

Mother and Father Speech Style as a Predictor of Insightfulness and Attachment

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Abstract

We investigated whether the speech patterns of parents while playing with their infants could predict later attachment style. 135 infants from predominately middle-class and Caucasian families participated along with their mothers and fathers. We transcribed parent speech during the Still Face Paradigm task with their 3-month infants and coded the speech based on its content and grammatical structure. Speech was then compared to attachment style, which was assessed for both mothers and fathers with the Strange Situation when the infants were 12 and 14 months. Mothers used more infant-directed speech and more overall speech than fathers. Mothers from insecure-avoidant dyads used a higher proportion of nonstandard utterances (i.e., babbling, nonsense words, game-playing, singing, etc.) and a lower proportion of informational utterances than did mothers from both dyads of secure and insecure-resistant attachment. Insecure-avoidant mothers also used lower proportions of infant-focused speech than did secure and insecure-resistant mothers. In fathers, higher educational attainment was correlated with a lower proportion of commands, and mothers used more commands when talking to male infants than when talking to female infants. Through the analysis of parental verbal expression during playtime, this study helps to explain attachment as it is developing and the mechanisms underlying attachment formation.

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During their first years of life, infants form attachment relationships with their caregivers as a result of continued interaction between the caregiver and infant (Bowlby, 1969). According to Bowlby, the development of attachment between parent-infant dyads occurs in four phases (1969). In Phase 1, which lasts from birth to two or three months of age, infants take an interest in people and can be comforted by them but are unable to distinguish between different people (Bowlby, 1969). Phase 2 acts as a transitional period between Phase 1 and 3. By Phase 3, which begins around six or seven months of age, infants treat their primary caregivers markedly different than they treat others, and secondary attachment relationships can form (Bowlby, 1969). In Phase 4, infants come to understand their primary caregivers as independent beings with goals, which allows infants to form partnerships with their caregivers (Bowlby, 1969).

Although nearly all infants undergo this process with their caregivers, attachment outcomes vary across dyads. As infants and caregivers interact, their responses toward one another form characteristic patterns (Bowlby, 1969). The patterns allow infants to form *internal working models*, or representations of how to anticipate, interpret, and respond to their caregivers (Bowlby, 1973). When an attachment figure is judged to adequately and consistently respond to an infant's desire for support and protection, an infant forms a positive internal working model and a secure attachment; when an infant does not interpret the actions of an attachment figure to be emotionally responsive, a negative internal working model and an insecure attachment can form (Bowlby, 1973).

Previous studies on attachment have attempted to evaluate Bowlby's predictions that attachment security depends on the sensitivity of the attachment figure or the ability of the attachment figure to respond to his or her child's signals in a way that the child recognizes to be

reciprocal to his or her actions (1969; Van den Boom, 1997). The sensitivity of an attachment figure toward an infant shapes the interactions between an infant and caregiver, and the infant's interpretation of these interactions leads to the development of attachment security or insecurity (Bowlby, 1969). Measurements of attachment figure sensitivity have been conducted through observations and analyses of parent behavior, including through ratings of sensitivity in home settings (e.g., Ainsworth, Blehar, Waters, & Wall, 1978); interviews about parent attitude (e.g., Benn, 1986); and assessments, such as the Still Face Paradigm, during laboratory visits (e.g., Tronick, Als, Adamson, Wise, & Brazelton, 1978; Braungart-Rieker, Garwood, Powers, & Wang, 2001; Braungart-Rieker, Garwood, Powers, & Notaro, 1998).

Although theories like Bowlby's attempt to characterize attachment, the exact mechanisms for attachment formation are unknown. De Wolff and van IJzendoorn suggest in their meta-analysis of attachment that secure attachment in mother-infant dyads is moderately associated with mother sensitivity (1997). However, some researchers have found only weak correlations between these two factors (Goldsmith & Alansky, 1987). Van IJzendoorn and de Wolff found the association between father-infant attachment and father sensitivity to be somewhat weaker than the association between mother sensitivity and attachment (1997). Although causation cannot be determined from correlational data alone, associations between sensitivity and attachment can be indicative of causal mechanisms (De Wolff & Van IJzendoorn, 1997).

