



## Comparison of Context-Based Interaction Patterns of Mothers Who Are Homeless With Their Preschool Children

Therese M. O'Neil-Pirozzi  
*Northeastern University, Boston*

**Purpose:** The primary purpose of this exploratory study was to examine the influence of context on interaction patterns used by mothers who are homeless with their preschool children during book-reading and game-playing activities. The impact of mothers' previously determined language functioning on their contextual use of facilitating language utterances was also examined.

**Method:** Using a prospective, nonrandomized, comparison group design, mothers read a book and played a game with their preschool children. Facilitating language utterances produced by the mothers in 16 mother-child dyads during each activity were analyzed.

**Results:** Regardless of their language functioning, no significant contextual differences in percentage use of facilitating language

utterances were found across mothers. Overall maternal use of facilitating utterances was less than 50%. Across both contexts, mothers used few different types of facilitating language utterances.

**Conclusions:** This exploratory study provides initial evidence of overall consistency of facilitating language utterance use by mothers who are homeless during interactions with their preschool children across contexts, regardless of maternal language functioning. This study provides an initial framework for future research investigating the interactions of families who are homeless and discusses possible language interventions for these at-risk families.

**Key Words:** mothers, preschool children, language, homeless people

In 2000, 31.1 million people in the United States lived in poverty, with 40% of these individuals being children (U.S. Bureau of the Census, 2001). People who are poor are typically unable to meet all of their needs. As a result, many people living in poverty are homeless. Families are the fastest growing subpopulation of homeless and account for approximately 40% of the total homeless population of more than 2 million individuals (U.S. Conference of Mayors, 2003). The majority of families who are homeless consist of women with an average of two preschool children (Better Homes Fund, 1999).

Poverty negatively affects child language-literacy development (Bassuk & Rudin, 1987; Kaiser & Delaney, 1996). For example, compared with middle-class children, children of poverty have smaller preschool-age vocabularies (Hart & Risley, 1995) and present with more frequent reading difficulties and delays (Purcell-Gates, 1995). As a result, speech-language pathologists are serving these children in such settings as early intervention, preschool, kindergarten, and elementary schools (Justice & Ezell, 2002; Roseberry-McKibbin, 2001).

Poverty also negatively affects parent-child interactions (Roseberry-McKibbin, 2001). For example, when interacting in such activities as storybook reading and playing, communication patterns used by parents of poverty with their preschool children have been less facilitating of a child's language-literacy development than communication patterns used by middle-class parents (Farran, 1982; Hart & Risley, 1995; Heath, 1982, 1983).

Few investigations of the language-literacy abilities of families of poverty have specifically focused on families who are homeless. Specific communication patterns used by mothers who are homeless with their children have not been examined.

The purpose of this exploratory study was to examine the influence of context on interaction patterns used by mothers who are homeless with their preschool children in book-reading and game-playing contexts. I present a brief review of literature in the following relevant areas: language functioning of families who are homeless, influence of language-based parent-child interactions

on children's language development, socioeconomic differences in language-based parent-child interactions, and language-based influences of context during these interactions.

### ***Language Functioning of Families Who Are Homeless***

Preschool children who are homeless often present with some combination of language, learning, or cognitive delays (Bassuk & Rudin, 1987; Gewirtzman & Fodor, 1987; O'Neil-Pirozzi, 2003; Whitman, Accardo, Boyert, & Kendagor, 1990). These delays make later school success difficult to achieve and maintain (Rescorla, 1993).

In the first of a two-part study of 25 mothers and their 29 preschool children residing in urban homeless shelters (O'Neil-Pirozzi, 2003), each mother and child completed a battery of standardized tests to assess the following language modalities: auditory comprehension, oral expression, reading, and writing. Based on their test performance, 15 of the 25 mothers (60%) were found to have overall language deficits. These findings were unexpected, especially given the mothers' reports of between 8 and 18 years of education, including 11 mothers with postsecondary education. Twenty of the 29 children (69%) presented with overall language delays. Using logistic regression analysis, a significant predictive relationship between maternal overall language deficit and child overall language delay was found such that, if a mother presented with an overall language deficit, the odds were greater than for a mother with functional language that her preschool child would present with an overall language delay (odds ratio = 47.85,  $p = .004$ ). Other significant predictors were maternal age (odds ratio = 0.64,  $p < .01$ ), child age (odds ratio = 5.68,  $p = .02$ ), and child gender (odds ratio = 0.05,  $p < .01$ ). No predictive relationships were found between maternal educational level, family race/ethnicity, or child educational placement and child language performance. (For more specifics regarding these findings, refer to O'Neil-Pirozzi, 2003.)

