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## Perceptions of Infants as a Function of Adult and Infant Characteristics

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LOYOLA UNIVERSITY CHICAGO

PERCEPTIONS OF INFANTS AS A  
FUNCTION OF ADULT AND INFANT CHARACTERISTICS

A DISSERTATION SUBMITTED TO  
THE FACULTY OF THE DIVISION OF THE SOCIAL SCIENCES  
IN CANDIDACY FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY  
DEPARTMENT OF PSYCHOLOGY

BY  
CHRISTINE GESELL ANDERSON

CHICAGO, ILLINOIS

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## CHAPTER I

### INTRODUCTION

Researchers have attempted to identify factors that place some parent-infant dyads at risk for later developmental problems. The current developmental models suggest that developmental outcome is determined by the adult, the child, the environment, and their interactions. There is some empirical evidence suggesting that a "hypersensitivity" in maltreating parents appears to play a role in negative perceptions of children and the parenting experience. There also is empirical evidence suggesting that infant prematurity and infant attractiveness are related to adult perceptions of infants and thus, potential caregiving behaviors. This study was designed to investigate the relationships between adult and infant characteristics and adult perceptions of infant attractiveness, infant age, and infant emotional state.

Undergraduate college students were asked to rate photographs of infants on attractiveness, age appearance, and emotional state. The photographs of preterm and full-term infants were taken at four ages; 41-42 weeks conceptional age (C.A.), and 2 months, 4 months, and 6 months (corrected for gestational age at birth for the

preterm infants). The research participants were blind to the birth condition (i.e., whether preterm or full-term), sex, and age of the photographed infants. In addition, participants were asked to complete the Child Abuse Potential Inventory which assessed attitudes toward parenting and children, and personality traits.

## CHAPTER II

### REVIEW OF LITERATURE

Child maltreatment has been increasingly recognized as a complex phenomenon involving characteristics of the adult, the child, the environment, and their interactions (Belsky, 1980; Cicchetti, 1989; Emery, 1989; Wolfe, 1985). One factor that has been associated with dysfunctional parenting is unrealistic parental expectations of children's behavior (Azar, Robinson, Hekinnian, & Twentyman, 1984; Newberger & Cook, 1983; Twentyman & Plotlin, 1982). These expectations do not appear to be related to knowledge of developmental milestones (Kravitz & Driscoll, 1983) but instead to inappropriate judgments of more complex competencies. For example, Azar et. al. examined the differences between maltreating and non-maltreating mothers on two measures of parental expectations: the knowledge of the age when various developmental milestones are acquired (e.g., ability to count and climb stairs); and judgments regarding more complex behaviors of children (e.g., the appropriateness of punishing a nine-month old for crying too much, expecting a five year old to be responsible for the care of younger siblings, and expecting a three year old to play quietly for

extended periods of time). Results showed no differences between the parental groups on knowledge of age appropriate developmental milestones. However, a significant group difference was obtained on the more complex child behavior measure showing maltreating mothers to have unrealistic expectations of child behavior in this domain. While research has identified these misperceptions, very little is known about what might account for them.

One condition suspected of contributing to inappropriate parental expectations has involved examining parental perceptions of childrearing practices. Studies have found that maltreating parents are less satisfied with their children and perceive childrearing to be more difficult than non-maltreating parents. In addition, maltreating parents report less enjoyment in the parental role and have a greater tendency to express negative affect toward their children (Trickett, Abner, Carlson, & Cicchetti, 1991; Trickett & Sussman, 1988).

Findings that maltreating parents may be negatively biased toward their own children and in their childrearing practices may be related to their reactions to children in general. Frodi and Lamb (1980) examined whether maltreating mothers respond atypically to infant signals. Maltreating and non-maltreating mothers were shown videotapes of crying and smiling infants and the mothers' physiological responses (i.e., heart rate, blood pressure, and skin conductance) to

the infant stimuli were measured. In addition, subjects rated their emotional responses to each infant condition. Findings showed that maltreating mothers were more physiologically aroused (i.e., increased heart rate, blood-pressure, and skin conductance) than non-maltreating mothers when exposed to crying infants. They also reported less sympathy and more annoyance toward the child. Moreover, the researchers found minimal changes in the physiological arousal in maltreating mothers response to either a smiling or crying infant, whereas the non-maltreating mother showed no arousal or declines in arousal when viewing a smiling infant. These findings suggest that maltreating parents may find any elicitation of parent-infant social interaction to be aversive.

However, this physical reaction of maltreating parents may not be limited to situations involving parent-infant interactions. Bauer and Twentyman (1985) examined parental reactions to a number of aversive stimuli. Maltreating and non-maltreating mothers were exposed to both child-related stressful stimuli (i.e., situations of stressful parent-child interactions) and non child-related stressful stimuli (i.e., fire alarm and car horns honking). Results showed that in the child-related situations, the maltreating group consistently viewed the children as acting intentionally to annoy them. Moreover, these mothers reported more annoyance across both the social and nonsocial stressors, supporting

the existence of a generalized pattern of hyperresponsivity to a variety of situations in maltreating parents.

Consistent with these reports of heightened physiological responses, other studies have indicated that maltreating parents report experiencing more stress and feeling more depressed, anxious, and emotionally distressed than non-maltreating parents (e.g., Egeland, Jacobvitz, & Sroufe, 1988; Lahey, Conger, Atkeson, & Treiber, 1984).

The ethological theory provides one explanation for these physiological and perceptual differences found in maltreating parents. Ethologists have suggested that through the evolutionary process, humans are predisposed with innate releasing mechanisms (IRMs) that are automatically triggered by specific environmental stimuli. One such IRM is the adult response to infants which functions to promote the survival of the infant and in turn the species. Specifically, infant characteristics serve as signals that elicit innate caretaking behaviors and affective responses in adults. From this perspective, the heightened physiological responses of maltreating parents may interfere or alter this natural process and result in faulty interpretations of the situations. These interpretations would then be manifested in behavior. Support for this idea has been found in studies investigating the parent-child interactions of maltreating families. Findings in this area have indicated that,

overall, maltreating parents interact with their children at a lower rate (Burgess & Conger, 1978); display fewer positive behaviors (Burgess & Conger, 1978; Kavanagh, Youngblade, Reid & Fagot, 1988); and display more aversive behaviors (Bousha & Twentyman, 1984; Lahey, Conger, Atkeson, & Treiber, 1984).

One interpretation of these data is that dysfunctional parenting may be due in part to a pre-existing condition in the parent that manifests itself in negative perceptions and behavior toward children. While research indicates that this may be the case, the majority of studies on child maltreatment have been conducted with adults who have already engaged in child maltreatment, making it difficult to ascertain whether these dysfunctional parental characteristics exist prior to parenting or are a result of their parenting experiences. This issue is significant because the manner in which the parent-child relationship develops is not solely dependent on characteristics of the parent but also is influenced by characteristics of the child.

There is empirical evidence that attractiveness (or cuteness) of the infant is one among numerous factors that may influence the parent-infant relationship. Examining a possible link between infant attractiveness and inappropriate parenting may be of considerable significance to understanding the etiology of unrealistic expectations of



children's behavior.

As stated before, ethologists have suggested that specific infant physical and behavioral characteristics are releasers of caregivers' approach and care behavior, as well as suppressors of aggressive behavior. For example, infants possessing "babyish" facial features (large eyes placed in the middle of the face, round heads and small noses, mouths and chins) are preferred by adults (Sternglanz, Gray, & Murakami, 1977). Adults rate infants with these features as more attractive and tend to look longer at them than the faces of infants not possessing these specific characteristics (Hildebrandt & Fitzgerald, 1978, 1979a, 1981). In addition to the role of physical attributes, there is evidence that behavioral attributes can also affect ratings of attractiveness. For example, positive infant expressions (e.g., smiling, happy, cheerful) are rated as more attractive than negative expressions (e.g., crying, unhappy) (Hildebrandt, 1983; Holmes, Reich, & Lauesen, 1987; Karraker & Stern, 1984; Power, Hildebrandt, & Fitzgerald, 1982),

In addition to the impact of physical characteristics on adult perceptions of infant attractiveness, these characteristics also affect adults' expectations for the infants' behavior and development. Stephen and Langlois (1984) showed a sample of African-American, Caucasian, and Mexican-American male and female adults photographs of

infants (same ethnic groups as the adults) taken at three ages: newborn, three months, and nine months. The adults rated the infants on attractiveness and on behavioral and developmental traits. The findings showed that on measures of "smart", "likeable", "good" and "causes parents problems", there was a positive bias for the physically attractive infants which was present across ethnic groups and ages.

In a similar study, Ritter, Langlois, and Casey (1991) investigated the relationships among infant age appearance and facial attractiveness, and adult expectations of the developmental maturity of infants differing on these dimensions. Parents and non-parents shown pictures of six month old infants were asked to rate the infants on attractiveness and age appearance. The adults also rated the competence of the infants in the areas of communication skills, motor abilities, social skills, cognitive level, and self-help skills. Results showed that both parents and non-parents rated the unattractive infants as older than their attractive age-mates. Furthermore, the parents overestimated the developmental competence of the unattractive infants, with unattractive females being perceived as more capable in communication and cognitive skills than the attractive females, and both unattractive female and male infants rated as more capable in motor abilities than attractive male and female infants. These

researchers propose that their findings suggest that less attractive and older appearing children may therefore become "trapped in a vicious cycle in which adults hold unrealistic expectations concerning the behavior of these children, and, in turn, the children's actual behavior appears to be immature." (p. 80). Therefore, their failure to behave as expected in combination with the negative evaluations unattractive children elicit, may result in even more dysfunctional evaluations by adults and in turn have a negative influence on adult-child interactions.

These data suggest that infants who do not share facial features associated with "babyishness" may be judged as less attractive and be less successful in eliciting appropriate nurturant responses from adults. Furthermore, the data suggest that the relationship between facial attractiveness and age-appearance may partly account for unrealistic expectations of children's competence. This suggests that particular populations of infants who, for one reason or another, do not possess these characteristics might be at risk because they will be less successful at eliciting such nurturing responses.

One such infant population may be premature infants who at birth are commonly described as looking like "little old men." In fact, Maier, Holmes, Slaymaker and Reich (1984) found that premature infants lack the "babyish" facial features found in full-term infants. This study first

examined the specific facial features of young preterm infants (31-34 weeks gestational age), older preterm infants (35-37 weeks gestational age) and full-term infants (40 weeks gestational age) and then used these data to generate composite drawings depicting these three groups of infants. These drawings were then used to elicit adults' perceptions of attractiveness. The results of this study indicated that preterm infants have significantly smaller eyes and narrower heads than full-term infants; the eyes of the preterm infants are placed proportionally higher in the face and closer to the sides of the face; and the distance between their noses and mouths is proportionally greater than for the full-terms. Maier et al., also found that college-age adults evaluated the preterm infants less positively than the full-term infants along several dimensions including attractiveness, behavioral functions (e.g., would eat well-would not eat well), and ability to elicit interactive behaviors from the adult raters.

