

Sex Differences in Mothers' Speech and Play Behavior with 6-, 9-, and 14-Month-Old Infants

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In this study, we analyzed mothers' speech and play behavior with their 6-, 9-, and 14-month-old sons and daughters. Thirty-six infant-mother dyads participated in a 10-min free-play session with gender-neutral toys. No sex differences were found in the infants' behavior, but sex differences were found in mothers' verbal behavior and level of engagement. Mothers of daughters made more interpretations and engaged in more conversation with their daughters, whereas mothers of sons made more comments and attentionals, which were typified by instructions rather than conversation. Furthermore, mothers interacted more with their daughters than with their sons across all ages. Overall, these results demonstrate that mothers transmit different messages to their male and female infants, both through language and interaction, which may contribute to infants' gender role development.

KEY WORDS: gender socialization; infant development; infant gender; play; parent-infant interaction.

Most developmental theorists acknowledge socialization as at least a contributing factor to the development of gender differences in children. For example, social learning theory posits that children learn behavior through reinforcement and modeling (Bandura & Walters, 1963; Mischel, 1966). With respect to gendered behavior, children might be praised for behaving in "gender-appropriate" ways (e.g., girls playing with dolls, and boys playing with trucks), and scolded for behaving in "gender-inappropriate" ways (e.g., girls playing with trucks, and boys playing with dolls). Similarly, gender role socialization theory posits that different people and objects in a child's environment provide rewards and models that then cause the children to shape their behavior to fit with gender norms (e.g., Block, 1973). Gender-schema theory uses these same principles of social learning to explain how people acquire masculine and feminine gender categories, and what characteristics and behaviors people associate with those categories (Bem, 1981).

Although socialization is considered to be a critical factor in transmitting information about gender roles, very little is understood about precisely how and when children absorb ideas from the adults around them. One possible vehicle for transmission of cultural information is language. Indeed, Whorf (1956) argued that the language people speak actually influences the way that they think about the world. Since Whorf, many have proposed specific ways that language can reflect social action and traditions (e.g., Budwig, 1995; Gleason, 1988; Ochs & Schieffelin, 1984). In particular, Ochs and Schieffelin (1984) called for an exploration of the language of caregivers for its particular socialization function (see also Gleason, 1988).

If language can transmit cultural information, and language serves as a significant source of socialization, one question that arises is when information about gender is transmitted to children through parents' language. It is well known that parents do convey ideas about gender to their children through their spoken language (e.g., Kruper & Uzgiris, 1987; Laflamme, Pomerleau, & Malcuit, 2002; O'Brien & Nagle, 1987). Many authors have reported that parents speak more to their female infants than to their male infants, but most studies have focused on

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children aged 18–24 months because this is around the time that children talk. For example, mothers of 24-month-old girls talk more overall to their infants than mothers of the same aged boys (Cherry & Lewis, 1976). In one study on prelinguistic infants, Laflamme et al. (2002) reported that parents talked more (i.e., used more words) to their 9-month-old boys than to their 9-month-old girls, but all differences disappeared by 15 months (see also Brundin, Rodholm, & Larsson, 1988).

In addition, parents use different kinds of language toward male and female infants. Mothers of 2-year-olds asked more questions of their daughters than mothers of the same aged sons (Cherry & Lewis, 1976). In addition, parents of 24-month-old male infants use a higher proportion of explanations (descriptive statements) when speaking to their sons than do parents of 24-month-old female infants (O'Brien & Nagle, 1987). Again, this pattern is suggested in the one study conducted with very young, prelinguistic infants. Kruper and Uzgiris (1987) found that both mothers and fathers of 3- and 9-month-old infants used a greater proportion of explanations (descriptive statements) when talking to their sons than to their daughters, but there were no sex differences in the number of questions or directives (orders).

Thus, numerous studies have shown sex differences in language directed toward speaking-age children, and one has shown sex differences in language directed toward very young prelinguistic infants (3- and 9-month-olds). Given that language serves as a socialization tool, and that most studies have focused on how this works in children who are already learning to talk, one purpose of the present study was to investigate whether these differences appear at an earlier age, and to track the developmental trajectory of those differences. We replicate and extend Kruper and Uzgiris' (1987) study by analyzing the speech content of mothers' conversation with their prelinguistic infants. We hypothesize that gender socialization through language appears very early and increases as infants get older, especially as children approach the age at which they begin to talk.