### ***Language-Based Parent-Child Interactions and Children's Language Development***

Socio-interactionist theories of language development propose that a child must be actively engaged in ongoing, reciprocal, social interactions in order to acquire language (Bloom & Lahey, 1978). Caregiver styles that are consistent with, and responsive to, a child's contextual focus, development, and interests are most conducive to language development (Tannock & Girolametto, 1992). Caregiver use of interactive techniques and facilitating language utterances is key to a preschool child's language development and later academic success (Cross, 1977; Kaiser, 1993; Snow, 1977; Tannock & Girolametto, 1992; Whitehurst et al., 1988).

Facilitating language utterances are caregiver verbalizations that enrich a preschool child's linguistic environment, enhance or mediate contextual language-based interactions between caregiver and child, and comprise key components of interventions to improve children's language abilities across cultural and socioeconomic levels (Fey, Krulik, Loeb, & Proctor-Williams, 1999; Girolametto, Weitzman, Wiigs, &

Pearce, 1999; Kaiser, 1993; Valdez-Menchaca & Whitehurst, 1992; Whitehurst et al., 1988). There are different types of facilitating language utterances. Some serve to engage or prompt a child's verbal participation during an interaction and may be grouped in a "parent prompt" category: for example, a mother asking a child open-ended questions to request contextually related information (Whitehurst et al., 1988). Others provide feedback in response to a child's verbalization and may be grouped in a "parent feedback" category: for example, a mother expressing expanded versions of a child's previously stated incomplete or telegraphic utterances (Girolametto, Hoaken, Weitzman, & van Lieshout, 2000). Less facilitating from an expressive language perspective are utterances or statements that give contextually relevant information to a child without prior prompting or required follow-up verbalizations from the child; these may be grouped in a "parent statement" category: for example, a mother describing an activity that she and her child are about to begin (Kaiser, 1993).

Types of facilitating utterances most beneficial for use with preschool children may vary based on such factors as the child's chronological age and language abilities (Arnold & Whitehurst, 1994; Lasky & Klopp, 1982; Snow, 1977; Whitehurst et al., 1988). For example, prompting a child to relate contextually based information (e.g., about a picture of an animal in a book being read) to non-contextually based information (e.g., about an earlier outing to the zoo) is more appropriate with normally developing 4- or 5-year-olds than with normally developing 2- or 3-year-olds. Asking a 4-year-old language-delayed child open-ended questions to elicit language (e.g., "What do you see here?") is more effective than prompting that child to relate contextually based information to non-contextually based information (e.g., "Where have we seen this before?"; Arnold & Whitehurst, 1994).

Mothers' knowledge and use of interactive techniques and facilitating utterances to enhance their preschool children's ongoing language development may also vary (Snow, 1977). As Cross (1977) stated, "Mothers may differ in the extent to which they can monitor and respond to their children's abilities and, at the same time, control their own (syntactic) complexity levels" (p. 175). One reason for such differences may be that some mothers have language deficits that, in turn, negatively affect their language input to their children. Another reason may be related to socioeconomic status, which will be discussed next.

### ***Socioeconomic Status and Language-Based Parent-Child Interactions***

Low socioeconomic status and a multitude of stressors associated with poverty may negatively affect the amount, quality, and type of parental language input that children spontaneously receive, which in turn may affect their language development and academic success (Hart & Risley, 1995; Heath, 1982, 1983; Kaiser & Delaney, 1996; Ninio, 1980; Snow, Dubber, & De Blauw, 1982). For example, Snow et al. (1982) posited that low-income mothers may expend much of their energy attending to the physical needs of their children and dealing with the stressors associated with their families' overall situation. As a result, these

mothers' interactions with their children may be decreased in frequency and may remain routinized, without the use of facilitating language utterances, thereby impeding their children's language development. Some researchers have found that, across ethnic groups, low-income parents' verbalizations to their preschool children consist of more directives than middle-income parents' verbalizations do (Hess & Shipman, 1965; Nittrouer, 1996).