In a subsequent study, Holmes, Reich, and Lauesen (1987) investigated whether or not these earlier differences could be attributed to the fact that at the time of the photographs the preterm infants were younger in post-conceptual age than the full-term infants. Furthermore, they examined the effects of infant facial expression on adult ratings of infants. College-age adults rated photographs (instead of composite drawings) of smiling and

neutral expressions of four month old preterm and full-term infants (corrected age for the preterm infants) in terms of perceived attractiveness, behavioral competence of the infants, and behavioral inclinations toward the infants. Findings were consistent with those of the earlier study. The full-term infants were consistently judged more positively than the preterm infants in all dimensions even though the infants were all four months old (preterm age corrected for gestational age at birth). Moreover, the smiles of the preterm infants were rated as less attractive than those of the full-term infants. Holmes and her colleagues suggest that the difference in attractiveness is not a function of conceptional age per se but, rather appears to be related to some aspect of the premature birth. Moreover, these findings indicate that the differences persist to at least four months of age, thereby heightening the possibility that their effects could affect caregiver responses over a prolonged period of time.

In a similar study, Frodi, Lamb, Leavitt, Donovan, Nett, and Sherry (1978) examined whether parents perceive differences in the cry and appearance of premature infants and full-term infants. In this study, parents viewed videotapes of infants who were crying or quiescent. Half of the parents saw a preterm infant and the other half a full-term infant. Sound tracks were dubbed so that half of the full-term infants and half of the preterm infants "emitted"

the cry of a normal full-term infant, while the other half emitted the cry of a premature infant. Physiological measures were gathered from parents as well as ratings on their mood, perceived sex of the infant, how pleasant they perceived the infant, and how likely they were to interact with the infant. Results showed that the cry and appearance of the premature infant were perceived as more aversive than those of the full-term infant. Moreover, the parents reported that they were less eager to interact with the premature infant, whom they rated as less pleasant. Based on these studies, it appears that all adults (including parents) perceive premature infants as less attractive and as possessing less positive attributes than full-term infants.

The relationship between the attractiveness of an infant and actual caregiver-infant interactions was examined by Cleland, Stilson and Reich (1992). As previously mentioned, Holmes et al. (1987) found college students who had no knowledge of infants birth histories rated the faces of preterm infants as less attractive, less likeable, and less cute than the faces of full-term infants. Cleland et al. found significant positive correlations between the ratings gathered from the Holmes study and the actual interactions of the same infants with their mothers. Specifically, as the ratings of infant attractiveness, likeability and cuteness decreased so did the mother-infant

interactions. Based on their findings, these authors suggested that the responsiveness of the caregiver was related to the physical characteristics of the faces of their infants.

As previously discussed, the Maier, et al. (1984) study found that the faces of preterm infants are narrower than those of full-term infants at birth. Anderson, Holmes and Klocek (1990) examined whether the facial features of preterm infants continued to differ from those of full-term infants as they grew older (when preterm age was corrected for gestational age at birth). Photographs of preterm and full-term infant faces were projected onto a flat vertical surface and the facial features found by Maier et al. to differentiate among preterm and full-term infants were measured. Results indicated that, overall, preterm infants had narrower faces than full-term infants. Moreover, while increased age resulted in increased roundness for the full-term infants, increased age was associated with increased narrowness for preterm infants.

The results of these studies indicate that infant prematurity may affect the perceptions and responses of adults who are unrelated to the infants and who viewed the infants passively. Although not directly tested, these studies also suggest that perhaps these same effects may carry over to caregiver behavior. Were this the case, one might assume that the abnormal facial appearance (i.e., less

"babyishness" features) of preterm infants may be one factor contributing to the high rate of parent-infant disturbance in families with preterm infants (for a review, see Frodi, 1981). McCabe (1988) investigated the way in which facial features may serve as cues about age, maturity, and competence and found that maltreated children have smaller craniofacial proportions that make them appear older than those of the same age, matched non-maltreated children. McCabe suggests that adults may have unrealistic expectations for a child perceived as older, and that the child's inability to meet those expectations might elicit disciplinary or abusive responses.

### Summary

The present literature review has indicated several important implications for the understanding of the developing parent-infant relationship and in particular parental unrealistic expectations of children's competencies. First, dysfunctional parents appear to be hyperresponsive to children. This heightened response may negatively influence their perceptions of and behaviors toward children. Second, facial features and expressions of infants influence parental perceptions of infant attractiveness. This appears to have an impact on the interactions and the developing relationships of parent-infant dyads. Third, premature infants have atypical facial features, have been rated by adults as less attractive and



as less able to elicit caregiving behaviors. The ethological perspective would predict that the less "babyish" facial features of premature infants would interfere with their ability to elicit caregiving behaviors and positive affective responses in adults. In addition, characteristics in adults such as high arousal levels may inhibit or alter the elicitation of caregiving behaviors in response to children. Moreover, the ethological perspective would predict that the combination of these conditions would be possible factors that place these adult-infant dyads at risk for developing dysfunctional relationships.

Since there appear to be no studies that bridge these two areas of research, there remains a need for exploration to determine if, in fact, the joint characteristics of the adult and the infant influence adult perceptions of the infant. The purpose of this study was to address this relationship among adult and infant characteristics and adult perceptions. The major purpose was to determine whether adults' perceptions of infant attractiveness varied as a function of both adult characteristics that have been found in maltreating parents and infant characteristics. It was proposed that both infant and adult characteristics would contribute to adult ratings of infant attractiveness. Specifically, it was predicted that preterm infants would be viewed as less attractive by all adults and that adults with personality profiles characteristic of physically abusive

parents would rate all infants as less attractive than would adults whose personality profiles were not similar to those characteristic of physically abusive parents. In addition, the investigator was interested in determining whether perhaps these two variables interact in such a manner that ratings of infant attractiveness are particularly depressed in cases where an adult with an abusive profile is responding to an infant with preterm facial characteristics.

In addition, adult perceptions of infant age and emotional state were examined to determine if these perceptions were also susceptible to influence by adult and infant characteristics.

### Hypotheses

It was expected that the following outcomes would occur: (a) adults who had characteristics found in maltreating parents would perceive infants as less attractive (cute and likeable) and older than adults who did not have these characteristics; (b) preterm infants would be perceived as less attractive (cute and likeable) than full-term infants; (c) infants with smiling faces and older infants would be rated more positively than non-smiling and younger infants; (d) perceptions of infant emotional state would be related to adult characteristics; and (e) the effects of infant group and of infant facial condition would be more pronounced for adults with personality profiles characteristic of maltreating adults than for adults without

such personality profiles.

## CHAPTER III

### METHOD

#### Subjects

Participants were 310 undergraduate students at Loyola University of Chicago completing a course requirement in introductory psychology. The participants were given an explanation of the procedures to be followed, the possible benefits and the risks of the study, and provided informed consent prior to participation. Of the 310 subjects, 56 were eliminated from the study due to missing data and/or invalid child abuse potential profiles (i.e., elevated scores in faking good, faking bad, random responses, excessive blanks). The remaining study sample consisted of 250 undergraduate students (79 males, 171 females; mean age 18.62 years, age range 17 - 39; 20 African-Americans, 190 Caucasians, 4 Hispanics, 21 Asians, 1 American Indian, 14 with unreported racial group). These participants were assigned to one of two adult groups as determined by their composite score on the Child Abuse Potential Inventory (CAP). The high scoring group (N = 58) consisted of subjects who reached or were above the cut-off score of 215 which "indicates that the examinee has characteristics

similar to known, active physical child abusers" (Milner, 1986, p. 12). This group will be referred to as High Profile Adults. The low scoring group consisted of the remaining adult subjects (N = 192) and will be referred to as Low Profile Adults.

### Environment and Equipment

A classroom approximately 15 x 18 ft was utilized for the testing procedures. Chairs with desk tops were positioned so that each participant had a clear view of a projection screen at one end of the room. A Kodak (model 760 H) slide projector was used to show subjects the infant stimuli slides. Participants were tested in 10 groups of 25 students (total 250).

### Infant Stimuli

Stimuli consisted of 280 photographs (slides) of the faces of 20 preterm and 20 full-term infants taken at four ages: 41-42 weeks conceptional age, 2 months, 4 months and 6 months.<sup>1</sup> Except at 41-42 weeks conceptional age (when only neutral photographs were taken), each of the 40 infants provided two photographs (one smiling and one neutral) at each of the remaining four ages. Thus, each infant contributed seven photographs to the total stimulus pool.<sup>2</sup>

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<sup>1</sup> The photographs of the infants were used in a previous report (Anderson, Holmes, & Klocek, 1990).

<sup>2</sup> Seven pictures were missing due to problems with the flash apparatus (3 photos), no clear smile (3 photos), missed appointment (1 photo). The seven missing infant stimuli were replaced randomly from stimuli within that cell so that each

Photographs were taken in the infants' homes with a 35mm camera. Although an electronic flash was used, lighting varied because of differences in natural light within the homes and the use of two different flash attachments. There was no evidence that this variation was systematic across groups and ages (Chi Square (df,3) = 1.64, n.s.). To control for any gender cues, all infants were photographed in an infant seat, wearing a white t-shirt. Distance from the top of the infant seat to the camera lens was held constant at 73 cm. Multiple photographs (mean number of photographs per visit = 8) were taken of the individual infants at each age. All photographs were viewed by the investigator and an assistant blind to infant birth condition and infant age who selected the two photographs which best fit the following criteria: correct orientation (i.e., full frontal face); a "neutral" face (i.e., eyes open, alert but no particular emotion present); and a "smile" face (i.e., mouth in clear smile position, eyes open and "bright"). In cases where there was a discrepancy, graduate students blind to infant characteristics made the final selection. Because infants do not smile spontaneously at 41-42 weeks conceptional age, only neutral photographs were obtained at that particular visit. Therefore, of the 280 photographs, 160 showed a neutral face and 120 showed a

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participant saw the appropriate number of stimuli from each cell.

All infants (both preterm and full-term) were born at Evanston Hospital between March 1987 and November 1987. All infants met the following criteria: weight appropriate for gestational age at birth; stable medical condition upon discharge; Caucasian; and no facial anomalies. Infants were recruited through random examination of medical records. Once a particular infant met the criteria, parents were contacted and parental informed consent was obtained. Approximately 33% of the selected parents of full-term infants declined to participate in the study. Two primary reasons were given for refusal to participate: (a) the time commitment necessary to complete the study, and (b) the first photograph would have to be taken soon after delivery. Of the preterm infants' parents, approximately 20% declined participation in the study. The primary reason for refusal in this was the length of time necessary to complete the study. Of the infants who participated, the following characteristics of each group were determined.

Preterm group. The preterm group consisted of 20 infants (10 female, 10 male). Characteristics of this group include: gestational ages of less than 36 weeks (mean gestational age = 32.3 weeks, range = 28 to 35 weeks); birth weights less than 2501 grams (mean birth weight = 1792.1 g, range = 1085 to 2500 g); birth lengths less than 49 cm (mean birth length = 42.5 cm, range = 37 to 48 cm); and birth head circumference less than 42 cm (mean birth head circumference

circumference less than 42 cm (mean birth head circumference = 30.6 cm, range = 26 to 41 cm).

