
Assigned number 1-4
1=Masculine
2=Feminine
3=Androgynous
4=Undifferentiated

1 18 JOY1 Child's Joy or enjoyment at Baseline (time 1)
Assigned number (clarity of cue 0-5)
0=Not observed
1=Fleeting, unsure
2=Fleeting, upturned mouth
3=Brief, clear smile
4=Smile >5-sec. &/or pleasant vocalizat'n
5=>5-sec. & smile/laughter

1 19 INTS1 Child's interest at (time 1)
Assigned number (clarity of cue 0-5)
0=Not observed
1=Dazed looking, unsure what child actually sees
2=Dazed looking
3=Neutral looking, some focused attention on person or object(s)
4=Focused looking on person or object(s)
5=Focused looking AND active involvement
<table>
<thead>
<tr>
<th>Assigned number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Not observed</td>
</tr>
<tr>
<td>1</td>
<td>Brief, with body movements only</td>
</tr>
<tr>
<td>2</td>
<td>Brief, with body movements and neutral vocalizations</td>
</tr>
<tr>
<td>3</td>
<td>Brief, body movements &amp; pos. vocalizations</td>
</tr>
<tr>
<td>4</td>
<td>=&gt;5-secs &amp;/or with distress of 1 or 2</td>
</tr>
<tr>
<td>5</td>
<td>=&gt;5-secs &amp;/or with distress of 3 or 4</td>
</tr>
<tr>
<td>0</td>
<td>Not observed</td>
</tr>
<tr>
<td>1</td>
<td>Whine, complaint, protest</td>
</tr>
<tr>
<td>2</td>
<td>Fretting</td>
</tr>
<tr>
<td>3</td>
<td>Whining cry</td>
</tr>
<tr>
<td>4</td>
<td>Crying</td>
</tr>
<tr>
<td>5</td>
<td>Crying &amp; screaming</td>
</tr>
<tr>
<td>0</td>
<td>Not observed</td>
</tr>
<tr>
<td>1</td>
<td>Only mouth/eyes show sadness</td>
</tr>
<tr>
<td>2</td>
<td>Blend with anger</td>
</tr>
<tr>
<td>3</td>
<td>Brief sadness</td>
</tr>
<tr>
<td>4</td>
<td>=&gt;5-secs &amp;/or with distress of 1 or 2</td>
</tr>
<tr>
<td>5</td>
<td>=&gt;5-secs &amp;/or with distress of 3 or 4</td>
</tr>
<tr>
<td>0</td>
<td>Not observed</td>
</tr>
<tr>
<td>1</td>
<td>Just the mouth shows anger</td>
</tr>
<tr>
<td>2</td>
<td>Blend with sadness</td>
</tr>
<tr>
<td>3</td>
<td>Brief anger</td>
</tr>
<tr>
<td>4</td>
<td>=&gt;5-secs &amp;/or with distress of 1 or 2</td>
</tr>
<tr>
<td>5</td>
<td>=&gt;5-secs &amp;/or with distress of 3 or 4</td>
</tr>
<tr>
<td>0</td>
<td>Not observed</td>
</tr>
<tr>
<td>1</td>
<td>Fleeting, unsure</td>
</tr>
<tr>
<td>Assigned number</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------</td>
</tr>
<tr>
<td>0</td>
<td>Not observed</td>
</tr>
<tr>
<td>1</td>
<td>Dazed looking, unsure what child actually sees</td>
</tr>
<tr>
<td>2</td>
<td>Neutral looking, some focused attention on person or object(s)</td>
</tr>
<tr>
<td>3</td>
<td>Focused looking on person or object(s)</td>
</tr>
<tr>
<td>4</td>
<td>Focused looking AND active involvement with person or object(s)</td>
</tr>
</tbody>
</table>

**INST2** Child's interest (time 2)

<table>
<thead>
<tr>
<th>Assigned number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Fleeting, upturned mouth</td>
</tr>
<tr>
<td>3</td>
<td>Brief, clear smile</td>
</tr>
<tr>
<td>4</td>
<td>Smile &gt;5-sec. &amp;/or pleasant vocaliz'n</td>
</tr>
<tr>
<td>5</td>
<td>=&gt;5-sec. &amp; smile/laughter</td>
</tr>
</tbody>
</table>