Heath (1982, 1983) investigated the relationship of parents' verbalizations during book sharing with their preschool children to those children's later academic success in one middle-class and two working-class communities. Only the middle-class children experienced long-term success in reading achievement. The middle-class parents not only read books to their children but also facilitated their children's language development by expanding on the text to ask questions and by making comments that facilitated their children's development of more abstract thinking, linguistic expression, and subsequent academic achievement.

Hart and Risley (1995) collected monthly language samples of 42 children between the ages of 6 and 36 months while spontaneously interacting at home with their welfare-receiving, working-class, and professional parents. Longitudinally, amount of language exposure/interaction, vocabulary growth (reflecting rate of language learning), and vocabulary use (measuring cognitive functioning during interactions) differed significantly across the children in the three socioeconomic groups, regardless of racial or ethnic background. Children in the welfare group received the least amount of parental language exposure or interaction and experienced the slowest and least amount of expressive vocabulary growth.

### ***Language-Based Influences of Context***

Another focus of investigations of language-based mother-child interactions has been on the influence of context on the verbalizations of mothers and their children and the relationship between the two. Many of these studies have identified differences in mothers' verbalizations (e.g., use of facilitating utterance types or strategies) to their children based on such contextual variables as child's age, type of activity the two are engaged in, and verbalizations produced by the child (Cross, 1977; O'Brien & Nagle, 1987; Snow, 1977). Contextually based differences in mother and child verbalizations may be related to such variables as activity concreteness (e.g., product-oriented activities like origami vs. open-ended, inquiry-based activities like book reading; Sigel & McGillicuddy-Delisi, 1984), simultaneous activity-related demands (e.g., physically manipulating Play-Doh vs. a book; Sorsby & Martlew, 1991), and how routinized or familiar the activity is (Snow et al., 1982).

In the Home-School Study of Language and Literacy Development, researchers longitudinally measured aspects of 74 young children's language and literacy environments hypothesized to facilitate children's language and literacy skill development, including book reading, mealtime, and toy play (Tabors, Roach, & Snow, 2001). The children were

from low-income families and were visited annually at home and at school for 3 years. Results indicated that multiple language-based contexts are important to facilitate children's language and literacy skill development.

In a study of social class differences in 18 mothers' speech to their 2-year-old children in free-play and book-reading contexts, Snow and her colleagues (1976) found that the mothers from all three social classes (unskilled and semiskilled working class, skilled lower middle class, and academic middle class) used more complex language in the book-reading than in the free-play context. Snow et al. hypothesized that this difference was the result of the greater contextual support that book reading provided in setting a topic and focusing a child's attention, thereby freeing the mothers to make more elaborate, related comments and expanded responses.

In summary, specific communication patterns used by mothers who are homeless with their preschool children are not known. The role of context on these mothers' interaction patterns when engaged in joint activities with their preschool children is also unknown. The current study represents the second part of a study of speech-language characteristics of families residing in urban homeless shelters. The primary purpose of this second part of the study was to explore the influence of context on language-based interaction patterns (i.e., facilitating utterances) used by mothers with their children. These interactions were compared across two contexts: book reading and game playing. The secondary purpose of this study was to explore whether there was any impact of presence or absence of maternal language deficit, based on the results of the first part of this study (O'Neil-Pirozzi, 2003), on the same mothers' use of facilitating language utterances while engaged in the above interactions. My research objectives were

1. to compare mothers' use of facilitating language utterances when interacting with their preschool children in book-reading and game-playing contexts and the influence of maternal education level on mothers' contextually based use of facilitating language utterances;
2. to examine the relation of presence or absence of maternal overall language deficit to mothers' use of facilitating language utterances when interacting with their children in book-reading and game-playing contexts.

## **Method**

### ***Participants***

The subset of 21 families with one preschool child residing in urban family homeless shelters in the earlier study (O'Neil-Pirozzi, 2003) participated in this study. This selection criterion was based on pilot research suggesting interaction differences when mothers read to one versus two preschool children simultaneously (van Kleeck & Beckley-McCall, 2002). Families chose to participate at the shelter where they resided or at the Northeastern University Speech and Hearing Clinic. To maintain confidentiality, each of the 21 families was assigned a letter of the alphabet. Following their participation, each family was given a gift certificate to a local department store.