Full-term group. The full-term group consisted of 20 infants (10 female, 10 male) with normal perinatal histories, born at term (i.e., 39-42 weeks gestation). Birth weights of the full-terms ranged between 2724 to 4554 grams with a mean of 3524.3 grams, birth lengths ranged between 49 to 56 cm with a mean of 52.3 cm, and birth head circumferences ranged between 34 to 40 cm with a mean of 35 cm.

A MANOVA assessed group and sex differences in birth weight, birth length, and birth head circumference. A significant main effect of group was found ( $F(3, 29) = 46.57, p < .001$ ). The two groups differed in birth weight ( $F(1, 31) = 146.65, p < .001$ ); birth length ( $F(1, 31) = 81.01, p < .001$ ); and birth head circumference ( $F(1, 31) = 25.66, p < .001$ ).<sup>3</sup> Even with adjusted alphas using ANOVAS, the differences between these variables would be significant. Neither the main effect for sex nor the interaction between sex and group were obtained.

At each subsequent age (two, four, and six months (corrected for preterm infants)), each infant was measured in terms of weight, length, head circumference, distance from ear to ear, and distance from the back of the head to

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<sup>3</sup> Degrees of freedom reduced due to missing data for five subjects.



significant effects or interactions for group or sex.

### Infant Rating Form

The infant rating form was designed to assess adult perceptions of infant characteristics. Participants were asked to rate the infants depicted in the photographs on four 7-point scales: "How cute is this infant?" (7 = cute, 1 = ugly); "How old is this infant?" (7 = seven months or more, 6 = six months, 5 = five months, 4 = four months, 3 = three months, 2 = two months, 1 = one month or less); "How likeable is this infant?" (7 = very likeable, 1 = not likeable); and "What is the emotional state of this infant?" (7 = happy, 1 = unhappy). These infant characteristics were selected based upon past studies indicating that infant facial characteristics were related to perceptions of attractiveness. The investigator also wanted to examine the accuracy of adult ratings of infant emotional state, as this trait has been found to be misperceived in the maltreating population. In addition, the relationship between adult characteristics and perceptions of infant age was of interest.

### Child Abuse Potential Inventory

The inclusion of this instrument allowed the assessment of parenting styles and parental traits such that analyses could be performed to assess relationships between varying parental traits and ratings on infant characteristics. Since dysfunctional parenting has been associated with a

variety of adult characteristics, an inventory that assessed more than one factor was needed. The Child Abuse Potential Inventory (CAP) assesses a constellation of traits that have been found in maltreating parents (Milner, 1986).

Specifically, it assesses levels of distress, rigidity, unhappiness, problems with self and child, problems with family, and problems from others, resulting in a scale which provides a continuum from nurturing to maltreating parenting styles.

This inventory is a 160-item self-administered questionnaire designed to measure an individual's parenting potential. Items are answered in a forced-choice format (i.e., agree - disagree). The questionnaire takes a college-educated person about twelve to fifteen minutes to complete and a high school educated person about fifteen to twenty minutes.

Validity data (see, for a review, Milner, 1986) indicate that the inventory is effective in discriminating maltreating parents from a variety of non-maltreating populations with an approximate correct classification rate of 94%. Reliability data indicate that KR-20 reliability coefficients for the abuse scale range from .92 to .96 across a variety of control, high risk, and abuse groups. Test-retest data for one day and one week periods are .94 and .90 respectively.

The CAP has been normed on a wide range of populations

(e.g., maltreating parents, at risk parents, non-maltreating parents, daycare workers, nurturing parents) including college students. Longitudinal data indicate that the future prediction of physical abuse of at-risk parents based on CAP scores is 17.5%. The concurrent validity for the CAP using court referred abusers and general population parents has been found to be 49%. Since only one of the participants was a parent, non-parent participants were instructed to answer parent-related items as if they were parents (per conversation with Milner, 1986).

### Procedure

This study assessed the relationship between actual and perceived infant characteristics and adult characteristics in a 2 (infant birth condition) X 4 (infant age) X 2 (infant expression) X 2 (adult groups) design. The two levels of infant birth condition were full-term (40 weeks gestation) and preterm (35 weeks or less gestation) birth. The four levels of infant age were 41-42 weeks conceptional age, 2 months, 4 months and 6 months (corrected for gestational age at birth for the preterm infants).<sup>4</sup> The two infant expressions were neutral and smiling. The two adult groups (high, low) were determined by each subject's composite score on the Child Abuse Potential Inventory (Milner, 1986).

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<sup>4</sup> Data gathered from the 41-42 weeks conceptional age were discussed in a previous report (Anderson, 1990).

Due to the large number of infant stimuli, it was not possible to show all stimuli to all subjects. Rather, each participant viewed 56 stimuli. The 280 infant photographs were randomly assigned without replacement into five groups of 56 pictures so that each group had equal representation of infant sex, birth condition, age, and facial expression.<sup>5</sup> As a result, each infant condition was viewed by an equal number of participants.

The participants were tested in ten groups of 25 students (total 250), with each group tested separately. They were given individual packets containing 56 Infant Rating Forms and the CAP questionnaire. Each packet and its contents were marked with individual identification numbers to ensure confidentiality.

When all participants within each group were seated and facing the projection screen, they were instructed that they would see a total of 56 different pictures of babies. For each baby, they were to record the baby's number (shown on each slide) at the top of the Infant Rating Form, and then to complete the form for that baby.

The first slide was shown and when all participants had completed that rating form, the next slide was shown. This process was repeated until all slides and rating forms were completed. The viewing and rating time per slide was 30

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<sup>5</sup> The seven missing infant stimuli were replaced randomly from stimuli within that cell.

seconds. Each group of participants received a different random order of the infant stimuli to control for possible order effects. After all slides and rating forms were completed, participants were asked to complete the adult questionnaire. Total testing was approximately 50 minutes. Participants whose CAP inventories were invalid as a result of faking good (N = 18), faking bad (N = 1), random responses (N = 4), excessive blanks (N = 3), or who had missing infant rating data (N = 30) were replaced until a total of 250 participants was obtained.

## CHAPTER IV

### RESULTS

As previously stated, participants were assigned to one of two adult groups as determined by their composite scores on the Child Abuse Potential Inventory (CAP). The high scoring group (N = 58) will be referred to as High Profile Adults (HP) and the low scoring group (N = 192) will be referred to as Low Profile Adults (LP). Due to the unequal number of adult subjects in the groups, data were analyzed utilizing least squares analyses of variance procedures.

It was anticipated that: High Profile Adults would perceive infants as less attractive and older than Low Profile Adults; preterm infants would be perceived as less attractive than full-term infants; infants with smiling faces and older infants would be rated more positively than non-smiling and younger infants; adult ratings of infant emotion would be related to adult group; and the effects of infant birth condition and of infant facial expression would be more pronounced for High Profile Adults.

#### Perceived Infant Attractiveness

The first analysis was performed to determine: if adult groups differed in their perceptions of infant

attractiveness (cuteness and likeability); if these differences were more marked for the preterm infants; and if smiling infant expression and actual infant age had a positive impact on these perceptions. A 2 (Adult Group: high, low profile) x 2 (Infant Birth Condition: full-term, preterm) x 2 (Infant Expression: neutral, smiling) x 3 (Infant Age: 2 months, 4 months, 6 months (corrected for the preterm infants)) repeated measures multiple analysis of variance (MANOVA) procedure was performed on ratings of perceived infant cuteness and likeability. Based on past studies indicating that these two variables showed a linear relationship (Holmes, et al., 1987; Maier et al., 1984) and were believed to tap into the same construct, these two measures were combined. The interdependence of infant cuteness and likeability were tested and found to be significant (Bartlett Test of Sphericity ( $df,1$ ) = 253.53,  $p < .001$ ).

Tests of homogeneity of variance revealed lack of homogeneity of variance (Box  $M$  = 470.62,  $F$  = 1.31,  $p < .001$ ) in the following variables: cuteness for the preterm infants at the two month neutral expression (PT2MNC); cuteness for the full-term infants at the two month neutral expression (FT2MNC); and likeability for the preterm infants at two and six months neutral expression (PT2MNL and PT6MNL respectively). Plots of normal probability suggested that the homogeneity of variance problems were not due to

significant deviations from normality. For each of these variables, the outliers were eliminated and data were re-analyzed and the results were consistent with those of the original MANOVA. Because the MANOVA procedures are believed to be robust enough to take care of potential problems associated with non-normal distributions for moderate sample sizes (Harris, 1985), results from the original MANOVA were assessed to be appropriate.

Results revealed that Adult Group, Infant Birth Condition, Infant Expression and Infant Age all made significant contributions to ratings of attractiveness (see Table 1). High Profile adults rated infants as less attractive than the Low Profile adults ( $F(2, 247) = 4.27, p < .05$ ). In addition, preterm infants were rated as less attractive than full-term infants ( $F(2, 24) = 59.84, p < .001$ ) and smiling infant faces were rated as more attractive than neutral infant faces ( $F(2, 247) = 206.47, p .001$ ). Finally, older infants were rated as more attractive than younger infants ( $F(4, 990) = 51.48, p 51.48$ ). However, these main effects were modified by significant interactions.

As predicted, a significant multivariate Adult Group x Infant Birth Condition x Infant Expression interaction was obtained,  $F(2, 247) = 3.60, p < .03$  (see Table 1). Univariate analyses showed infant cuteness as the major contributor to the interaction, although not significantly



Table 1

Results for Repeated Measures Multivariate Analysis of  
Variance for Measures of Infant Cuteness and Likeability

Effect	F	d.f.
<b>Main effects:</b>		
Adult Group .....	4.27*	(2, 247)
Infant Birth Condition .....	59.84***	(2, 247)
Infant Expression .....	206.47***	(2, 247)
Infant Age .....	51.48***	(4, 990)
<b>Interactions:</b>		
Adult Group by:		
Infant Birth Condition .....	.76	(2, 247)
Infant Expression .....	.95	(2, 247)
Infant Age .....	1.37	(4, 990)
Infant Birth Condition by:		
Infant Expression .....	1.60	(2, 247)
Infant Age .....	10.04***	(4, 990)
Infant Expression by		
Infant Age .....	.69	(4, 990)
Adult Group by Infant Expression by:		
Infant Birth Condition .....	3.60*	(2, 247)
Infant Age .....	2.55*	(4, 990)
Infant Birth Condition by Infant Age by		
Infant Expression .....	3.99**	(4, 990)
Adult Group by Infant Expression by		
Infant Age by Infant Birth Condition	.45	(4, 990)