Given sensitivity's weak to moderate link with attachment, it is possible that factors other than sensitivity should be examined as plausible correlates or precursors of attachment security. Research on factors other than sensitivity, however, is sparse and has not revealed consistent results, especially in the case of father-infant dyads. Finding other parental characteristics that

relate to attachment could help to further explain the relationship between sensitivity and attachment.

In addition to sensitivity, which is assessed by how parents behaviorally respond to infants, insightfulness is emerging as a component to the formation of attachment security (Oppenheim & Koren-Karie, 2002). Insightfulness is defined as a parent's ability to empathize with his or her child, to see things from his or her point of view, and to understand the child's behavior as stemming from the child's motives (Oppenheim & Koren-Karie, 2002). Oppenheim and Koren-Karie suggest that insightfulness has several components (2002). First, caregivers view the child as a whole person with complex needs. Second, when talking about the child, positive features are discussed openly and at times with pride. When negative aspects of the child are discussed, it is done so in a non-accusatory and non-upsetting way. Finally, a caregiver with insightfulness does not impose on the child his or her own ideas of who the child should be. Instead, the caregiver updates his or her views of the child based on the child's behavior.

An adequate level of insightfulness in caregivers allows them to respond to a child in appropriate ways, which then allows a child to organize his or her thoughts and feelings (Oppenheim & Koren-Karie, 2002). This coherent and effective organization of feelings is typical in securely attached infants (Oppenheim & Koren-Karie, 2002). In contrast, when caregivers lack insightfulness and act in ways that can inhibit a child's ability to coherently and effectively organize his or her feelings, insecure attachment can form (Oppenheim & Koren-Karie, 2002). Barriers to caregiver insightfulness include anger, worry, preoccupation with other issues, and lack of openness or acceptance of the child or his or her behaviors (Oppenheim & Koren-Karie, 2002).

Oppenheim and Koren-Karie have also suggested a method of assessing caregiver insightfulness known as the Insightfulness Assessment (IA; 2002). During IA, parents and their children first interact in various contexts, and the interactions are recorded. Parents then watch video segments and are interviewed about the interactions. They are asked questions about their own thoughts and feelings as well as about their perceptions of their child's thoughts and feelings. The interviews are transcribed, and parental speech is rated on level of insightfulness. Based on levels of insightfulness, parents are divided into the categories of positively insightful, one-sided, disengaged, and mixed. Two studies have used this procedure, and secure attachment has been shown to relate to higher levels of insightfulness in mothers (Koren-Karie, Oppenheim, Dolev, Sher, & Etzion-Carasso, 2002; Oppenheim, Koren-Karie, & Sagi, 2001).

The current study examines parent insightfulness as well. Whereas in previous studies caregivers have watched videos of themselves interacting with their child and have been asked questions about the interaction after it happened, this study aims to observe caregiver insight by examining what parents say to their children during play time. While most previous studies have been limited to mother-infant dyads, this study includes data on both mother-infant and father-infant dyads (of the same infant).

This study will look at the types of utterances parents make while talking to their infants, i.e., declaratives, interrogatives, imperatives, nonsense words, etc., as well as the content of the utterances, i.e., utterances about the infant, the family, the environment, etc. We hope to examine parent insightfulness while parents are interacting with their infants, as opposed to during an interview afterward. Retrospective reporting of one's own behavior could introduce socially desirable responses and an overly positive self-presentation. By observing parents' statements ourselves, we hope to measure parents' thoughts and feelings about their infant more

objectively. We will then compare the content and nature of parent speech to parent attachment style.

We are particularly interested in speech about the infant, in expressed positive and negative attitudes toward the infant, in the proportion of commands used, and in the proportion of speech that is nonstandard, i.e. babbling, nonsense, game-playing, etc., versus speech that is informational, i.e. statements and questions.