The mothers ranged in age from 21;1 (years;months) to 43;10 ( $M = 27;4$ ), and the children ranged in age from 3;0 to 5;11 ( $M = 4;2$ ). Thirteen children were boys; 8 were girls. Mothers reported having between 8 and 18 years of education. Eleven of the 21 children (52%) were enrolled in some type of educational program (e.g., preschool or kindergarten) at the time of their study participation; 10 (48%) were not. The amount of time each family reported being shelter residents at the time of study participation ranged from 2 weeks (3 families) to 104 weeks (1 family;  $M = 17.10$  weeks,  $SD = 24.2$ ,  $Mdn = 6$  weeks). English was the native and primary language of the 21 families.

### Procedures

After completing the previously reported hearing screening and standardized language testing in the first half of this study (O'Neil-Pirozzi, 2003), each mother and her preschool child jointly engaged in two different language-based activities in the same order across families: a book-reading activity and a game-playing activity. A speech-language pathology graduate student, located inconspicuously in the same room as the family, transcribed all utterances produced by the mother during both activities, excluding book text. The investigator observed both activities. Both activities were audio-recorded for any additional transcription needs and for reliability checks.

*Book-reading activity.* Each mother was presented with the book *Millions of Cats* (Gag, 1956) and asked whether she and her children had ever read it, and none had. This book was chosen because of its age appropriateness, engaging focus, and narrative format. Each mother was instructed to "read this book with your child as you normally would and let us know when you are done." At the end of the untimed activity, as a measure of the typicalness of the interaction for the family, each mother was asked, "Is that how it usually goes when you and your child read a book together?" Each mother was also asked how often she and her child read books together.

*Game-playing activity.* Following the book-reading activity, each mother was presented with the *Mr. Potato Head Pals Mix'n Match Game* (Hasbro) and asked whether she and her children had ever played it, and none had. This game was chosen because of its age appropriateness, engaging focus, and format. Each mother was instructed to "play this game with your child as you normally would and let us know when you are done." At the end of the untimed activity, as a measure of the typicalness of the interaction for the family, each mother was asked, "Is that how it usually goes when you and your child play a game together?" Each mother was also asked how often she and her child played games together.

### Typicalness of Study Interactions

Sixteen of the 21 mothers (76%) reported that the book-reading interaction with their children was typical, and 18 of them (86%) reported that the game-playing interaction was typical. Five mothers reported that the book-reading interaction with their children was atypical. Three of these mothers also reported that the game-playing interaction was

atypical. The data from the 16 mother-child dyads with maternal reports of typical book-reading and game-playing interactions were the focus of this study.

### Contextually Based Utterance Analysis

A graduate student examiner verified the accuracy of her live transcription of each mother's spontaneous utterances during the two language-based activities using audio-recorded playback. Subsequently, the graduate student coded the maternal utterances produced during each activity. In book-reading interactions in which mothers' utterances consisted of the book text exclusively, the number of spontaneous utterances produced by mothers was tallied as zero.

Each spontaneous maternal utterance was categorized as a facilitating utterance or a nonfacilitating utterance. Facilitating utterances were defined as those types of maternal verbalizations that enrich a preschool child's linguistic environment and enhance or mediate contextual language-based interactions between mother and child (Arnold & Whitehurst, 1994; Fey et al., 1999; Girolametto et al., 1999; Kaiser, 1993; Valdez-Menchaca & Whitehurst, 1992; Whitehurst et al., 1988). Facilitating maternal utterance types used in this study were grouped into one of the three different categories described earlier in this article: parent prompt, parent feedback, or parent statement. Parent prompt types of facilitating utterances included closure, facilitation of expectation/prediction, elicited imitation, and request for verbal information. Parent feedback types of facilitating utterances included developmental paraphrase, expansion, extension, and recasting. Parent statement types of facilitating utterances included provision of information, provision of positive feedback, and sequencing of events. Descriptions of each type of facilitating utterance are provided in the Appendix. Nonfacilitating utterances were defined as those types of maternal verbalizations that are not conducive to enriched, positive, shared, contextual language-based interactions between mother and child. The total number of facilitating and nonfacilitating utterances were tallied per task and converted to a percentage of each mother's total utterances. Total number and percentage of individual types of facilitating utterances were also calculated.

### Reliability

Interrater agreement for classification of maternal utterances as facilitating or nonfacilitating was determined from independent graduate student examiner and investigator transcription and analysis of five randomly selected sets of maternal transcripts of both activities (20%).