In addition to speech, parents may also transmit ideas about gender through other means. For instance, as children get older, parents tend to exhibit increasingly gender stereotypical interactions and play behavior. In one example, Power (1985) examined mother- and father-infant play in 7-, 10-, and 13-month-old infants, and found that, with increasing infant age, mothers of girls were more likely

to direct their daughter's play, whereas mothers of boys were less likely to direct their sons' play. By the time infants are 18 months old, parents encourage them to play with gender-stereotyped toys, and they give more positive responses and reinforcement when their infants engage in gender-traditional activities than when they engage in cross-gendered activities (e.g., Caldera, Huston, & O'Brien, 1989; Caldera & Sciaraffa, 1998; Fagot, 1978). For instance, Caldera et al. (1989) videotaped parents and their 18- to 24-month-old infants playing with stereotypically masculine toys, then with stereotypically feminine toys, and finally with gender-neutral toys. Fathers of sons acted the most excited when they saw the masculine toys, and mothers of daughters acted the most excited when they saw the feminine toys. Furthermore, both mothers and fathers were most involved with their children's activities when the children were playing with gender-stereotypical toys.

Although most researchers agree that parents of toddlers and young children (18 months and up) display differential behavior based on their child's sex, there is some evidence that parents of very young infants also play differently with their male and female infants. For example, Landerholm and Scriven (1981) found that both mothers and fathers used more physical contact with their male 6-month-old infants and more object play with their female 6-month-old infants. However, there have been a few contradictory studies, which leave open the question of whether parents play differently with their male and female infants. Although one recent study showed no differences in mothers' and fathers' play behavior (Laflamme et al., 2002), many researchers agree that by the time infants are 7–8 months old, fathers display more physical play behavior with their infants than mothers do, which contributes to the pervasive gender norm that men are more aggressive and physical than women are (e.g., Crawley & Sherrod, 1984; MacDonald & Parke, 1986; Power & Parke, 1983).

Note that these latter studies showed differences in fathers' behavior compared to mothers, not differences based on the sex of the child. Thus, the question of whether or not parents play differently with their male and female infants is still open. The second purpose of the present study was to investigate whether mothers would respond differently to their very young infants based on the infants' sex. Again, given that parents convey information about gender roles through behavior, we ask when this gender socialization process begins and how it develops. We

predict that this process begins quite early, and thus we expect to see different kinds of interactions between mothers and sons than between mothers and daughters. For example, following the gender norm of boys' physical play, we expect that mothers of boys will engage in more physical play than mothers of girls.

In sum, the purpose of the present study was to explore the development of gender socialization in very young infants. We ask when gender socialization, both in terms of language and play behavior, begins and how it changes as children develop. Most researchers who have explored language as a tool for gender socialization have done so with parents of speaking children (2 years and up), which leaves open the question of when parents begin to show different patterns of speech. We predict that mothers will behave toward and speak differently to male and female infants, even those who are months away from producing speech. To address this question, mothers of 6-, 9-, and 14-month-old infants were videotaped in a free-play session with only gender-neutral toys present. We predicted that mothers would show gendered behaviors in both language and interaction across all ages tested. Specifically, we predicted that mothers would speak more to their girls than to their boys, and use different speech structure, but that mothers' speech would become increasingly different between sons and daughters as the infants' ages increased (i.e., as they approached the age when they would begin to speak). Finally, we hypothesized that mothers and daughters would spend more time being near and in physical contact with each other than would mothers and sons, but that mothers would engage in more physical play with their boys than with their girls.

METHOD

Participants

Participants included three groups of 12 mother–infant dyads. The first group (six boys, six girls) ranged in age from 5 to 7 months ($M = 6.32$ months), the second group (six boys, six girls) ranged in age from 8 to 11 months ($M = 9.26$ months), and the third group (six boys, six girls) ranged in age from 12 to 15 months ($M = 14.11$ months). All of the 14-month-olds were walking, all the 9-month-olds were crawling, and all the 6-month-olds were stationary. We tested 9-month-olds

to replicate Kruper and Uzgiris' (1987) findings, 6-month-olds to explore a younger group of infants, and 14-month-olds because infants at that age are generally speaking their first words. One mother–infant dyad was Indian American, 1 was African American, and the rest were European American (representative of the local population). All parents were native English speakers, and English was the primary language spoken in the home. Parents were recruited via phone calls if they had participated in previous studies or they volunteered after seeing signs posted around town. Infants received a small gift for their participation.

Apparatus

Infants were tested in a large brightly lit room on a 10 ft \times 10 ft floor area covered in black and white checkerboard linoleum (each square was 1 ft \times 1 ft). There were gender-neutral toys placed in two opposite corners of the floor. In one corner there was a shape sorting set and a beads-on-wire toy that is similar to an abacus. In the opposite corner there was a stuffed octopus toy and a plastic tool set.

Two VHS cameras on opposite sides of the floor recorded each dyad's data.

Procedure

Each mother–infant pair was recorded for a 10-min play session on the linoleum floor. Before each session started, the mothers were told not to direct their infants' play toward anything specific, so that we could measure infants' natural responses to the toys in the absence of maternal encouragement. Mothers were also instructed to interact with their infants as they normally would. The experimenter had the mothers pick their infants up and place them in the center of the linoleum floor. The mothers then sat down in a remaining corner of the floor facing their infant. The experimenter sat in the last corner of the floor, also facing the infant.