Previous studies have indicated that parents of securely attached infants view their child as a whole and complex person and discuss their child's behavior in positive ways (Oppenheim & Koren-Karie, 2002). We expect, therefore, that parents in securely attached parent-infant dyads will talk more about their child than will parents from insecurely attached parent-infant dyads, and we expect to find that parents of securely attached infants use more positive than negative language.

We predict that parents of securely attached infants will use fewer imperatives than parents with insecurely attached infants. This is consistent with previous research indicating that parents from secure parent-infant dyads are less likely to have preconceived notions of who their child is and how their child should behave whereas parents with insecure attachment are more likely to lack this acceptance and openness toward their child (Oppenheim & Koren-Karie, 2002).

Finally, we expect relationships between insightfulness measures and attachment to be weaker for fathers than for mothers, as observed in van IJzendoorn and de Wolff's meta-analysis on fathers (1997).

Method

Participants

This study is part of a larger longitudinal study of 135 infants (64 boys; 71 girls) and their parents who visited the laboratory when the infants were 3, 5, 7, 12, 14, and 20 months (+/- 14 days). For the purposes of this study, data from the first, fourth, and fifth visits were examined. Participants in this study were recruited through the following methods: a local child-birth educator announced the study to her classes, a local hospital sent flyers home with new mothers, business cards were distributed at various community locations, and informational booths were set up at several community events. Mothers were on average 29.3 years (range = 17 - 44), and fathers were on average 30.7 years (range = 18 - 44). Parents were predominantly Caucasian (90.3% of mothers and 87.4% of fathers) and were predominantly middle class with 14.8% of the families reporting annual incomes below \$29,999, 65.2% with incomes between \$30,000 and \$74,999, 17.6% with incomes over \$75,000, and 3.0% refusing to report income. Over half of the parents attended some college or completed college (61.6% of mothers and 52.2% of fathers), while more than a quarter of parents had at least some postgraduate training (27.3% of mothers and 29.1% of fathers). The remaining parents either attended some high school or completed high school (11.1% of mothers and 18.7% of fathers). Families consisted primarily of married parents living together (84.4%) and unmarried parents living together (11.9%).

Of the original 135 families who completed the 3-month lab visit, 130 completed the 5-month visit, 125 completed the 7-month visit, 124 completed the 12-month visit, and 117 completed the 14-month visit, yielding a low attrition rate of about 13% from the first to the fifth visit. Analyses comparing the sample of families who dropped out by the 14-month visit to those who remained in the study indicated that families in which the mother's highest level of

education was high school or less were more likely to drop out compared to families in which mothers had more advanced education levels, $\chi^2(2) = 16.89, p < .001$. In addition, families whose annual incomes were \$29,999 or less had higher drop-out rates than those with incomes greater than \$30,000, $\chi^2(2) = 13.63, p < .01$. Families with both mothers, $\chi^2(1) = 7.86, p < .01$, and fathers, $\chi^2(1) = 8.12, p < .01$, of minority ethnic status were more likely to drop out. Paternal education level and cohabitation status did not differ for families who dropped out versus those who remained in the study. Thus, the generalizability of our findings is somewhat limited to families who earned higher incomes, were Caucasian, and whose mothers were more educated.

Procedures

Parents who agreed to participate in the study were sent a packet of questionnaires to complete and bring with them to each laboratory visit. During each visit, parent-infant interactions were video-recorded using two separate video cameras, with one focused on the infant and one on the parent. The video cameras recorded onto a split screen, which allowed coders to see both the parent and the infant simultaneously.