### Data Analysis

Analyses were completed using the data collected from the book-reading and game-playing interactions of the 16 families whose mothers reported that both interactions were typical. Table 1 summarizes case history information and language functioning based on test performance for these 16 families. To adjust for the possibility that mothers would produce unequal numbers of (spontaneous) utterances in the book-reading and game-playing contexts, statistical

**TABLE 1. Characteristics of the 16 mothers and their children.**

ID	Mother age range (years;months)	Mother education	Child age range (years;months)	Child gender	Child educational placement
<b>Mothers With Language Deficit and Their Children With Language Delay</b>					
B	21;0–30;0	Less than HS	5;0–5;11	Male	Kindergarten
D	21;0–30;0	HS/equivalent	3;0–3;11	Female	Preschool/Head Start
F	21;0–30;0	Less than HS	3;0–3;11	Male	Preschool/Head Start
S	21;0–30;0	Less than HS	5;0–5;11	Male	None
U	21;0–30;0	Less than HS	5;0–5;11	Male	None
W	21;0–30;0	Less than HS	5;0–5;11	Male	Kindergarten
<b>Mothers With Language Deficit and Their Children With Typical Development</b>					
A	21;0–30;0	Less than HS	5;0–5;11	Female	Kindergarten
G	21;0–30;0	Some undergraduate/specialty training	5;0–5;11	Female	None
<b>Mothers With Typical Development and Their Children With Language Delay</b>					
J	41;0–50;0	Some undergraduate/specialty training	4;0–4;11	Male	Preschool/Head Start
K	31;0–40;0	Some undergraduate/specialty training	4;0–4;11	Female	Preschool/Head Start
L	31;0–40;0	Less than HS	3;0–3;11	Female	None
Y	31;0–40;0	Less than HS	3;0–3;11	Male	None
<b>Mothers With Typical Development and Their Children With Typical Development</b>					
H	21;0–30;0	Some undergraduate/specialty training	5;0–5;11	Female	Preschool/Head Start
P	21;0–30;0	Less than HS	3;0–3;11	Female	None
Q	21;0–30;0	HS/equivalent	5;0–5;11	Male	None
T	21;0–30;0	Some undergraduate/specialty training	4;0–4;11	Male	Preschool/Head Start

Note. HS = high school.

comparisons of facilitating language utterance use across contexts was based on percentage of use per context, as has been done in other studies examining context (O'Brien & Nagle, 1987; Sorsby & Martlew, 1991).

For some of the analyses of the second research objective, the 16 families were divided into four groups based on their standardized language testing performance, which was reported previously (O'Neil-Pirozzi, 2003): mothers with language deficit and children with language delay (MLD/CLD;  $n = 6$ ); mothers with language deficit and children with typical development (MLD/CTD;  $n = 2$ ); mothers with typical development and children with language delay (MTD/CLD;  $n = 4$ ); and mothers and children with typical development (MTD/CTD;  $n = 4$ ). To analyze the rest of the data for the second research objective, the 16 families were divided into two groups: mothers with language deficit ( $n = 8$ ) and mothers with typical development ( $n = 8$ ).

An alpha level of .05 was used for all suitable statistical analyses. Given the exploratory nature of this study, no alpha level correction was made for multiple comparisons of the same data.

## Results

### Reliability

Interrater reliability of classification of the 518 book-reading and game-playing utterances in these sets of transcripts as facilitating or nonfacilitating was 97%. Interrater agreement across the same sets of transcripts for classification of individual facilitating utterance types ranged from 84% to 100% across contexts. Interrater agreement for classification of individual nonfacilitating utterance types ranged from 88% to 100%.

### Frequency of Natural Occurrence of Study Interactions

The reported frequency with which the 16 mothers reporting typical interactions read to their children varied from daily (2 mothers) to less than once a month (6 mothers). The reported frequency with which these mothers played games with their children varied from daily (2 mothers) to less than once a month (5 mothers).

### Comparisons of Contextually Based Maternal Use of Facilitating Language Utterances

In the book-reading context, the 16 mothers generated 371 utterances; in the game-playing context, they generated 1,492 utterances. The mean percentage of facilitating language utterances produced by the mothers during book reading was 45.1% ( $SD = 32.1$ ), and the mean percentage of facilitating language utterances produced during game playing was 42.2% ( $SD = 19.8$ ). Using paired  $t$ -test analysis, there was no statistically significant difference between the mean percentage of facilitating language utterances produced by the mothers in the book-reading versus the game-playing context,  $M = 2.88$ ,  $t(15) = 0.36$ ,  $p = .73$ .