The infants then explored the floor and toys in any manner they desired for 10 min. The infants were allowed to play with any of the toys, interact with their mothers, interact with the experimenter, or do anything else they wished. The only parameter for each session was that the infants had to stay on the linoleum floor as much as possible. When infants

wandered off the floor, they were brought back to the floor by the experimenter.

Data Coding

Four categories of behavior were coded from the videotapes: infants' behaviors, including physical proximity to their mothers and looks directed toward the mothers, mothers' verbal behavior, level of mothers' engagement in their infants' activities and form of mother–infant engagement.

Infant Behaviors

The two measures of physical proximity were utilized to determine whether the male and female infants engaged in different behaviors. First, we measured the amount of time that the infants were close to their mothers, which we defined as being within 1 square of any part of the mother's body. Recall that the squares were 1 ft × 1 ft. The second measure of proximity was the amount of time the infants spent touching their mothers.

In addition, two measures of looking behavior were coded, which we adapted from Clyman, Emde, Kempe, and Harmon's (1986) categories and coding schemes for social looking behavior. The first was Bids for Social Interaction, where an infant appeals to an adult to share an emotional reaction to an object or event, or appeals for interaction with the adult, as in offering a toy or raising the arms, which is frequently accompanied by gestures, vocalizations, or facial cues to the adult. This measure captured how frequently infants initiated an interaction. The second measure was Orienting to a Voice, where an infant looks at an adult who has just started speaking, which is defined as turning the head and possibly the torso toward the person who has just begun speaking, or otherwise fixating on that adult. This measure captured infants' direct responses to mothers' verbal behavior.

Mothers' Verbal Behavior

The following measures of verbal behavior were adapted from O'Brien and Nagle (1987). Mothers' speech was transcribed (unintelligible words were not coded), and then divided into seven categories: (1) *Words*: number of words spoken;

(2) *Declarative utterances*: number of sentences or phrases spoken; (3) *Questions*: number of questions asked; (4) *Repetitions*: exact repetitions and slight variations in which the meaning of the utterance is the same; (5) *Directives*: statements directing an infant's attention toward something specific (e.g., "Look at the blocks!"); (6) *Attentionals*: words or phrases that serve to gain/keep the infant's attention (e.g., "Look, Jimmy!"); and (7) *Imaginative sounds*: utterances in which the adult is pretending to talk for or make the sound of a toy (e.g., making a ringing noise while holding a toy telephone).

Following O'Brien and Nagle (1987), we further categorized the specific kinds of declaratives and questions, and then calculated each as a proportion of the total number of utterances (as measured by grammatical closures or pauses of longer than 2 s) spoken to the infant. The categories were declaratives and questions. Declaratives were (a) *Comments and explanations*: statements to infants that describe what they are doing or provide information to the infants by labeling or naming something; (b) *Praise*: statements that compliment or reward the infants for doing something well (e.g., "good job putting the block into the bucket"); (c) *Interpretations*: statements concerning infants' feelings, needs, or wishes (e.g., "you look tired"); and (d) *Other*: statements or comments that do not fit into the above categories. Questions were also divided into three categories: (a) *Wh-questions*: questions asking who, what, where, when, or why; (b) *Yes/No questions*: questions answerable by a yes or no, even if no answer appears to be expected; and (c) *Other*: any other utterance in the form of a question.

Level of Engagement

This measure, adapted from Lindsey and Mize's (2001) study of parent–child interactions with their preschool-aged children, captured how involved mothers were with their infants' activity. Mothers were assigned a score, based on the levels below, for each 10-s interval. The four categories of engagement were: (1) Mother not involved in the same activity as her infant (mother does not attend to her infant for the 10-s interval); (2) Mother watches and attends to her infant's activity but does not actively participate with or talk to her infant during the 10-s interval; (3) Mother talks about the child's activity but does not actively participate in the activity at any time during the 10-s interval; and (4) Mother is actively

engaged in the same activity as the child at least once during the 10-s interval.

Form of Engagement

This measure, also adapted from Lindsey and Mize (2001), captures the specific kind of play-behavior demonstrated by the mother. Again, mothers were scored in 10-s intervals, based on the following seven categories: (1) *Functional play*: intentional manipulation of toys to elicit their properties; (2) *Physical play*: playful contact or motor activity between mothers and infants; (3) *Instructive play*: naming objects, colors, or numbers; (4) *Pre-tense play*: use of toys to represent other objects; (5) *Other play*: any activity that does not fit into one of the above categories; (6) *Other interaction*: engagement that does not involve play, such as comforting the infant and making faces at the infant; and (7) *Noninteraction*: any infant activity that does not involve the mother.