3-month visit. After consenting, parents were randomly assigned to participate first or second in the Still Face Paradigm (SFP; Tronick et al., 1978). When the first parent entered the playroom, he or she placed the infant in a booster seat on a table and then sat down and faced the infant. Parents were given verbal instructions about the procedure and were given written instructions to refer to if needed. The SFP involved three 90-second episodes—play, still-face, and reunion. For the play episode, parents were instructed to interact with their infants as they normally would once an initial doorbell sounded. After 90 seconds, a second doorbell rang, which signaled the start of the still-face episode. During the still-face episode, parents were

instructed to cease interaction with their infants, to sit back in their chair, and to maintain an expressionless face until they heard a third doorbell which indicated the start of the reunion episode. The still-face episode was shortened if the infant became overly upset, as was the case for three 3-month father-infant dyads and one 3-month mother-infant dyad. Parents were instructed to resume interaction with their infant during the reunion episode. The doorbell rang a final time to signal the end of the SFP. At this time, parents could remove their infants from the booster seat to soothe them, if desired. Once the SFP was completed and the infant was once again in a neutral or positive state, the second parent entered the room and repeated the SFP procedure. Of interest in this study are the utterances made by parents during the play and reunion episodes during the 3-month visit.

12- and 14-month and visit. Ainsworth and Wittig's (1969) Strange Situation was conducted at the 12- and 14-month visits. Mothers attended the 12-month visit, and fathers attended the 14-month visit. Parent order at the 12-month visit was not randomized given that there has been no evidence of order effects when there is at least a 4-week separation between assessments (e.g., Belsky, Rovine, & Taylor, 1984). The Strange Situation procedure involved seven 3-minute episodes. In the first episode, the parent and infant are left alone in a room. In the second, a stranger joins the parent and infant. Third, the parent leaves the room. Fourth, the parent returns, and the stranger leaves. Fifth, the parent leaves, and the infant is left alone. Sixth, the stranger returns, and seventh, the parent returns and the stranger leaves. The series of episodes is designed to elicit attachment and exploratory behavior in infants.

Measures

Parental Utterances. For the 3-month visit, mother and father speech was transcribed verbatim for play and reunion episodes of the SFP. Each utterance, defined as a grammatically

complete phrase or a word or set of words occurring between significant pauses, was then coded (Brachfeld-Child, Simpson, & Izenson, 1988). The codes, adapted from previous studies (Adams & Ramey, 1980; Brachfeld-Child et al., 1988; Sherrod, Friedman, Crawley, Drake, & Devieux, 1977), divided utterances into three categories—nonstandard utterances, informational utterances, and command utterances. The nonstandard utterance codes were as follows: (1) *vocalizations*, including babbling, laughter, gasping, and onomatopoeias; (2) *words and phrases*, including greetings, standard idioms (e.g., “oh my,” “please,” “yes”), and isolated words such as the baby’s name; and (3) *game playing or reciting*, which included singing, reciting nursery rhymes, and other phrases that indicated playing (e.g., “I got your toes,” “tickle, tickle”). Informational utterance codes were subdivided into declarative, interrogative, and imperative codes. Declaratives, utterances consisting of two or more words that are not grammatically structured as questions or commands and are not spoken with question-like intonation, were coded as (4) *declaratives about the infant and at least one other member of the family*, (5) *declaratives about a member of the family other than the infant*, (6) *declaratives about the infant*, or (7) *declaratives about the environment*. Interrogatives, defined as utterances spoken with question intonation and/or utterances grammatically structured as questions, were coded as either (8) *interrogatives about the infant and at least one other member of the family*, (9) *interrogatives about a member of the family other than the infant*, (10) *interrogatives about the infant*, or (11) *interrogatives about the environment*. Commands were coded as (12) *imperatives*. Finally, mumbling, sentences interrupted by other noises, and other uncodeable utterances were given (13) *uncodeable*. The first thirteen codes were mutually exclusive. However, the final two codes were given in combination with an utterances primary code, when applicable. Negative

statements about the infant were given an additional code of (14) *negative*, and positive statements about the infant were coded as (15) *positive*.

Coders did not code independently until they had achieved sufficient reliability with a gold-standard coder (intraclass correlations (ICCs) $\geq .80$). ICCs averaged .90 (range = .13 – 1.00) for mothers and .96 for fathers (range = .81 – 1.00). One reliability score, for positive utterances in mothers, was particularly low due to the infrequency of this code. Because transcriptions were detached from their video recordings, coders were allowed to code the same family within the age group. Videos in which a parent spoke a language other than English during the SFP were not included in analyses (3-month mother $n = 5$; 3-month father $n = 5$). Additionally, all episodes that either contained no sound or had defects in video quality were excluded from analyses (3-month mother play $n = 7$; 3-month mother reunion $n = 12$; 3-month father play $n = 7$; 3-month father reunion $n = 12$).