Eight of the 16 mothers (50%) generated a greater percentage of facilitating language utterances in the book-reading context than in the game-playing context; 5 mothers (31%) generated a greater percentage of facilitating language utterances in the game-playing context, and 3 mothers (19%) generated the same percentage of facilitating utterances across the two (see Table 2). Using the binomial distribution test, there was no statistically significant difference in number of mothers between any pair of these three groups ( $p > .05$ ).

**TABLE 2. Use of facilitating language utterances by the 16 mothers during book reading and game playing.**

ID	Book facilitating utterance no./total	Book facilitating utterance %	Game facilitating utterance no./total	Game facilitating utterance %
Mothers With Language Deficit and Their Children With Language Delay ( <i>N</i> = 6)				
B	11/19	57.89	54/79	68.35
D	4/36	11.11	38/156	24.36
F	1/21	4.76	3/60	5.00
S	0/1	0.00	5/7	71.43
U	18/31	58.06	59/136	43.38
W	31/54	57.41	80/187	42.78
Mothers With Language Deficit and Their Children With Typical Development ( <i>N</i> = 2)				
A	13/16	81.25	10/32	31.25
G	22/27	81.50	50/115	43.48
Mothers With Typical Development and Their Children With Language Delay ( <i>N</i> = 4)				
J	4/11	36.36	33/139	23.74
K	10/14	71.43	32/73	43.84
L	24/59	40.68	56/149	37.58
Y	5/45	11.11	5/48	10.42
Mothers With Typical Development and Their Children With Typical Development ( <i>N</i> = 4)				
H	5/12	41.67	72/133	54.14
P	1/1	100.00	40/59	68.80
Q	15/22	68.18	53/109	48.62
T	0/2	0.00	6/10	60.00

Two of the 16 mothers (12.50%) produced more than 50% facilitating language utterances in both contexts, and 5 mothers (31%) produced less than 50% facilitating utterances in both contexts. Nine mothers (56%) produced less than 50% facilitating language utterances in one context and more than 50% in the other, with 6 producing a greater percentage of facilitating utterances in the book-reading context and the other 3 producing a greater percentage in the game-playing context. Across-context differences in use of facilitating language utterances by the 9 mothers who produced these utterances more than 50% of the time in one of the two contexts ranged from 2% to 71% ( $M = 34.11\%$ ). Pearson product-moment correlation analysis indicated that there was no statistically significant relation between percentage of facilitating utterances produced by the 16 mothers in one context with the percentage they produced in the other ( $r = .299, p = .26$ ).

Independent-samples *t* testing for equality of means was used to explore the impact of maternal educational level on mothers' percentage use of facilitating language utterances in the book-reading and game-playing contexts. Consistent with analysis of maternal educational level in the first part of this study (O'Neil-Pirozzi, 2003), maternal educational level, originally a discontinuous variable with four values (see Table 1), was analyzed as a discontinuous variable with two values: "a high school degree, its equivalent, or less" and "some undergraduate college education, specialty training, or more." After confirming homogeneity of variance (Levene, 1960), these analyses indicated that there were no statistically significant differences in mothers' percentage use of facilitating language utterances in the book-reading or game-playing contexts based on their educational level: book reading  $M = -1.66, t(14) = -0.09, p = .93$ ; game playing  $M = -4.09, t(14) = -0.37, p = .72$ .

Pearson product-moment correlation analysis suggested that there was no statistically significant relation between

the 16 mothers' educational level and their percentage use of facilitating language strategies in either context (book reading  $r = .02, p = .93$ ; game playing  $r = .10, p = .72$ ). Less than 1% of the variance in facilitating language utterance use in the book-reading context and 1% of the variance in the game-playing context were predicted by maternal educational level (book reading  $r^2 = .0004$ ; game playing  $r^2 = .01$ ).

The relation of five additional variables on maternal use of facilitating language utterances across contexts was explored. These variables were child educational placement, child gender, presence or absence of child overall language delay, maternal age, and child age (see Table 1). Independent-samples *t* testing for equality of means was used to explore the impact of child educational placement (analyzed as a discontinuous variable with two values: placement and no placement), child gender (analyzed as a discontinuous variable with two values: boy and girl), and child overall language delay (analyzed as a discontinuous variable with two values: yes and no) on maternal use of facilitating language utterances across contexts. After confirming homogeneity of variance, these analyses indicated that there were no statistically significant differences in mothers' percentage use of facilitating language utterances across contexts based on any of these three variables: child educational placement mean difference and, although highly improbable that the numbers would be the same, child gender mean difference =  $-6.52, t(14) = 0.69, p = .50$ ; presence or absence of child overall language delay mean difference =  $-10.42, t(14) = 0.97, p = .35$ .