\*  $p < .05$ \*\*  $p < .01$ \*\*\*  $p < .001$

so;  $F(1, 248) = 3.07, p < .09$  (see Tables 2 & 3). It was expected that this significant three-way interaction would be due to a significant two-way interaction between Infant Expression and Infant Birth Condition for High Profile Adults but not for Low Profile Adults. Specifically, it was expected that there would be a cumulative depression in attractiveness ratings for preterm infant with neutral expression for High Profile Adults. While visual inspection of Figure 1 supported this prediction, neither univariate two-way interactions involving Infant Expression and Infant Birth Condition were significant for either Adult Group. As shown in Tables 4 and 5, simple effects analyses revealed significant effects which indicated that, overall, Low Profile Adults rated infants as cuter than High Profile Adults (overall mean rating for the Low Profile Adults = 4.84; mean overall rating for the High Profile Adults = 4.47). Moreover, there was a nonsignificant trend for the Low Profile Adults to rate the full-term infants as cuter than the pre-term infants (mean overall rating for the full-term infants = 4.97, mean overall rating for the preterm infants = 4.71;  $F(1, 195) = 2.98, p < .10$ ). This trend was not found for the High Profile Adults (mean overall rating for the full-term infants = 4.60, mean overall rating for the preterm infants = 4.33;  $F(1, 195) = .97, n.s.$ ). Both Adult Groups rated infants with smiling faces as significantly cuter than the same infant with neutral

Table 2

Results for Repeated Measures Univariate Analysis of Variance: The Effects of Adult Group (AG), Infant Birth Condition (IBC), Infant Expression (IE), and Infant Age (IA) on Measures of Infant Cuteness

Effect	SS	df	MS	F	P
AG	2175.81	(1, 248)	8.77	8.54	< .01
IA	245.15	(2, 496)	.49	101.48	< .001
IA x AG	245.15	(2, 496)	.49	1.21	n.s.
IBC	116.42	(1, 248)	.47	116.62	< .001
IBC x AG	116.42	(1, 248)	.47	.03	n.s.
IE	220.82	(1, 248)	.89	218.08	< .001
IE x AG	220.82	(1, 248)	.89	.47	n.s.
IA x IBC	187.84	(2, 496)	.38	14.51	< .001
IA x IBC x AG	187.84	(2, 496)	.38	.18	n.s.
IA x IE	176.29	(2, 496)	.36	.80	n.s.
IA x IE x AG	176.29	(2, 496)	.36	2.89	< .06
IBC x IE	61.35	(1, 248)	.25	2.94	< .10
IBC x IE x AG	61.35	(1, 248)	.25	3.07	< .09
IA x IBC x IE	181.06	(2, 496)	.37	5.80	< .01
IA x IBC x IE x AG	181.06	(2, 496)	.37	.53	n.s.

Table 3

Means (and Standard Deviations) of Cuteness Ratings for  
Adult Group, Infant Birth Condition, Infant Expression, and  
Infant Age

	Conditions	
	Low Profile Adults	High Profile Adults
<b>Preterm</b>		
2 Months		
No Smile	4.18 (1.23)	3.70 (0.86)
Smile	4.62 (1.18)	4.27 (1.06)
4 Months		
No Smile	4.50 (1.05)	4.06 (1.01)
Smile	5.09 (1.07)	4.68 (1.05)
6 Months		
No Smile	4.67 (1.09)	4.25 (1.05)
Smile	5.18 (1.05)	5.00 (1.10)
<b>Full-Term</b>		
2 Months		
No Smile	4.55 (1.12)	4.09 (0.89)
Smile	5.13 (1.09)	4.75 (1.08)
4 Months		
No Smile	4.77 (1.00)	4.49 (1.12)
Smile	5.14 (1.07)	4.64 (0.99)
6 Months		
No Smile	4.92 (1.06)	4.56 (0.91)
Smile	5.38 (0.95)	5.12 (0.82)

Note: Higher ratings correspond to more positive evaluations

Figure 1. Differences in adult ratings of infant cuteness as a function of adult group, infant birth condition, and infant expression.

Note. Higher ratings correspond to more positive evaluations.

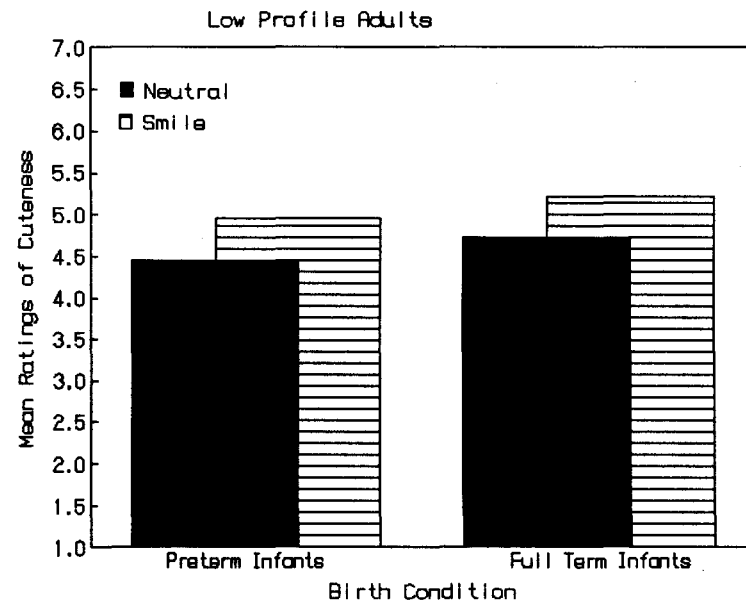
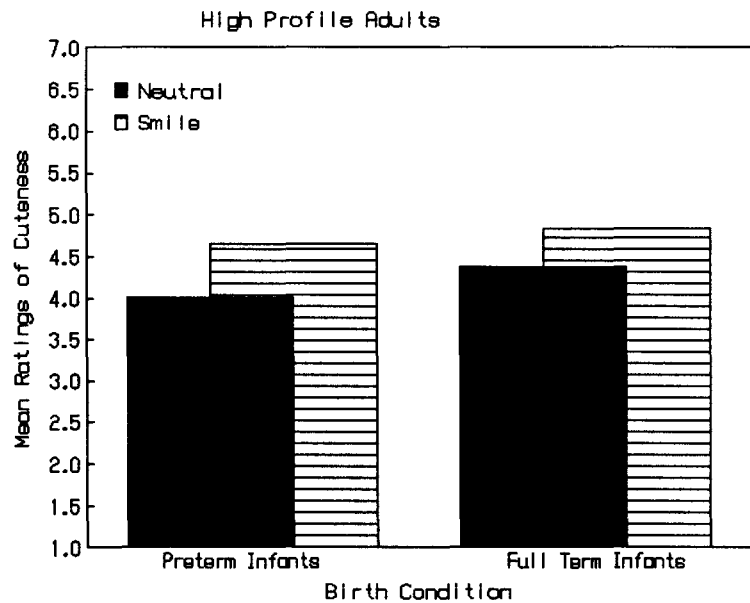


Table 4

Results for Repeated Measures Univariate Simple Effects  
Analyses of Variance: The Effects of Infant Birth  
Condition (IBC) and Infant Expression (IE) on Measures  
of Infant Cuteness for Low Profile Adults

Effect	SS	df	MS	F	P
IBC	13.79	1	13.79	2.98	< .10
Error		195	4.62		
IE	47.21	1	47.21	69.53	< .01
IBC x IE	.04	1	.04	.06	n.s.
Error		321	.68		

Table 5

Results for Repeated Measures Univariate Simple Effects  
Analyses of Variance: The Effects of Infant Birth Condition  
(IBC) and Infant Expression (IE) on Measures of Infant  
Cuteness for High Profile Adults

Effect	SS	df	MS	F	P
IBC	4.46	1	4.46	.97	n.s.
Error		195	4.62		
IE	17.66	1	17.66	26.01	< .01
IBC x IE	.46	1	.46	.68	n.s.
Error		321	.68		

expressions (for the Low Profile Adults, mean overall rating for smiling infant expression = 5.09, mean overall rating for the neutral infant expression = 4.59,  $F(1, 321) = 69.53, p < .01$ ; for the High Profile Adults, mean overall rating for the smiling infant expression = 4.74, mean overall rating for the neutral infant expression = 4.19,  $F(1, 321) = 26.01, p < .01$ ).

In summary, these results indicated that, overall, high profile adults perceived infants as less cute than did low profile adults, regardless of infant facial expression and infant birth condition. Infant facial expression influenced ratings of infant cuteness for both adult groups such that infants were rated as cuter when they were smiling. In addition, the low profile adults (but not the high profile adults) tended to rate full-term infants as cuter than the preterm infants. Moreover, while neither univariate two-way interactions between Infant Birth Condition and Infant Expression were significant for either Adult Group, visual inspection of Figure 1 suggested that the significant multivariate three-way interaction reflects a tendency for the high profile adults to rate preterm infants with neutral faces in a less positive manner than the low profile adults.

In addition to the significant interaction between Adult Group, Infant Birth Condition, and Infant Expression just discussed, a significant multivariate interaction involving Adult Group, Infant Expression, and Infant Age was



also obtained,  $F(4, 992) = 2.55, p < .04$  (see Table 1). Again, infant cuteness was found to be the main contributor to the interaction, although not significantly so;  $F(2, 496) = 2.89, p < .06$  (see Tables 2 & 3). Visual inspection of Figure 2, showed a pattern similar to the previous three-way interaction. Again, while neither univariate two-way interactions between Infant Expression and Infant Age were significant, Figure 2 suggested that the significant multivariate three-way interaction reflects a cumulative negative impact of being two-months old with a neutral face and being observed by a High Profile Adult. As shown on Tables 6 and 7, analyses of simple effects revealed that Low Profile Adults rated infants, in general, as significantly cuter than did the High Profile Adults (mean overall rating for the Low Profile Adults = 4.84; mean rating for High Profile Adults = 4.46). Both Adult Groups rated infants with smiling expressions as cuter than the same infants with neutral expressions (for the Low Profile Adults, mean rating for smiling infant faces = 5.09, mean rating for the infant neutral expression = 4.59,  $F(1, 212) = 14.66, p < .01$ ; for the High Profile Adults, mean rating for the smiling infant expression = 4.74, mean rating for the neutral infant expression = 4.19  $F(1, 212) = 54.82, p < .01$ ). In addition, as infant age increased, ratings of cuteness increased for both adult groups (for the Low Profile Adults mean ratings at 2 months = 4.62, at 4 months = 4.86, at 6 months = 5.04

Figure 2. Differences in adult ratings of infant cuteness as a function of adult group, infant age, and infant expression.

Note. Higher ratings correspond to more positive evaluations.