Infant-Parent Attachment. For the Strange Situation, infant-parent pairs were classified as having one of four attachment styles—(A) organized insecure-avoidant, (B) organized secure, (C) organized insecure-resistant (Ainsworth et al., 1978), or (D) disorganized (Main & Solomon, 1986). Infants classified as A actively avoided their caretakers at reunions. Infants classified as B sought physical or visual contact during reunions with their caregivers. When caregivers were present, infants classified as C were less willing to explore their environment. During reunion, infants classified as C showed a mixture of contact-seeking behaviors and anger toward their caregivers. Infants classified as D did not appear to fall into any of the above-mentioned categories. Rather, they displayed a variety of unusual behaviors during the Strange Situation (e.g., approaching their caregiver while looking away).

Dr. Elizabeth Carlson from the University of Minnesota headed a two-person coding team for the Strange Situation. To calculate inter-rater reliability, a subset of the mother-infant (16%) and father-infant (17%) tapes were coded by both raters, which yielded a 90% agreement with Cohen's kappa = .84 for mother-infant dyads and an 80% agreement with a Cohen's kappa = .71 for father-infant dyads. Initially, infants were classified as either A, B, C, or D, as explained above. However, infants with a primary code of D were reclassified into A, B, or C for this study in order to maintain maximum group sizes, especially for insecure groups (e.g., Martins & Gaffan, 2000). Two father-infant dyads who were primarily coded as D/A/C could not easily be placed into A or C and were therefore excluded from further analyses.

Results

Prior to testing our hypotheses, we examined the rates of each attachment style across mother-infant and father-infant dyads. Table 1 presents the frequencies of mother-infant and father-infant attachment groups. A 3 (mother-infant) X 3 (father-infant) chi-square analysis examining the frequency distribution of infant attachment classification across dyads was marginally significant, $\chi^2(4) = 8.58, p = .07$, indicating that attachment classification was mostly, but not completely, independent across infant-parent dyads.

For each parent, proportion scores were determined for nonstandard, informational, command, negative, positive, and infant-focused utterances. "Nonstandard" utterances included (1) *vocalizations*, (2) *words and phrases*, and (3) *game playing or reciting*. "Informational" utterance included all declaratives (4-8) and imperatives (9-11). "Negative" utterances included all utterances coded as (14) *negative*. "Positive" utterances consisted of all utterances coded as (15) *positive*. Finally, "infant-focused" utterances consisted of all informational utterances that mentioned the infant, including (4) *declaratives about the infant and at least one other member*

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of the family, (6) declaratives about the infant, (8) interrogatives about the infant and at least one other member of the family, and (10) interrogatives about the infant.

The nonstandard, informational, and infant-focused proportions followed a normal distribution, while command, positive, and negative proportions did not. To account for this, logarithmic transformations were conducted for command, negative, and positive proportion scores. These six parental speech scores—nonstandard proportion, informational proportion, log-transformed command proportion, log-transformed negative proportion, log-transformed positive proportion, and infant-focused proportion—along with total number of utterances, were then used in subsequent analyses.

We examined the degree to which mothers and fathers differed in their utterances. Paired t-tests for nonstandard, informational, command, negative, positive, infant-focused, and total utterances were conducted, and the means and standard deviations are reported in Table 2. Differences in total number of utterances for mothers and fathers of the same infant were significant, $p = .02$, with mothers using a higher number of total utterances than fathers used. Differences in infant-focused proportion were also significant, $p = .03$, with mothers employing higher proportions of infant-focused speech than fathers did. Finally, differences in information proportion were marginally significant, $p = .05$, with mothers using a higher proportion of informational utterances than fathers used.