RESULTS

Interrater Reliability

In order to test interrater reliability, a second coder scored 20% of the videotapes (nine mother-infant dyads). Agreement for amount of time infants spent near their mothers was 83% (range = 77–100%). Agreement for amount of time infants spent in physical contact with their mothers was 94% (range = 83–100%). These percentages for infants' proximity are consistent with previous findings of 89% (range = 85–97%) agreement (Gustafson, 1984). Interrater reliability was 84.8% exact agreement across both categories of looks (range: 80–88%).

For the number of words, number of utterances, number of questions, and percentage of repetitions, agreement between coders was 96%, 100%, 91%, and 84%, respectively. These percentages are also consistent with previous findings that had a mean of 87% (range = 81–91%) agreement between coders (O'Brien & Nagle, 1987). Agreement was 84% (range = 67–100%) for the specific types of mothers' verbal behaviors, which is also comparable to O'Brien and Nagle's (1987) work.

For level of mothers' engagement, there was 87% agreement (range = 66–95%) between coders,

which is comparable to the work of Lindsey and Mize (2001). Form of mother-infant engagement resulted in 83% agreement (range = 67–100%) between coders, which is identical to previous reliability results (Lindsey & Mize, 2001).

Physical Proximity of Infants to Mothers

As described above, the 9- and 14-month-old infants were all independently moving. Thus, these infants could choose either to move closer to their mothers or farther away. In order to rule out differential maternal behavior due to differential infant behavior, we tested whether the mobile male and female infants spent the same amount of time near or touching their mothers (none of the mothers of the 6-month-olds held or touched their infants during the session, nor could any of the infants move on their own, so their data were excluded from this analysis). A 2 (sex: male or female) \times 2 (age: 9 or 14 months) analysis of variance (ANOVA) test of average amount of time the infants spent near their mothers revealed no differences, $F(1, 1) = 2.93$, *ns*. A second ANOVA on the average amount of time the infants were in direct physical contact with their mothers also revealed no differences, $F(1, 1) = 2.06$, *ns*. Thus, male and female infants did not show any differences in how much time they spent near or directly contacting their mothers.

Infants' Looking Behaviors

We also tested infants' looking behavior to detect any sex differences in infants' initiation of contact or response to speech directed toward them. A 2 (sex) \times 3 (age) ANOVA of the number of bids for social interaction revealed no differences, $F(1, 30) = .731$, *ns*. A second ANOVA on the number of times infants oriented to a voice also revealed no differences, $F(1, 30) = .13$, *ns*. Thus, again, male and female infants did not differentially initiate interactions or differentially respond to verbal input.

Mothers' Verbal Behavior

The first series of analyses consisted of several 2 (sex) \times 3 (age) ANOVAs on each of the individual kinds of speech acts (see Fig. 1). Mothers of

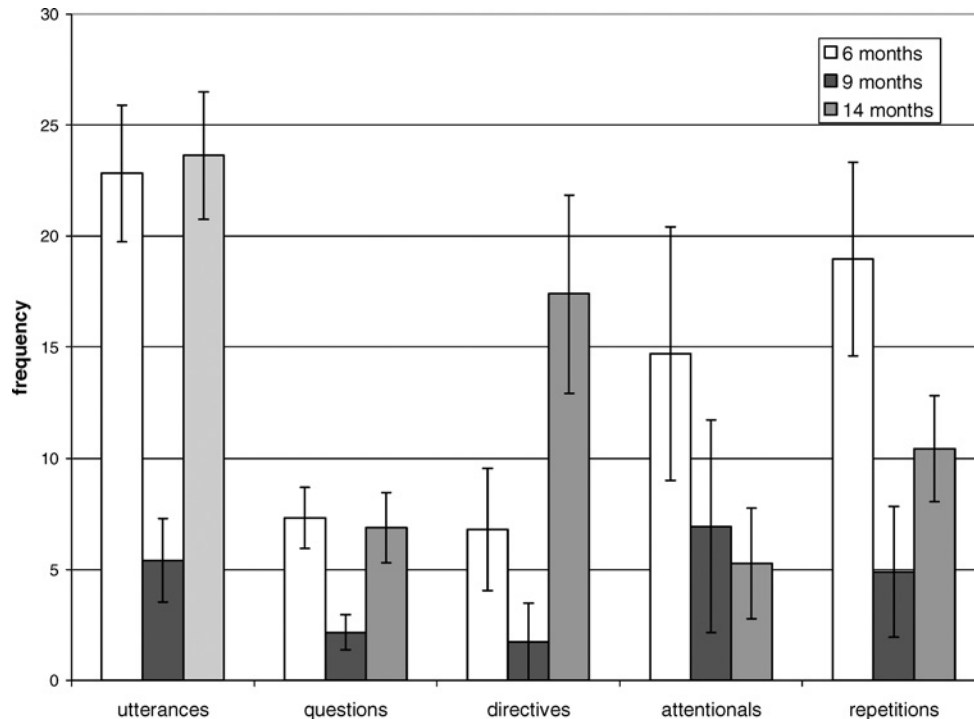


Fig. 1. Mean number of speech acts as a function of infants' age.