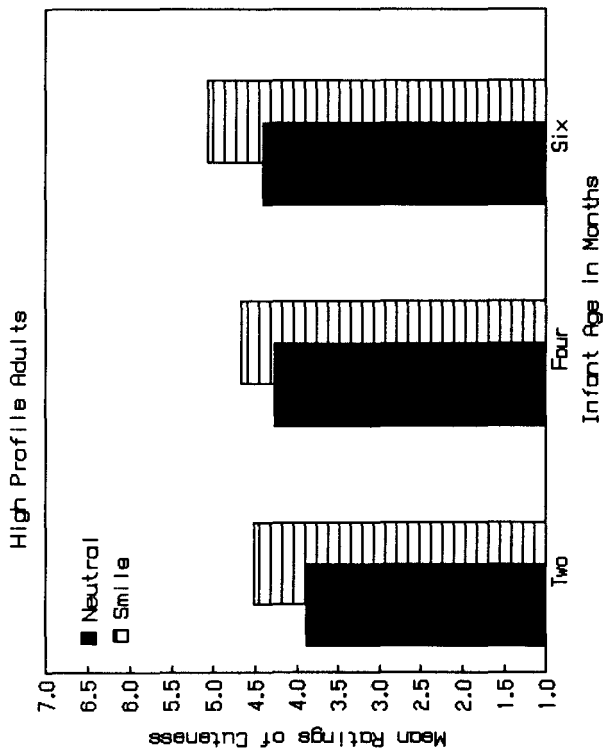
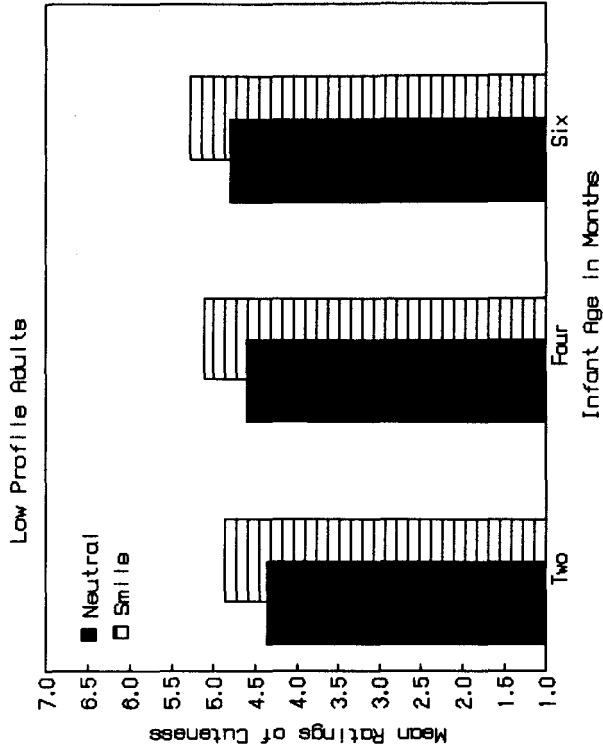


Table 6

Results for Repeated Measures Univariate Simple Effects  
Analyses of Variance: The Effects of Infant Expression (IE)  
and Infant Age (IA) on Measures of Infant Cuteness for Low  
Profile Adults

Effect	SS	df	MS	F	P
IE	70.82	1	70.82	14.66	< .01
Error		212	.48		
IA	34.45	2	17.23	34.86	< .01
IE x IA	.05	2	.03	.06	n.s.
Error		352	.49		

Table 7

Results for Repeated Measures Univariate Simple Effects  
Analyses of Variance: The Effects of Infant Expression (IE)  
and Infant Age (IA) on Measures of Infant Cuteness for High  
Profile Adults

Effect	SS	df	MS	F	P
IE	26.48	1	26.48	54.82	< .01
Error		212	.48		
IA	16.30	2	8.15	16.63	< .01
IE x IA	1.26	2	.63	1.28	n.s.
Error		352	.49		

$F(2, 352) = 34.86, p < .01$ ; for the High Profile Adults mean ratings at 2 months = 4.20, at 4 months = 4.47, at 6 months = 4.73,  $F(2, 352) = 16.63, p < .01$ ). Post hoc Scheffé analyses performed to assess the significance of pairwise differences between ages revealed that although the average cuteness ratings increased with age, the magnitude of the differences was different depending on the Adult Group. For the Low Profile Adults, significance was found between the 2 month and 4 month ratings (difference between means = .24;  $F(2, 352) = 11.29, p < .05$ ), whereas no significance was found between the 4 and 6 month ratings (difference between means = .18;  $F(2, 352) = 6.35, n.s.$ ). However, for the High Profile Adults, significance was found between the 2 and 6 months ratings (difference between means = .53;  $F(2, 352) = 16.53, p < .01$ ) but not between the 2 and 4 months ratings (difference between means = .27;  $F(2, 353) = 4.29, n.s.$ ) nor the 4 and 6 months ratings (difference between means = .26;  $F(2, 353) = 3.98, n.s.$

Finally, a significant multivariate interaction involving Infant Birth Condition, Infant Age, and Infant Expression was obtained;  $F(4, 992) = 3.98, p < .004$ ). Univariate analyses revealed that ratings of cuteness ( $F(2, 496) = 5.80, p < .004$ ) and likeability ( $F(2, 496) = 6.41, p < .003$ ) contributed to the interaction (for cute, see Tables 2 & 3; for likeable, see Tables 8 & 9). As shown in Figure 3, smiling infant expressions were rated as cuter than

Table 8

Results for Repeated Measures Univariate Analysis of Variance: The Effects of Adult Group (AG), Infant Birth Condition (IBC), Infant Expression (IE), and Infant Age (IA) on Measures of Infant Likeability

Effects	SS	df	MS	F	P
AG	1965.71	(1, 248)	7.93	6.03	< .05
IA	190.66	(2, 496)	.38	88.54	< .001
IA x AG	190.66	(2, 496)	.38	2.35	< .10
IBC	77.20	(1, 248)	.31	68.67	< .001
IBC x AG	77.20	(1, 248)	.31	1.09	n.s.
IE	248.88	(1, 248)	1.00	401.36	< .001
IE x AG	248.88	(1, 248)	1.00	1.88	n.s.
IA x IBC	126.15	(2, 496)	.25	17.07	< .001
IA x IBC x AG	126.15	(2, 496)	.25	.57	n.s.
IA x IE	134.55	(2, 496)	.27	.96	n.s.
IA x IE x AG	134.55	(2, 496)	.27	.67	n.s.
IBC x IE	58.31	(1, 248)	.23	2.02	n.s.
IBC x IE x AG	58.31	(1, 248)	.23	.39	n.s.
IA x IBC x IE	128.40	(2, 496)	.26	6.41	< .01
IA x IBC x IE x AG	128.40	(2, 496)	.26	.03	n.s.

Table 9

Means (and Standard Deviations) of Likeability Ratings for  
Adult Group, Infant Birth Condition, Infant Expression, and  
Infant Age

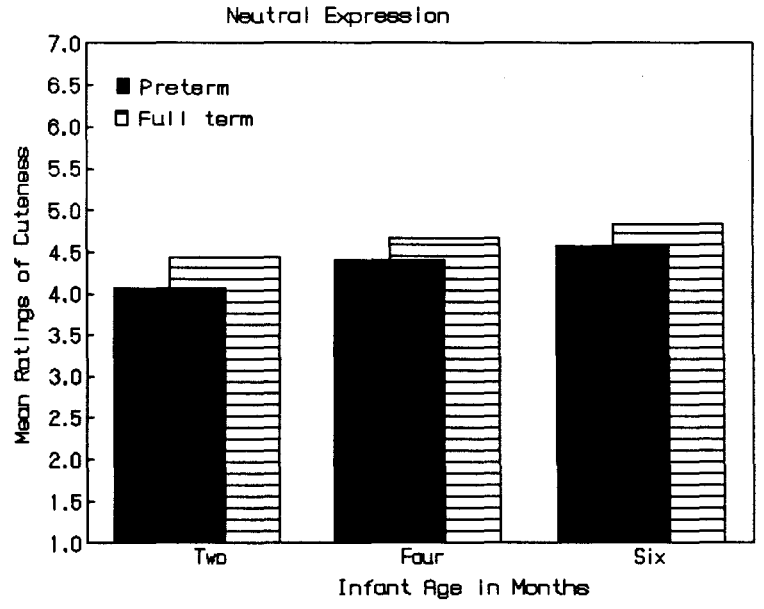
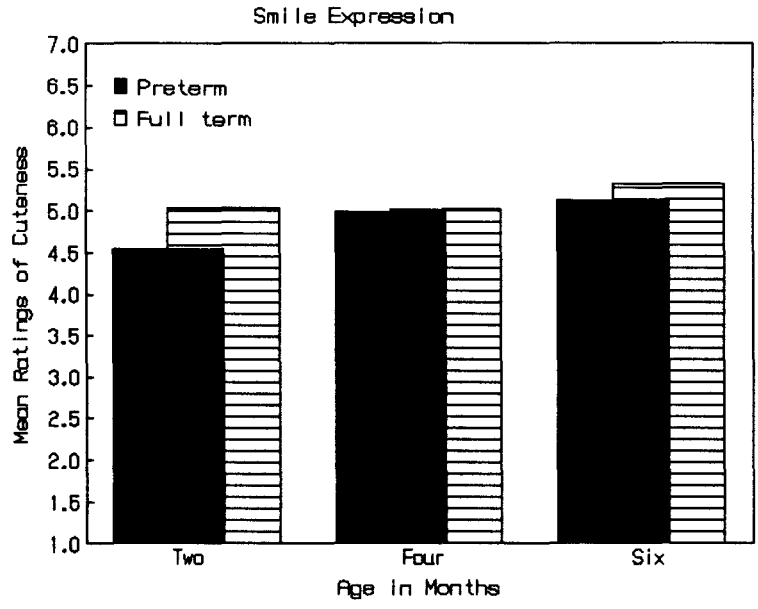
		Conditions	
		Low Profile Adults	High Profile Adults
<b>Preterm</b>			
2 Months			
No Smile	4.53 (1.15)	4.09 (0.87)	
Smile	5.19 (1.05)	4.79 (1.05)	
4 Months			
No Smile	4.81 (1.01)	4.43 (0.94)	
Smile	5.58 (0.96)	5.29 (1.02)	
6 Months			
No Smile	4.90 (1.09)	4.60 (0.87)	
Smile	5.68 (0.91)	5.53 (0.97)	
<b>Full-Term</b>			
2 Months			
No Smile	4.76 (1.09)	4.40 (0.91)	
Smile	5.55 (0.97)	5.26 (0.96)	
4 Months			
No Smile	4.98 (1.02)	4.65 (0.92)	
Smile	5.56 (0.96)	5.37 (0.89)	
6 Months			
No Smile	5.06 (0.97)	4.71 (0.91)	
Smile	5.71 (0.90)	5.59 (0.78)	

Note: Higher ratings correspond to more positive evaluations

Figure 3. Differences in adult ratings of infant cuteness as a function of infant birth condition, infant age, and infant expression.

Note. Higher ratings correspond to more positive evaluations.