To examine the degree to which parental speech utterances during playtime with infants relate to attachment style, Analyses of Covariance (ANCOVAs) were conducted. Parent age and ethnicity, family income, and infant gender were entered as covariates, and attachment style served as the independent variable to which nonstandard, informational, command, positive, negative, infant-focused, and total utterance scores were compared. Table 3 presents the means,

standard deviations, and effect sizes for mother and father utterance scores across attachment styles.

For mothers, ANCOVAs indicated a significant relationship between informational utterance proportion and mother-infant attachment style, between nonstandard utterance proportion and mother-infant attachment style, and between infant-focused proportion score and mother attachment style. Specifically, in insecure-avoidant mother-infant dyads, mothers used a higher proportion of nonstandard utterances than did mothers in both secure and insecure-resistant mother-infant dyads. Similarly, mothers with insecure-avoidant attachment styles employed lower proportions of informational utterances than did mothers with either secure or insecure-resistant attachment styles. Finally, mothers with insecure-avoidant attachment had lower infant-focused proportion scores than did mothers with secure and insecure-resistant attachment.

For fathers, ANCOVAs did not indicate a significant ($p < .05$) relationship between paternal utterance scores and father-infant attachment style. However, nonstandard utterance proportion and father-infant attachment style were shown to be related with marginal significance ($p < .10$). Specifically, fathers with insecure-avoidant attachment styles had higher proportions of nonstandard utterances than did fathers with insecure-resistant attachment with marginal significance ($p < .10$).

Additionally, ANCOVAs indicated that some demographic variables in combination with utterance proportion type were significantly related to attachment style. For mothers, when controlling for age, ethnicity, income, and gender and assessing the relationship between command utterances and attachment style, infant gender was independently related to attachment style, $F(1,91) = 6.53$, $p < .05$. Mothers of boys showed a mean of 6.44 commands with a

standard deviation of 5.15, while the mean number of commands for mothers of girls was 4.62 with a standard deviation of 4.36. For fathers, when controlling for demographics and assessing the relationship between command proportion and attachment style, education was found to correlate with attachment, $F(1,91) = 12.03, p < .01$, such that fathers who had more years of education showed fewer command utterances as shown in Table 4.

Discussion

We predicted that parents with insecure attachment would use infant-focused speech less than parents with secure attachment and found, in line with our prediction, that insecure-avoidant mothers used significantly fewer infant-focused utterances than did mothers with secure attachment relationships. Our results are in accordance with previous work examining insightfulness such that mothers of secure infants are more insightful about their infants' feelings and behaviors (Oppenheim & Koren-Karie, 2002). Thus, our method of rating parents' types of utterances during face-to-face play may be tapping into parents' thoughts and insights about their infants.

Previous research on insightfulness and attachment has placed insecure-avoidant and insecure-resistant attachment styles under the blanket category of "insecure" and would therefore have predicted insecure-resistant mothers to also use fewer infant-focused utterances than mothers with secure attachment. However, we found no significant difference between the number of infant-focused utterances used by mothers with secure and insecure-resistant attachment. Additionally, we found that insecure-resistant mothers used significantly more infant-focused utterances than did insecure-avoidant mothers. If infant-focused speech is an indicator of insightfulness, it appears that mothers of insecure-avoidant infants are less insightful than mothers of insecure-resistant infants. Alternatively, the difference in infant-focused speech

could be explained as a difference in sensitivity. Bohlin, Hagekyll, Germer, Andersson, and Lindberg observed differences in predictive factors for resistant and avoidant responses by breaking down sensitivity measures into measures of intrusiveness, physical contact, and responsiveness (1989). While intrusiveness was predictive of resistant attachment, a lack of both responsiveness and physical contact were associated with avoidant attachment. In the current study, infant-centered speech could be an indicator of responsiveness or a lack of intrusiveness, as would be supported by Bohlin et al. (1989).