the youngest and oldest infants spoke more words to their infants ($M = 73.2$, $SE = 13.5$ and $M = 72.2$, $SE = 11.3$ respectively) than did mothers of the 9-month-old infants ($M = 18.5$, $SE = 6308$, $F[2, 30] = 7.89$, $p < .01$). Similarly, the total number of utterances (phrases or sentences) was higher for mothers of the youngest infants ($M = 22.8$, $SE = 3.08$) and the oldest infants ($M = 23.62$, $SE = 2.87$) than for mothers of the 9-month-olds ($M = 5.42$, $SE = 1.88$), $F(2, 30) = 10.52$, $p < .001$. Mothers of the youngest and oldest infants directed more questions toward their infants ($M = 7.3$, $SE = 1.38$ for the 6-month-olds and $M = 6.87$, $SE = 1.59$ for the 14-month-olds) than did mothers of the 9-month-old infants ($M = 2.17$, $SE = .79$), $F(2, 30) = 4.74$, $p < .05$. Mothers of 6-month-olds made significantly more repetitions ($M = 18.94$, $SE = 4.36$) than did mothers of the older infants ($M = 4.89$, $SE = 2.95$ and $M = 10.44$, $SE = 2.39$, respectively), $F(2, 30) = 4.87$, $p < .05$. Mothers issued more directives (commands) to the oldest infants, $F(2, 30) = 6.35$, $p < .05$. Significant sex differences were found for only one general category of speech act, that is, for attentionals. Mothers of boys made significantly more calls for attention than did mothers of girls, $F(1, 30) = 7.67$, $p < .05$.

The next series of analyses focused on more specific types of utterances. Separate 2 (sex) \times 3 (age) MANOVAs were conducted on the four types of declaratives and the three types of questions. There were no main effects or interactions for questions, $F(2, 2) = .43$, *ns*. However, for declaratives, there was a main effect for both age, $F(9, 23) = 2.75$, $p < .05$, and sex, $F(4, 27) = 3.27$, $p < .05$. Figure 2 depicts the age effect on the specific kinds of declarative statements. Praise and interpretations were rarely uttered for all age groups. The youngest infants heard mostly other declaratives (a statement that is not praise, interpretation, or comment on what the infant is doing) and some comments, whereas the 9-month-old infants heard mostly comments and some other declaratives. The oldest infants heard more other declaratives than any other speech act.

Figure 3 depicts the effect of sex on type of declarative statements. Posthoc tests show that mothers of boys made more comments ($M = 16.19$, $SE = 5.71$) than mothers of girls did ($M = 11.79$, $SE = 2.85$), whereas mothers of girls made more interpretations (statements about feelings or needs; $M = 4.77$, $SE = 3.23$) and other declaratives ($M = 31.76$, $SE = 5.67$) than mothers of boys did ($M = 1.55$, $SE = .95$ and $M = 15.69$, $SE = 3.10$, respectively).

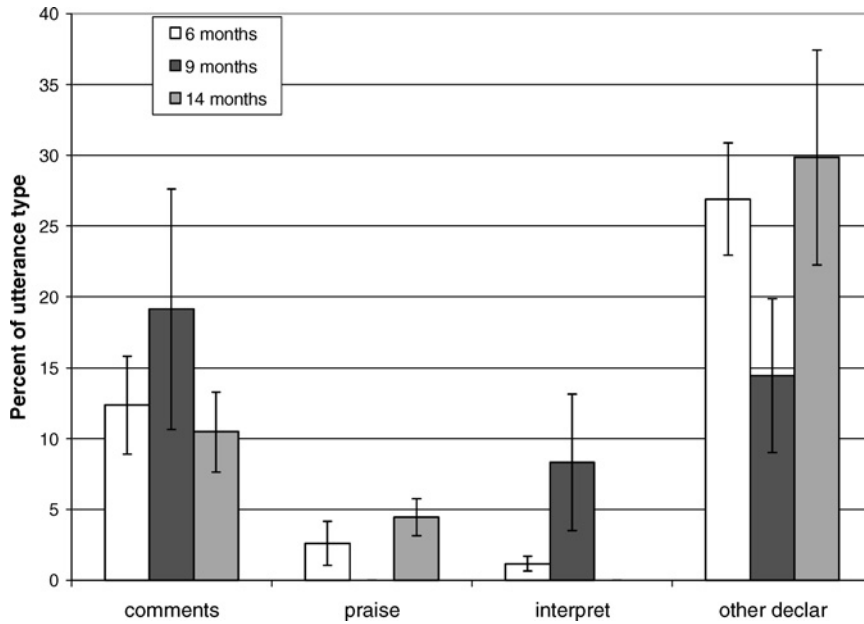


Fig. 2. Mean percentages of mothers' different kinds of declarative statements, based on mothers' total number of utterances, as a function of infants' age.