**EXCT2** Child's excitement (time 2)

<table>
<thead>
<tr>
<th>Assigned number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Brief, with body movements only</td>
</tr>
<tr>
<td>2</td>
<td>Brief, with body movements and neutral vocalizations</td>
</tr>
<tr>
<td>3</td>
<td>Brief, body movements &amp; pos. vocalizations</td>
</tr>
<tr>
<td>4</td>
<td>=&gt;5-secs &amp;/or with distress of 1 or 2</td>
</tr>
<tr>
<td>5</td>
<td>=&gt;5-secs &amp;/or with distress of 3 or 4</td>
</tr>
</tbody>
</table>

**DSTRS2** Child's distress (time 2)

<table>
<thead>
<tr>
<th>Assigned number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Whine, complaint, protest</td>
</tr>
<tr>
<td>2</td>
<td>Fretting</td>
</tr>
<tr>
<td>3</td>
<td>Whining cry</td>
</tr>
<tr>
<td>4</td>
<td>Crying</td>
</tr>
<tr>
<td>5</td>
<td>Crying &amp; screaming</td>
</tr>
</tbody>
</table>

**SAD2** Child's sadness (time 2)

<table>
<thead>
<tr>
<th>Assigned number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Not observed</td>
</tr>
<tr>
<td>1</td>
<td>Only mouth/eyes show sadness</td>
</tr>
<tr>
<td>Time</td>
<td>Assigned number</td>
</tr>
<tr>
<td>------</td>
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<tr>
<td>2.1</td>
<td>ANGR2</td>
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<tr>
<td>2.2</td>
<td>JOY3</td>
</tr>
<tr>
<td>2.3</td>
<td>INST3</td>
</tr>
<tr>
<td>2.4</td>
<td>EXCT3</td>
</tr>
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</table>

**ANGR2 (Child's anger)**
- 2 = Blend with anger
- 3 = Brief sadness
- 4 = 5-secs. &/or with distress of 1 or 2
- 5 = 5-secs. &/or with distress of 3 or 4

**JOY3 (Child's joy)**
- 2 = Blend with sadness
- 3 = Brief anger
- 4 = 5-secs. &/or with distress of 1 or 2
- 5 = 5-secs. &/or with distress of 3 or 4

**INST3 (Child's interest)**
- 2 = Blend with anger
- 3 = Brief sadness
- 4 = 5-secs. &/or with distress of 1 or 2
- 5 = 5-secs. &/or with distress of 3 or 4

**EXCT3 (Child's excitement)**
- 2 = Blend with anger
- 3 = Brief sadness
- 4 = 5-secs. &/or with distress of 1 or 2
- 5 = 5-secs. &/or with distress of 3 or 4
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<tr>
<th>Code</th>
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<td>Child's distress (T3)</td>
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<td></td>
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<td>Assigned number (clarity of cue 0-5)</td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
<td>1</td>
<td>Whine, complaint, protest</td>
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<tr>
<td></td>
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<td>Fretting</td>
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<tr>
<td></td>
<td>3</td>
<td>Whining cry</td>
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<tr>
<td></td>
<td>4</td>
<td>Crying</td>
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<tr>
<td></td>
<td>5</td>
<td>Crying &amp; screaming</td>
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<td>SAD3</td>
<td>6</td>
<td>Child's sadness (T3)</td>
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<td></td>
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<td>Assigned number (clarity of cue 0-5)</td>
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<tr>
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<tr>
<td></td>
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<td>Only mouth/eyes show sadness</td>
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<tr>
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<td>Blend with anger</td>
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<tr>
<td></td>
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<td>Brief sadness</td>
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<td>=&gt;5-secs. &amp;/or with distress of 1 or 2</td>
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<td>=&gt;5-secs. &amp;/or with distress of 3 or 4</td>
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<td>Assigned number (clarity of cue 0-5)</td>
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<tr>
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<tr>
<td></td>
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<td>Just the mouth shows anger</td>
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<td>=&gt;5-secs. &amp;/or with distress of 1 or 2</td>
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<td>5</td>
<td>=&gt;5-secs. &amp;/or with distress of 3 or 4</td>
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<td>VISM</td>
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<td>Visual regard (mother)</td>
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<tr>
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<td>0</td>
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<td>No response, or no visual regard shown</td>
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<td>2</td>
<td>Questionable (may look in child's direction)</td>
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<td>3</td>
<td>Inconsistent</td>
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<td>4</td>
<td>Prolonged (&gt;5-secs. or more than once)</td>
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