Compared with mothers, we found that fathers spoke significantly fewer infant-focused utterances and that father use of infant-focused speech was not related to attachment style. This could suggest a difference in the factors relating to attachment for mothers and fathers. Because mothers are often primary caregivers, this result could relate to the primary versus secondary roles of the caregivers. Primary caregivers spend more time with their children than do secondary caregivers. This extra time spent together could allow primary caregivers to develop consistent and patterned ways of interacting with their children that we observed in our study and that relate to the formation of attachment. Caregivers who spend less time with their infants might not have had enough time to develop patterns of speaking and interacting with their child in ways that relate to attachment style. Rather, their interactions might be more spontaneous and less related to the attachment style that will later develop. Van IJzendoorn and de Wolff similarly observed weaker correlations between sensitivity and attachment for fathers than for mothers (1997). Future studies could examine primary- versus secondary-caregiver fathers in order to better understand this result or could study father speech with older infants, with whom fathers could have had more time to develop patterns of speech and interaction that relate to attachment.

Although we predicted that secure attachment would be associated with higher levels of positive utterances, we did not find significant relationships between the two variables. Additionally, negative utterances were not related to attachment style. This does not align with previous research that has shown that parents with high insightfulness, and therefore attachment security, tend to talk about the positive aspects of their children more than the negative aspects (Oppenheim & Koren-Karie, 2002). It is possible that positive speech does not correspond with insightfulness or attachment style, but it is also possible that our criteria for positive and negative utterances were too strict. For the purposes of this study, positive utterances consisted only of compliments about the baby, and negative utterances consisted only of negative statements about the baby, which occurred infrequently. A broader definition of positive utterances or a scaled score for utterance positivity could provide further insights in future studies.

Results from previous studies would indicate that parents with secure attachment give fewer commands than parents with insecure attachment because secure parents have been shown to be open and accepting of their child's behavior and personality while insecure parents tend to impose on the child their own ideas of how the child should be (Oppenheim & Koren-Karie, 2002). This did not hold true for the current study. However, mothers spoke significantly higher proportions of command utterances to boys than to girls, and fathers with lower levels of education gave more commands to their infants than did fathers with higher levels of education. Nonetheless, commands and attachment do not seem to relate directly to one another. Therefore, it is possible that commands are not an accurate measure of a parent imposing on a child his or her own ideas of who the child should be.

We expected to find more expansive results for mothers than for fathers, which held true. For mothers, nonstandard, informational, and infant-focused utterance proportions were

significantly related to attachment, while for fathers, only the nonstandard proportion score was related to attachment with marginal significance. Although this is consistent with previous research (Van IJzendoorn and de Wolff, 1997), future studies of primary- and secondary-caregiver mothers and fathers could help to explain this difference.

We observed several additional unexpected results. First, we found that mothers used significantly more utterances than fathers did. The greater number of utterances could be characteristic of mothers or of primary caregivers, but the higher number of utterances did not correspond directly with attachment. Second, we found that insecure avoidant mothers used both a higher proportion of nonstandard utterances and a lower proportion of informational utterances than did secure and insecure-resistant mothers. Finally, insecure-avoidant fathers used more nonstandard utterances than did insecure-resistant fathers with marginal significance. The greater use of nonstandard utterances, i.e., babbling, nonsense words, game-playing, etc., used by insecure-avoidant mothers and fathers could show a lack of responsiveness that has been found avoidant parents in previous studies (Bohlin et al., 1989).

Although the playtime that was observed and recorded in the current study was unstructured aside from the start and stop times, our study is limited in that it is possible that the laboratory setting altered our results from what one would find in a natural setting. Our original sample was fairly representative of the population, but families who earned higher incomes, were Caucasian, and whose mothers were educated were more likely to remain in the study. Our results could therefore be somewhat limited to this demographic group.

This study helps to explain attachment as it is developing during the initial phases of attachment formation. Through the analysis of unstructured playtime, we have examined how parents are expressing their thoughts and feelings while interacting with their infants. The

resulting associations regarding attachment and command, informational, nonstandard, and infant-focused utterances can help us to understand the underlying mechanisms of attachment and to move forward in our investigation and evaluation of attachment theory.