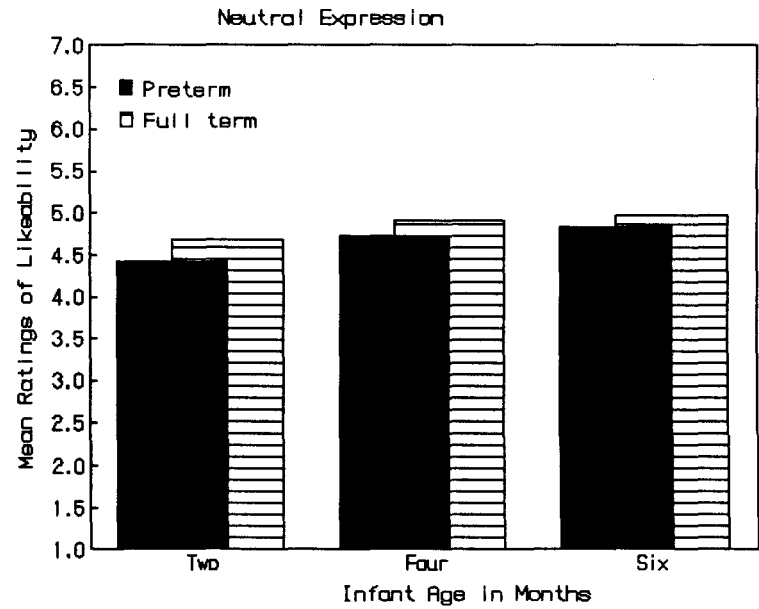
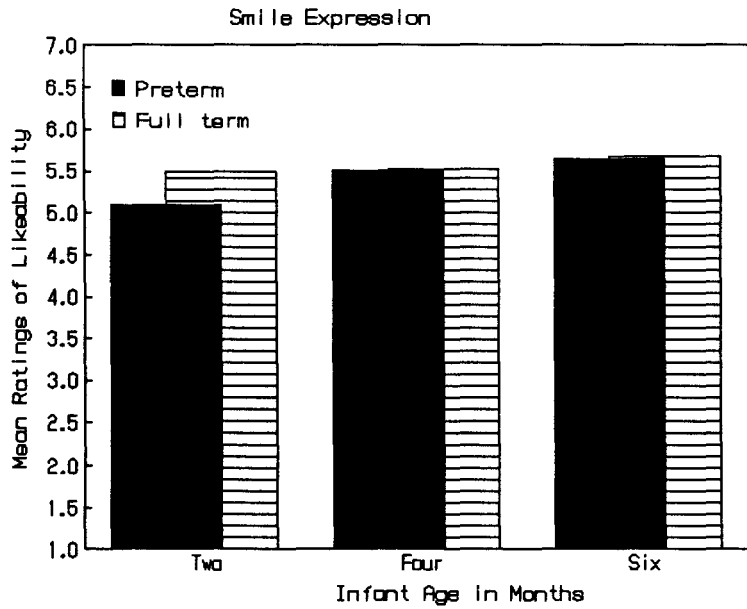
neutral infant expressions (mean overall rating for the smiling expression = 5.01, mean overall rating for the neutral expression = 4.50). Simple effects analyses revealed that in the neutral facial expression, overall, full-term infants were rated as cuter than preterm infants with the same expression (mean overall rating for full-term infants = 4.65, mean overall rating for pre-term infants = 4.36;  $F(1, 321) = 50.07, p < .01$ ). Also, as infant age increased, ratings of cuteness increased (mean rating for 2 months = 4.22, for 4 months = 4.53, for 6 months = 4.71;  $F(2, 687) = 61.28, p < .01$ ). Post hoc Scheffé analyses revealed significance at the 2 and 4 months ratings (difference between means = .31;  $F(2, 687) = 38.75, p < .01$ ) and ratings between 4 and 6 months (difference between means = .18,  $F(2, 687) = 13.06, p < .05$ ). However, in the smiling expression condition, these effects were modified by a significant Infant Birth Condition x Infant Age interaction,  $F(2, 687) = 16.60, p < .01$ . Second order effects analyses revealed that full-term infants were rated as significantly cuter than preterm infants at the 2 and 6 month ages (for 2 months: mean rating for the full-term infants = 5.04, mean rating for the preterm infants = 4.56;  $F(1, 838) = 43.58, p < .01$ ; for 6 months: mean rating for the full-term infants = 5.32, mean rating for preterm infants = 5.13;  $F(1, 838) = 5.82, p < .01$ ). This difference was not found at the 4 month age (mean rating for full-term infants = 5.02, mean

rating for preterm infants = 4.99;  $F(1, 838) = .19$ , n.s.).

As shown in Figure 4, a similar pattern was found on ratings of likeability, infants with smiling expressions were rated as more likeable than the same infants with neutral expressions (mean overall rating for smiling expression = 5.50, mean overall rating for neutral expression = 4.76). In the neutral infant expression, full-term infants were rated as more likeable than the preterm infants,  $F(1, 286) = 21.38$ ,  $p < .01$  (mean rating for the full-term infants = 4.85, mean rating for the preterm infants = 4.66). Also, ratings of likeability increased with infant age;  $F(2, 209) = 50.82$ ,  $p < .01$  (mean rating at 2 months = 4.55, at 4 months = 4.82, at 6 months = 4.91). Post hoc Scheffé analyses revealed a significant difference between the 2 and 4 month ages (difference between means = .27,  $F(2, 409) = 27.61$ ,  $p < .01$ ) but not between the 4 and 6 month ages (difference between means = .09,  $F(2, 409) = 3.07$ , n.s. A significant Infant Birth Condition x Infant Age was also found in the smiling expression condition;  $F(2, 409) = 17.03$ ,  $p < .01$ . Second order effect analyses revealed that full-term infants were rated as significantly more likeable than preterm infants at the 2 month age (mean rating for full-term infants = 5.49, mean rating for preterm infants = 5.10,  $F(1, 709) = 30.55$ ,  $p < .01$ ). This difference was not found at the 4 month age (mean rating for full-term infants = 4.91, mean rating for pre-term infants =

Figure 4. Differences in adult ratings of infant likeability as a function of infant birth condition, infant age, and infant expression.

Note. Higher ratings correspond to more positive evaluations.



4.73,  $F(1, 709) = .02$ , n.s.) nor the 6 month age (mean rating for the full-term infants = 4.97, mean rating for the preterm infants = 4.83,  $F(1, 709) = .26$ , n.s.).

In summary, these analyses indicated infants with smiling facial expressions were perceived as cuter than infants with neutral expressions. Moreover, in the neutral facial expression, full-term infants were perceived as cuter and more likeable than preterm infants. In the smiling infant condition, full-term infants were perceived as cuter than preterm infants when they were two and six months but not at four months. Finally, full-term infants were perceived as more likeable than preterm infants at the 2 month age but not the four and six month ages.

Overall, these results indicated that low profile adults perceived infants as cuter than did high profile adults. For both adult groups, smiling infant facial expression and infant age had a positive impact on perceptions of infant cuteness. The low profile adults, but not the high profile adults, had the tendency to perceive full-term infants as cuter than preterm infants. Moreover, visual inspection of the univariate three-way interactions involving Adult Group, Infant Birth Condition, Infant Expression, and Infant Age (Figures 2 & 3) support the speculation of a cumulative effect on ratings of infant cuteness. Specifically, Figures 2 & 3 suggested that high profile adults tended to rate the neutral face of two-month

old infants and preterm infants in a less positive manner than the low profile adults. Results also indicated that, in general, full-term infants were perceived as cuter and more likeable than preterm infants when the infants exhibited neutral expressions. In addition, although ratings of cuteness and likeability increased with age, the size of the effect of age on these dependent variables decreased as infant age increased.

#### Perceived Infant Age

The next set of analysis were performed to determine if adult groups differed in their perceptions of infant age; if these differences were more marked for the preterm infants; and if smiling infant facial expression influenced ratings of perceived age. A 2 (Adult Group: high, low profile) x 2 (Infant Birth Condition: full-term, preterm) x 2 (Infant Expression: smiling, neutral) x 3 (Infant Age: 2 months, 4 months, 6 months (corrected for preterm infants)) repeated measures ANOVA was performed to assess perceptions of infant age (see Tables 10 & 11).

A significant Adult Group x Infant Birth Condition x Infant Age interaction was obtained;  $F(2, 496) = 3.17, p < .05$ . As shown in Figure 5, overall, High Profile Adults rated infants as older than Low Profile Adults (overall mean rating of High Profile Group = 4.01; overall mean rating for Low Profile Group = 3.68. Simple effects analyses revealed a significant Infant Birth Condition x Infant Age for the

Table 10

Results for Repeated Measures Analysis of Variance: The Effects of Adult Group (AG), Infant Birth Condition (IBC), Infant Expression (IE), and Infant Age (IA) on Measures of Perceived Infant Age

Effects	SS	df	MS	F	P
AG	41.04	1	41.04	3.95	< .05
Error	2575.65	248	10.39		
IA	375.55	2	187.77	436.31	< .001
IA x AG	3.26	2	1.63	3.79	< .05
Error	213.46	496	.43		
IBC	46.75	1	46.75	107.39	< .001
IBC x AG	.55	1	.51	1.26	n.s.
Error	107.96	248	.44		
IE	13.00	1	13.00	36.87	< .001
IE x AG	1.45	1	1.45	4.08	< .05
Error	87.94	248	.35		
IA x IBC	10.90	2	5.45	19.00	< .001
IA x IBC x A	1.82	2	.91	3.17	< .05
Error	142.18	496	.29		
IA x IE	1.01	2	.51	194	n.s.
IA x IE x AG	.05	2	.03	.10	n.s.
Error	129.52	496	.26		
IBC x IE	1.03	1	1.03	3.70	n.s.
IBC x IE x A	.05	1	.05	.19	n.s.
Error	68.91	248	.28		
IA x IBC x IE	.10	2	.05	.18	n.s.
IA x IBC x IE x AG	.05	2	.02	.09	n.s.
Error	132.27	496	.27		



Table 11

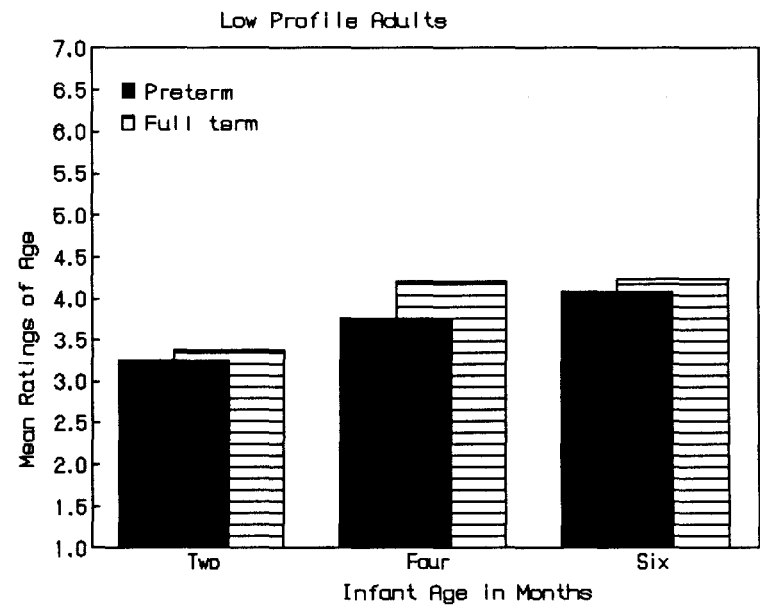
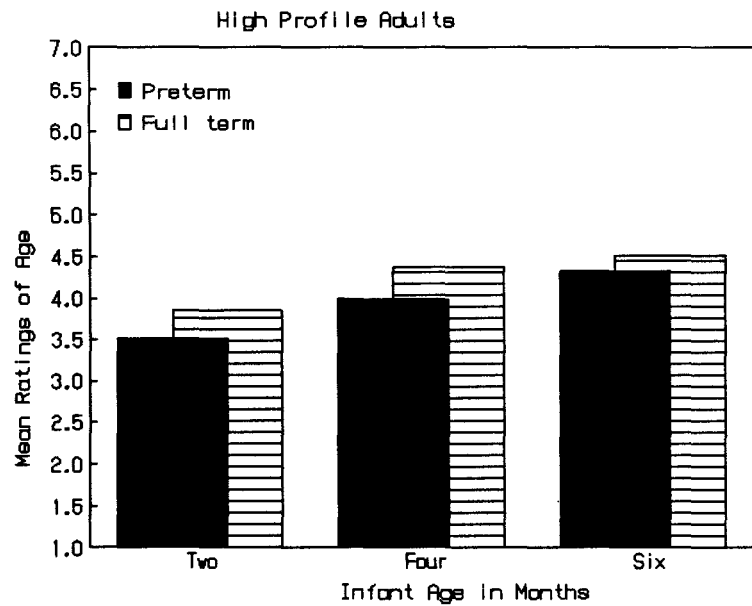
Means (and Standard Deviations) of Age Ratings for Adult Group, Infant Birth Condition, Infant Expression, and Infant Age