Level of Mothers' Engagement

A 2 (sex: male or female) × 3 (age: 6, 9, or 14 months) × 4 (level 1, level 2, level 3, level 4) repeated measures ANOVA was performed on the level of the mothers' involvement (calculated with the mean number of 10-s intervals spent in each cat-

egory). A main effect was found for level of involvement, $F(3, 30) = 78.68, p < .0001$; posthoc tests indicate that all mothers displayed more level 2 involvement compared to other levels, which means that mothers were usually watching their children but not actively involved in play or verbal behavior with them. An interaction was also found between

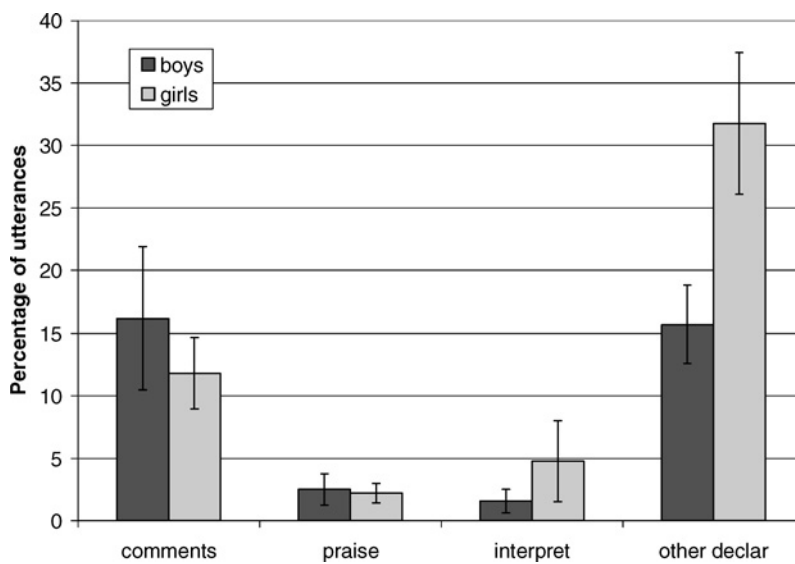


Fig. 3. Mean percentages of mothers' different kinds of declarative statements, based on mothers' total number of utterances, as a function of infants' sex.

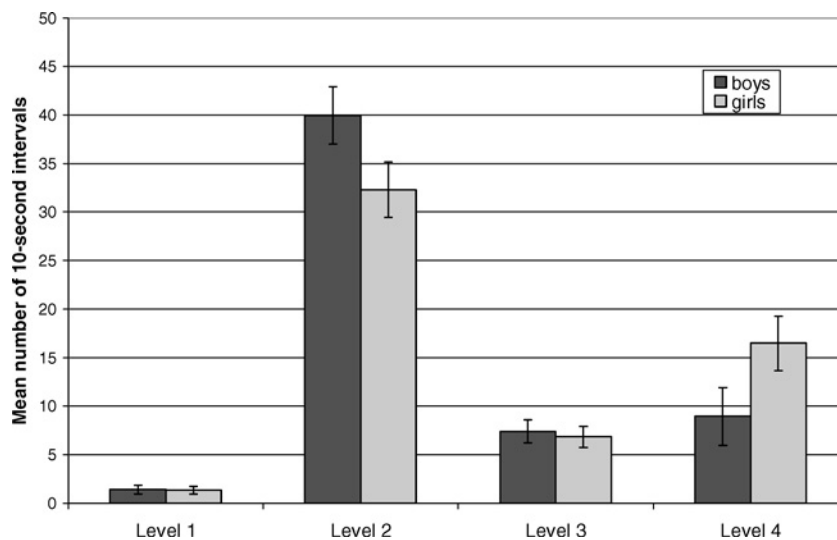


Fig. 4. Mean number of 10-s intervals (out of 60 total) that mothers spent in each level of engagement as a function of infants' sex.

the infants' sex and the mothers' level of engagement, $F(1, 3) = 3.11$, $p < .05$. The mothers of boys spent more time engaged in level 2 behavior ($M = 39.94$, $SE = 2.97$ compared to $M = 32.27$, $SE = 2.87$ for girls), whereas mothers of girls displayed more level 4 behavior ($M = 16.5$, $SE = 2.81$ compared to $M = 8.94$, $SE = 2.97$ for boys) (see Fig. 4). Thus, mothers of girls spent more time engaged in an activity with their daughters, whereas mothers of boys spent more time watching their sons but not interacting with them.