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Table 1
Numbers of Infants with A, B, and C Father-Infant and Mother-Infant Attachment Styles

Mother-Infant Attachment Style	<u>Father-Infant Attachment Style</u>		
	Insecure-Avoidant (A)	Secure (B)	Insecure-Resistant (C)
Insecure-Avoidant (A)	2	6	1
Secure (B)	9	70	6
Insecure-Resistant (C)	0	10	4

Table 2
Paired Samples Test for Types of Utterances Used by Mothers and Fathers

Utterance Score	<i>M (SD)</i>
<i>Nonstandard Proportion</i>	
Mother	.55 (.13)
Father	.56 (.16)
<i>Informational Proportion</i>	
Mother	.38 (.12)
Father	.35 (.15)
<i>Command Proportion</i>	
Mother	.06 (.02)
Father	.06 (.02)
<i>Negative Proportion</i>	
Mother	.04 (.00)
Father	.04 (.00)
<i>Positive Proportion</i>	
Mother	.05 (.01)
Father	.05 (.01)
<i>Infant-Focused Proportion</i>	
Mother	.31 (.16)*
Father	.28 (.13)*
<i>Total Utterances</i>	
Mother	95.87 (20.34)*
Father	89.06 (27.70)*

Note: * = Difference in means is significant, $p < .05$

Table 3
Proportion of Utterance Type by Attachment Style, Controlling for Parent Age and Ethnicity, Family Income, and Infant Gender

Utterance Type	Proportion of Utterance Type <i>M(SD)</i>			Effect <i>F(df)</i>
	Insecure-Avoidant	Secure	Insecure-Resistant	
<i>Nonstandard Proportion</i>				
Mother	.70 (.13) ^a	.55 (.12) ^b	.47 (.09) ^b	(2,91) = 8.05**
Father	.66 (.16)	.54 (.15)	.58 (.20)	(2,90) = 2.54
<i>Informational Proportion</i>				
Mother	.23 (.13) ^a	.38 (.11) ^b	.45 (.11) ^b	(2,91) = 8.31***
Father	.25 (.17)	.36 (.15)	.35 (.17)	(2,90) = .87
<i>Command Proportion</i>				
Mother	.07 (.02)	.06 (.02)	.07 (.02)	(2,91) = .42
Father	.06 (.02)	.06 (.03)	.06 (.02)	(2,90) = .07
<i>Negative Proportion</i>				
Mother	.04 (.00)	.04 (.00)	.04 (.00)	(2,91) = 1.17
Father	.04 (.00)	.04 (.00)	.04 (.00)	(2,90) = .40
<i>Positive Proportion</i>				
Mother	.04 (.00)	.04 (.00)	.04 (.00)	(2,91) = 2.00
Father	.04 (.01)	.05 (.01)	.04 (.00)	(2,89) = 2.17
<i>Infant-Focused Proportion</i>				
Mother	.20 (.14) ^a	.32 (.11) ^b	.39 (.10) ^b	(2,91) = 6.03**
Father	.19 (.13)	.30 (.13)	.29 (.16)	(2,90) = 1.10
<i>Total</i>				
Mother	95.78 (17.89)	96.46 (21.60)	98.75 (19.99)	(2,91) = .16
Father	96.00 (34.32)	87.94 (28.40)	97.50 (16.33)	(2,90) = .67

Note: * = $p < .05$; ** = $p < .01$; *** = $p < .001$. Different superscripts within a row indicate

significantly different means.

Table 4
Fathers' Commands by Level of Education

Father's Educational Attainment	<i>N</i>	<i>M</i>	<i>SD</i>
Less than 9 th grade	2	20.00	15.56
Some high school	4	9.25	7.18
Completed high school	15	15.67	20.18
Some trade school	1	13.00	
Completed trade school	6	4.67	5.43
Some college	26	3.77	6.19
Completed Bachelor's degree	29	2.72	2.58
Some graduate/professional school	8	2.25	2.66
Completed graduate/professional degree	24	2.92	4.03