		Conditions	
		Low Profile Adults	High Profile Adults
<b>Preterm</b>			
2 Months			
No Smile	3.16 (0.99)		3.50 (1.02)
Smile	3.34 (1.08)		3.54 (1.03)
4 Months			
No Smile	3.68 (1.01)		3.97 (1.19)
Smile	3.85 (1.08)		4.01 (1.09)
6 Months			
No Smile	3.97 (1.12)		4.27 (1.25)
Smile	4.21 (1.12)		4.40 (1.08)
<b>Full-Term</b>			
2 Months			
No Smile	3.31 (1.01)		3.83 (1.13)
Smile	3.42 (1.06)		3.89 (1.04)
4 Months			
No Smile	4.17 (1.17)		4.40 (1.14)
Smile	4.24 (1.08)		4.34 (0.99)
6 Months			
No Smile	4.16 (1.07)		4.47 (1.11)
Smile	4.32 (1.07)		4.56 (1.01)

Note: Higher ratings correspond to "older" evaluations

Figure 5. Differences in adult ratings of infant age as a function of adult group, infant birth condition, and infant age.

Note. Higher ratings correspond to "older" evaluations.

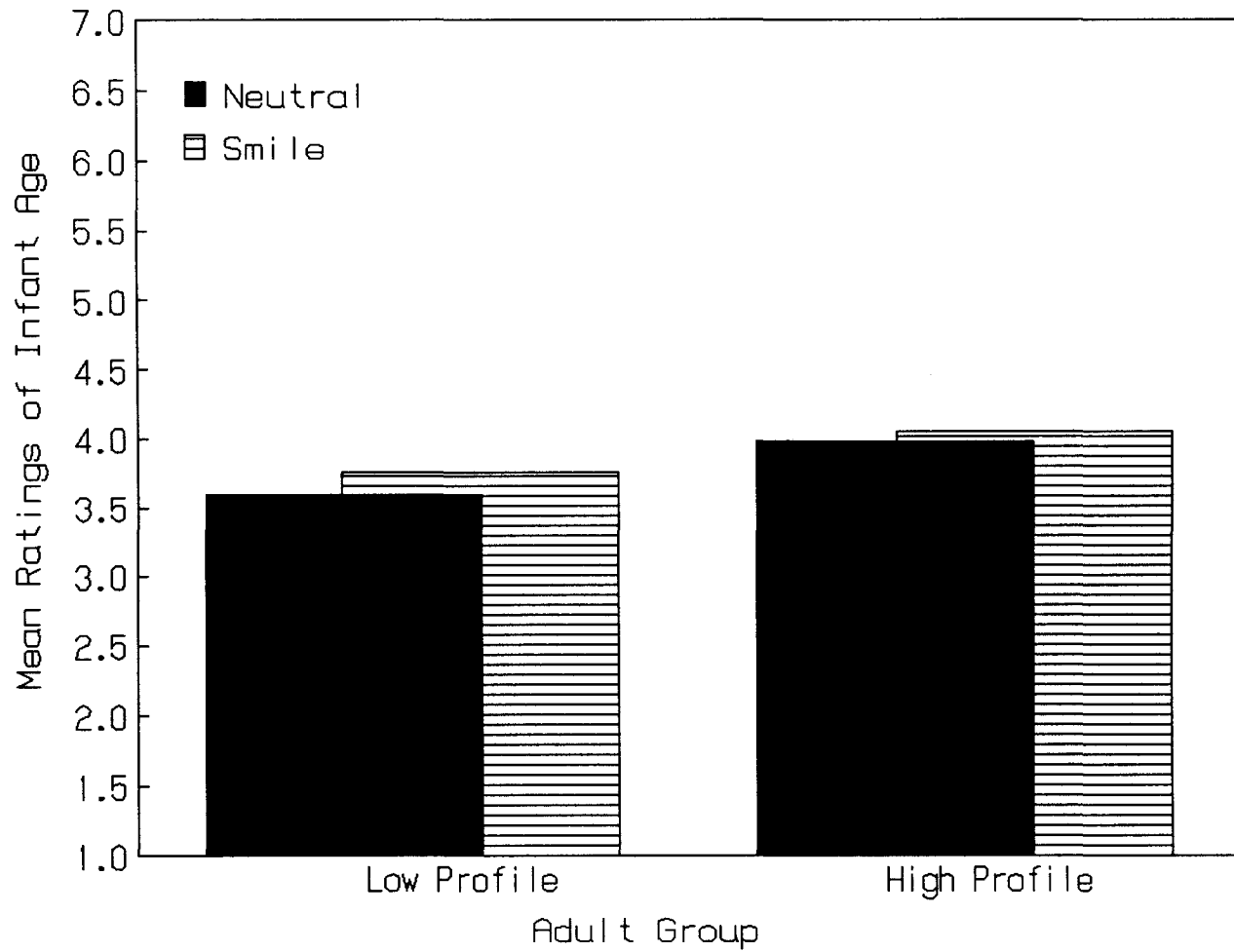


Low Profile Adults ( $F(2, 679) = 7.94$ ,  $p < .01$ ) but not for the High Profile Adults ( $F(2, 679) = .89$ , n.s.). Second order effect analyses showed that the Low Profile Adults had the tendency to rate full-term infants as older than the preterm infants, with this difference more marked when the infants were four months old (overall mean rating for the full-term infants at 2 months = 3.37, at 4 months = 4.20, at 6 months = 4.24; mean overall ratings for preterm infants at 2 months = 3.25, at 4 months = 3.77, at 6 months = 4.09). Neither the effect of Infant Birth Condition nor the Infant Birth Condition x Infant Age interaction were found for the High Profile Adults. However, in the High Profile Adult Group, ratings of perceived infant age increased with actual infant age;  $F(2, 679) = 16.12$ ,  $p < .01$ . Post hoc Scheffé analyses were performed to assess the significance of pairwise differences between ages. These analyses revealed that two month mean rating was significantly less than the four month mean rating,  $F(1, 679) = 24.34$ ,  $p < .01$ , but the difference between the four and six month mean ratings failed to achieve significance.

In addition to the Adult Group x Infant Birth Condition x Infant Age, a significant Adult Group x Infant Expression was obtained,  $F(2, 496) = 3.79$ ,  $p < .03$  (see Figure 6). Analyses of simple effects indicated that the Low Profile Adults rated infants with smiling facial expressions as older the infants with neutral expressions,  $F(1, 352) =$

Figure 6. Differences in adult ratings of infant age as a function of adult group and infant expression.

Note. Higher ratings correspond to "older" evaluations.



5.08,  $p < .05$ . This impact of infant facial expression was not found for the High Profile Adults.

In summary, these results indicated that, overall, high profile adults perceived infants as older than did low profile adults. In addition, the High Profile Adults did not differentiate between infant birth condition on their perceptions of infant age whereas the Low Profile Adults perceived full-term infants as older than preterm infants, with this difference more marked when the infants were four months old. Although ratings of infant age increased with actual infant age, the magnitude of the differences decreased as age increased. Finally, Low Profile Adults perceived faces of smiling infants as older than the same infants with neutral facial expression. This impact of infant facial expression was not found for the High Profile Adults.

#### Perceived Emotion

Finally, an Adult Group x Infant Birth Condition x Infant Expression x Infant Age repeated measures ANOVA was performed on ratings of infant emotional state (see Tables 12 & 13). Results revealed a significant main effect of Adult Group ( $F(1, 248) = 4.26, p < .05$ ) which indicated that the Low Profile Adults rated infants as significantly happier than the High Profile Adults (mean rating for the low risk adults = 4.88, mean rating for the high profile adults = 4.24). A significant interaction involving Infant

Table 12

Results for Repeated Measures Analysis of Variance: The Effects of Adult Group (AG), Infant Birth Condition (IBC), Infant Expression (IE), and Infant Age (IA) on Measures of Perceived Infant Emotion

Effects	SS	df	MS	F	P
AG	10.13	1	10.13	4.26	< .05
Error	589.65	248	2.38		
IA	162.00	2	81.00	231.55	< .001
IA x AG	1.70	2	.85	2.43	n.s.
Error	173.51	496	.35		
IBC	14.49	1	14.49	53.71	< .001
IBC x AG	.02	1	.02	.06	n.s.
Error	66.91	248	.27		
IE	3332.75	1	3332.75	3635.75	< .001
IE x AG	.00	1	.00	.00	n.s.
Error	227.34	248	.92		
IA x IBC	2.58	2	1.29	4.32	< .05
IA x IBC x AG	.44	2	.22	.74	n.s.
Error	148.00	496	.30		
IA x IE	2.34	2	1.17	3.85	< .05
IA x IE x AG	.22	2	.11	.37	n.s.
Error	150.61	496	.30		
IBC x IE	1.03	1	1.03	3.70	n.s.
IBC x IE x AG	.05	1	.05	.19	n.s.
Error	68.91	248	.28		
IA x IBC x IE	5.89	2	2.94	8.56	< .001
IA x IBC x IE x AG	.83	2	.41	1.20	n.s.
Error	170.68	496	.34		



Table 13

Means (and Standard Deviations) of Infant Emotional State Ratings for Adult Group, Infant Birth Condition, Infant Expression, and Infant Age