Form of Mother–Infant Engagement

A 2 (sex) \times 3 (age) \times 7 (categories of interaction) repeated measures ANOVA revealed a main effect for the form of mother–infant engagement, $F(6, 30) = 160.63$, $p < .0001$. A series of t -tests (with a Bonferroni correction) revealed that the dyads engaged in significantly more “other interaction” ($M = 12.17$ 10-s intervals, $SE = 2.10$) and “noninteraction” ($M = 45.14$ 10-s intervals, $SE = 2.27$) than any other category.

An interaction was also found for infants' sex and the form of mother–infant engagement, $F(1, 6) = 2.53$, $p < .05$; mothers and daughters engaged in more “other interaction” ($M = 15.7$, $SE = 3.17$ for girls and $M = 8.61$, $SE = 2.59$ for boys), whereas mother and sons engaged in more “noninteraction” ($M = 41.78$, $SE = 3.18$ for girls and $M = 48.5$, $SE = 3.11$ for boys) (see Fig. 5).

DISCUSSION

The present study was designed to investigate when the process of gender socialization begins, and how it changes as children develop. Results indicated that mothers act in different ways, both in speech content and play behavior, toward their boys and their girls. These differences are evident in parents with infants as young as 6 months of age, a few months before the infants are independently mobile (i.e., crawling or walking) and many months before they begin to speak. The lack of sex differences in the infants' behavior strengthens our claim that the differences in maternal behavior stem from the mother. Thus, it is not the case that mothers simply respond to different infant behaviors.

The content analysis of mothers' speech revealed some interesting findings, both with respect to age and sex differences. Focusing on the age differences first, we found that mothers talked more to both the youngest and oldest infants, across all measures. We propose that this pattern of results fits with the notion that language serves different purposes as infants get older. Specifically, for the youngest infants, language appeared to be an activity for the mother. While the 6-month-old infants laid on their stomachs and played with toys, the mothers narrated what their infants were doing, and they also talked to them to keep the infants happy. However, by 9 months of age, the infants were crawling, and thus exploring the room on their own. Here, the mothers

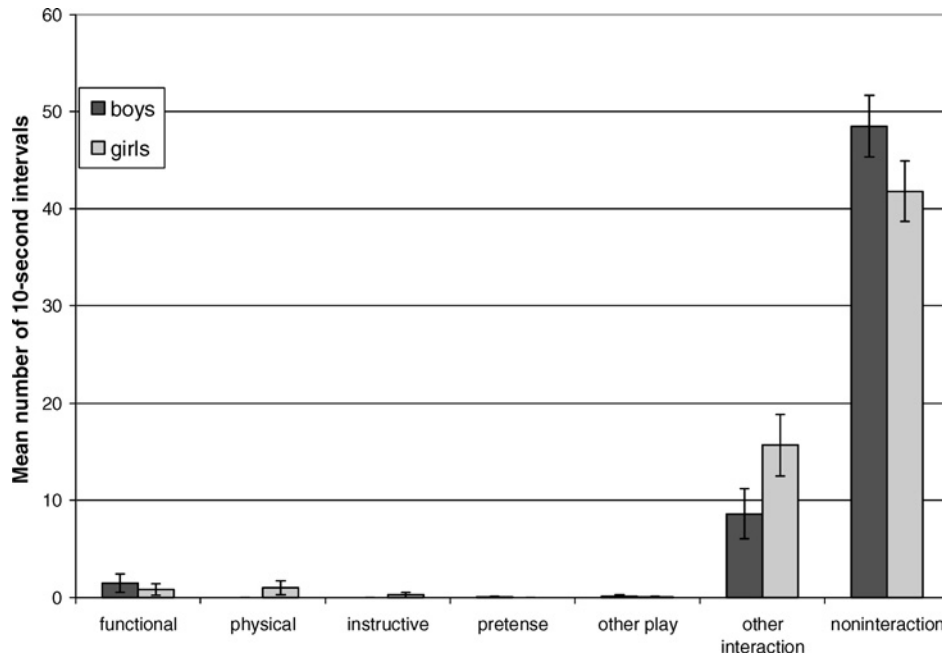


Fig. 5. Mean number of 10-s intervals (out of 60 total) that mothers and infants spent in the different forms of engagement as a function of infants' sex.

didn't talk much to their infants, perhaps in an effort to let them explore and not to interfere. And again at 14 months of age, mothers talked much more to their children. Generally, at this point, the mothers were telling the infants what to do (as shown by the increase in the number of directives), which is suggestive of mothers' awareness of the increasing agency of their children (see Campos et al., 2000 for a review). By this, we mean that once infants walk, they are more able to engage in activities that are of interest to them, rather than playing with whatever caregivers put in front of them. This increasing independence may be the impetus for the increase in directives.

More important, the results also support previous findings that parents talk differently with their daughters and their sons, with parents expecting more verbal responses from daughters than from sons (e.g., Cherry & Lewis, 1976; Kruper & Uzgiris, 1987). Cherry and Lewis found that mothers asked more questions of their 24-month-old girls and used more explanations with their boys of the same age. Asking questions require responses, whereas explanations do not. Hence, girls are expected to be more verbally expressive than boys. What is so striking about the present results is that the parents appear to have these expectations even in infants nowhere

near the age at which they begin to speak. Even at 6 months of age, mothers were more likely to ask interpretive questions of their daughters, whereas mothers were more likely to direct their sons' behavior. For instance, typical interpretations directed toward the girls were: "You're playing with the octopus. You like that, right?" or "Look at you playing with the beads. Are you going to slide the red bead next?" In contrast, much of the mothers' verbal behavior toward the boys consisted of directives such as "Come here," and attentionals, such as calling out the infant's name.

There were no age-by-sex differences. This suggests that, although mothers display different behaviors based on the sex of their infants, they do not significantly change their behaviors toward their infants between the ages of 6–15 months. This is surprising because one might expect that the messages infants receive might become more tailored to their behavior over time. However, the present results indicate that infants are receiving gendered messages months before they are ready to start speaking, even in the context of gender-neutral toys. These data support our hypothesis that gender socialization through language begins very early, much earlier than was previously thought. It is possible that mothers' speech to their prelinguistic infants reflects our culture's social

traditions with respect to gender and that mothers may, unconsciously, be transmitting those traditions to their infants through their language (e.g., Budwig, 1995; Gleason, 1988; Ochs & Schieffelin, 1984).

Along with language as a socialization tool, mothers also appeared to send gendered messages through their play behavior. Although all mothers were involved only minimally with their infants, there was a difference between mothers of boys and mothers of girls. Despite the fact that both the boys and the girls were placed in the same unfamiliar situation, they may have been getting different messages, due to the mothers' different levels of engagement. Because the mothers were actively engaged with their girls more frequently than with their boys, they may have contributed to the development of the idea that it is acceptable for girls to seek help, but boys should remain independent (Fagot, 1978). By being more involved with their girls, mothers may be subconsciously sending the message to their infants that girls require more attention, whereas boys are given more room to explore and learn about their environment on their own.

In general, mothers and infants did not spend a lot of time playing together with any of the toys, and they spent the most time engaged in noninteraction, which means that mothers were attentively watching the infants, but not interacting with them. However, mothers of girls engaged in "other interaction" significantly more than did mothers of boys, usually in the form of the mothers comforting and hugging their daughters. These different behaviors further contribute to the gender norms and expectations that boys are supposed to be independent and strong, whereas girls are supposed to display emotion and be dependent upon other people (Serbin, Poulin-Dubois, & Eichstedt, 2002). Girls were reinforced with comfort and a sense of security for engaging with their mothers, and boys were not.

More important, the mothers in our study may have been teaching their infants about gender roles through modeling and reinforcement. Both the girls and their mothers may have been reinforced for interacting with each other. As the girls explored the room, their mothers talked to them more frequently, thus initiating interactions. Although the girls did not behave differently than the boys, the girls may have been adding that new information to their developing gender schemas. Thus, girls may acquire the knowledge that they are "supposed" to engage in higher levels of interaction with other people and display more verbal behavior than boys (e.g., Maccoby,

1998). In contrast, the boys were reinforced for exploring on their own, as seen through the levels of interaction and also the high number of comments directed toward them. This might reinforce a sense of independence in boys that is not reinforced in girls.

Overall, the results of the present study add to our growing knowledge of the process of socialization. With respect to language, we now know that parents begin to speak differently to their male and female infants long before their children are close to producing their own first words. This finding supports theories of gender socialization that rely on children learning about "gender-appropriate" behavior, either through modeling (e.g., Bandura & Walters, 1963), rewards (e.g., Block, 1973), or learning about gender categories (Bem, 1981). These results also demonstrate the importance of fine-grained content analyses of speech directed toward very young infants. Along with Gleason (1988) and Ochs and Schieffelin (1984), we believe that it is through these kinds of analyses that researchers will learn about precisely which aspects of our language and behavior fuel gender role socialization. The present research is thus a step toward a clearer understanding of the socialization process involved in the shaping of children's gender development.

ACKNOWLEDGMENTS

This research was supported by a Louis B. Perry Grant from Whitman College. Portions of these data were presented at the April 2004 meeting of the Western Psychological Association, in Phoenix, AZ, and at the April 2005 meeting of the Society for Research in Child Development, in Atlanta, GA. We thank Molly Mullen, Christine Osborne, and Elizabeth Karas for help with data collection and coding and two anonymous reviewers for helpful comments on the manuscript.

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