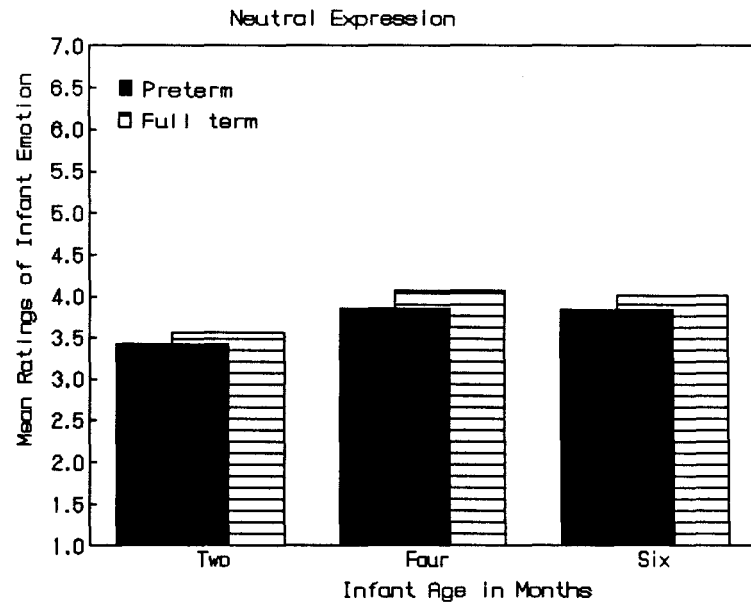
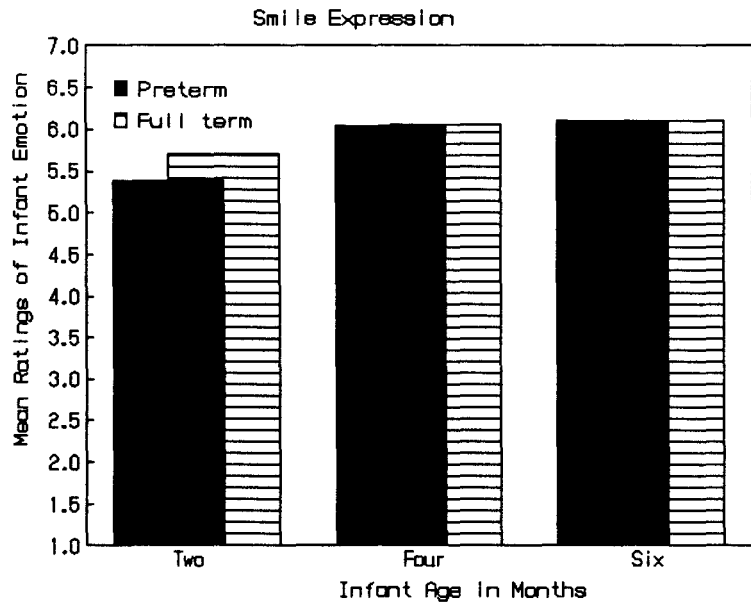
	Conditions	
	Low Profile Adults	High Profile Adults
<b>Preterm</b>		
2 Months		
No Smile	3.47 (0.68)	3.28 (0.66)
Smile	5.42 (0.80)	5.29 (0.82)
4 Months		
No Smile	3.89 (0.74)	3.75 (0.79)
Smile	6.09 (0.64)	5.90 (0.71)
6 Months		
No Smile	3.88 (0.70)	3.69 (0.69)
Smile	6.12 (0.73)	6.11 (0.75)
<b>Full-Term</b>		
2 Months		
No Smile	3.58 (0.73)	3.50 (0.65)
Smile	5.76 (0.81)	5.53 (0.73)
4 Months		
No Smile	4.13 (0.82)	3.89 (0.75)
Smile	6.10 (0.72)	5.90 (0.72)
6 Months		
No Smile	4.01 (0.65)	4.03 (0.67)
Smile	6.12 (0.73)	6.07 (0.77)

Note: Higher ratings correspond to more positive evaluations

Birth Condition, Infant Expression and Infant Age was also obtained,  $F(2, 496) = 8.65, p < .001$ . As shown in Figure 7, infants with smiling faces were rated as happier than when they exhibited neutral facial expressions (mean rating for smiling expression = 5.90, mean rating for neutral expression = 3.80). In the neutral expression condition, full-term infants were rated as happier than preterm infants (mean rating for full-term infants = 3.88, mean rating for preterm infants = 3.71;  $F(1, 272) = 18.95, p < .01$ ). In addition, older infants were rated as happier than younger infants,  $F(2, 351) = 104.06, p < .01$ . Post hoc Scheffé analyses were performed to assess the significance of pairwise differences between ratings. These analyses revealed that the two month mean rating was significantly less than the four month rating,  $F(1, 351) = 84.71, p < .01$ . The difference between the four and six month mean ratings failed to achieve significance. In the smiling expression condition, a significant Infant Risk x Infant age interaction was obtained,  $F(2, 351) = 4.01, p < .01$ . Second order effects analyses revealed that full-term infants were rated as happier than preterm infants when the infants were two months old (mean rating for full-term infants = 5.71, mean rating for preterm infants = 5.39,  $F(1, 736) = 20.63, p < .01$ ) but not at the four and six month ages (mean rating for full-term infants at 4 months = 6.06, at 6 months = 6.11; mean rating for preterm infants at 2 months = 6.05, at

Figure 7. Differences in adult ratings of infant emotion as a function of infant expression, infant age, and infant birth condition.

Note. Higher evaluations correspond to more positive evaluations.



6 months = 6.11).

In summary, these analyses indicated that older infants were perceived as happier than younger infants. In addition, full-term infants with neutral facial expression were perceived as happier than the preterm infants with the same expressions, and smiling full-term infants were perceived as happier than smiling preterm infants when the infants were two months but not at any other age. Perceptions of infant happiness increased with infant age. Moreover, low profile adults perceived infants, in general, as happier than high profile adults.

## CHAPTER V

### DISCUSSION

The purpose of this study was to examine adult perceptions of infants as a function of adult characteristics and of infant characteristics. Based on the marriage of two areas of research (i.e., expectations of dysfunctional parents and infant attractiveness), it was expected that adults with characteristics found in dysfunctional parents would view infants as less attractive and older than adults without these characteristics, and that these differences would be more marked for preterm infants. It was also anticipated that smiling infant faces would have a positive impact on adult perceptions of infant attractiveness but that this effect would be less pronounced for high profile adults. This study was also designed to determine if these effects would vary with the age of the children.

As expected, on the basis of previous research which has suggested a "hypersensitivity" in inadequate parents, non-parenting adults in this study with characteristics associated with dysfunctional parenting (i.e., high profile group), in general, perceived infants as less attractive

(cute) than non-parenting adults without these characteristics (i.e., low profile group).

In addition to the expectations that adult groups would differ in their perceptions of infant attractiveness, it was also anticipated that perceptions of infant attractiveness would be modified by characteristics of the infants. It was anticipated, based on past studies, that preterm infants would be perceived as less attractive than full-term infants and that this negative evaluation would be more marked for the high profile adults. Evidence for this prediction was attained in the findings of a significant multivariate interaction among Adult Group, Infant Birth Condition, and Infant Expression. While neither of the univariate simple effects two-way interactions between Infant Birth Condition and Infant Expression were statistically significant, visual inspection of the cuteness means (see Figure 1) supports the interpretation that this three-way interaction reflects a tendency for high profile adults to view preterm infants with neutral faces in a particularly negative manner, as predicted.

Findings also showed that less subtle features, such as infant expression and age, may have a positive impact on adult evaluations. As predicted, the data indicated that for both adult groups, infants with smiling expressions elicited more positive ratings of attractiveness than neutral infant faces and older infants were perceived as

more attractive than younger infants.

Although, overall, older infants received higher ratings of attractiveness than younger infants, the magnitude of the difference was dependent on adult group. The data suggested that within the high profile adult group, the advantage of infant age did not make a significant contribution in attractiveness ratings until the infants were six months old, whereas in the low profile adult group, the difference appeared between the two and four month ages. This suggests that any overall advantage of smiling to elicit more positive evaluations by high profile adults may not occur until infants are more than four months old. Moreover, while neither of the univariate simple effects two-way interactions between Infant Expression and Infant Age were statistically significant, visual inspection of the cuteness mean ratings (see Figure 2) support the interpretation that the significant three-way multivariate Adult Group, Infant Expression, and Infant Age interaction reflects the tendency for high profile adults to perceive two months old infants with neutral faces less positively.

In addition to the expectations that adult and infant characteristics would influence perceptions of infant attractiveness, it was also anticipated that these variables would contribute to perceptions of infant age. Data revealed that adults in the high profile group perceived infants, in general, as older than did adults in the low



profile group regardless of infant birth condition, facial expression and actual age. Moreover, the low profile adults, but not the high profile adults, rated the full-term infants as older than the preterm infants, with this difference more marked when the infants were four months old than at two or six months of age. The data suggested that unlike the low profile adults, the high profile adults do not differentiate between the faces of preterm and full-term infants in terms of age. This lower perception of age of preterm infants by low profile adults suggests that these adults may therefore lower their expectations of the competencies of preterm infants. On the other hand, high profile adults, who appear to overestimate infant age in general may expect infants to be more competent than their actual age. Moreover, since high profile adults also appear not to differentiate age appearance between preterm and full-term infants, they may expect preterm infants to be as competent as full-term infants. Thus, the advantage of "looking" younger for the premature infants may not play a part in adult expectations, if the observer is a high profile adult.

Finally, this study examined the influence of adult and infant characteristics on adult perceptions of infant emotion. The data suggested that high profile adults, overall, perceived infants as less happy than low profile adults. In summary, data from this study suggest that

adults with characteristics found in dysfunctional parents, in general, perceive infants as less attractive, older, and less happy than adults without these characteristics supporting the speculation that aversive perceptions of infants found in dysfunctional parents may be operating prior to the actual parenting experience.

This study also supports the speculation that adult characteristics, as well as infant characteristics, make important contributions in perceptions of infants. Since the majority of studies on inadequate parenting are retrospective - using already identified maltreating families - it has been difficult to separate the effects of child characteristics from those of the parent. These studies have been unable to address the possibility that the breakdown of the caretaking process may have started prior to the birth of the infant (Pianta, Egeland & Erickson, 1989). The results of this study, although highly tentative, suggest that this breakdown may indeed be operating prior to actual parenting experience.

In addition, the results of the present study support current transactional models suggesting that characteristics of the adult, the child, the environment and their interactions influence the course of development (Belsky, 1980; Cicchetti, 1989; and Sameroff & Chandler, 1975). The data also support the assumption that while dyads that are characterized by a single risk factor (e.g., infant

prematurity, infant unattractiveness, parental abuse potential) are at increased risk for a negative outcome, the cumulative - and sometime interactive - effect of the multiple risk factors results in dyads passing the threshold for negative outcomes (Rutter, 1983). Specifically, the univariate simple effects two-way interactions involving Infant Expression and Infant Birth Condition were not significant for either Adult Group, but when all three factors were present, significant effects on ratings were obtained. A similar pattern was attained for Adult Group, Infant Expression and Infant Age whereby the additive effects of premature birth, neutral infant expression, young infant age and high profile adult and their interactions, may have a particularly strong effect on ratings of attractiveness.

The intent of this study was not to emphasize adult and child influences to the exclusion of environmental influences. Rather, it was intended to provided the identification of possible variables that may place individuals at risk and to help further the understanding of the complex developmental nature of parent-child relationships.

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## VITA

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Her elementary education was obtained in the public schools of Zion and Waukegan, Illinois. Her secondary education was completed in 1970 at the Waukegan Township High School, Waukegan, Illinois.

In June 1979, Ms. Anderson entered Lake County College, receiving the degree of Associated of Arts in Psychology in December 1982. In January 1983 she entered Northeastern Illinois University and received the degree of Bachelor of Arts with high honors in August 1984 in Psychology and Social Science.

In September 1984, Ms. Anderson entered George Williams College. While attending George Williams College, she was awarded academic fellowships for two years. In January 1986, she entered Illinois Benedictine College and received a Master of Science degree in Counseling Psychology.

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The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

Dec 3, 1993  
Date

Deborah L. Holmes  
Director's Signature