Pearson product-moment correlation analysis was done to explore the relation of maternal age and child age (both analyzed as continuous variables) to facilitating language utterance use. These analyses indicated that there was no statistically significant relation between maternal age and the 16 mothers' percentage use of facilitating language utterances across contexts ( $r = .41, p = .11$ ). A statistically

significant relation was found between child age and the 16 mothers' percentage use of facilitating language utterances across contexts such that the older the child, the greater the percentage use of facilitating utterances produced by the mother ( $r = .60, p = .01$ ). Thirty-six percent of the variance in facilitating language utterance use across contexts was predicted by child age ( $r^2 = .36$ ).

### **Relation Between Presence or Absence of Maternal Language Deficit and Use of Facilitating Language Utterances**

Based on data reported in Table 2, the mean percentage of facilitating book-reading utterances produced by the group of 6 mothers with language deficit and children with language delay (the MLD/CLD group) was 31.50% ( $SD = 28.90$ ), and the mean percentage of facilitating game-playing utterances was 42.30% ( $SD = 25.30$ ). Using paired  $t$ -test analysis, there was no statistically significant difference between mothers' mean percentage of facilitating language utterances produced in the book-reading versus game-playing context,  $M = -10.83, t(5) = 0.84, p = .44$ . Two of the MLD/CLD group mothers (33%) generated a greater percentage of facilitating language utterance in the book-reading context than in the game-playing context; 3 mothers (50%) generated a greater percentage of facilitating utterances in the game-playing context, and 1 mother (17%) generated the same percentage of facilitating utterances across the two.

The mean percentage of facilitating book-reading utterances produced by the group of 2 mothers with language deficit and children with typical development (the MLD/CTD group) was 81.50% ( $SD = 0.71$ ), and the mean percentage of facilitating game-playing utterances was 37.00% ( $SD = 8.49$ ). Both MLD/CTD mothers (100%) generated a greater percentage of facilitating language utterances in the book-reading context.

The mean percentage of facilitating book-reading utterances produced by the group of 4 mothers with typical development and children with language delay (the MTD/CLD group) was 39.80% ( $SD = 24.60$ ), and the mean percentage of facilitating game-playing utterances was 29.00% ( $SD = 15.20$ ). Using paired  $t$ -test analysis, there was no statistically significant difference between mothers' mean percentage of facilitating language utterances produced in the book-reading versus game-playing context,  $M = 10.75, t(3) = 1.82, p = .17$ . Two of the MTD/CLD mothers (50%) generated a greater percentage of facilitating language utterances in the book-reading context, and 2 (50%) generated the same percentage of facilitating utterances across contexts.

The mean percentage of facilitating book-reading utterances produced by the group of 4 mothers and children with typical development (the MTD/CTD group) was 52.50% ( $SD = 42.30$ ), and the mean percentage of facilitating game-playing utterances was 57.80% ( $SD = 8.18$ ). Using paired  $t$ -test analysis, there was no statistically significant difference between mothers' mean percentage of facilitating language utterances produced in the book-reading versus game-playing context,  $M = -5.25, t(3) = 0.26, p = .81$ . Two of the MTD/CTD group mothers (50%) generated a greater

percentage of facilitating language utterances in the book-reading context, and 2 (50%) generated a greater percentage of facilitating utterances in the game-playing context.

Using the Kruskal–Wallis test, there were no statistically significant differences across the four groups of mothers in terms of each group's percentage use of facilitating language utterances in either the book-reading or game-playing contexts: book reading  $\chi^2(3) = 4.52, p = .21$ ; game playing  $\chi^2(3) = 5.12, p = .16$ . Using the Mann–Whitney  $U$  test to compare percentage use of facilitating language utterances in the book-reading and game-playing contexts by the 8 mothers with overall language deficit versus the 8 mothers without, there were no statistically significant differences between the two groups of mothers in either context: book reading  $U = 32.00, z = 0.05, p = .96$ ; game playing  $U = 36, z = -0.37, p = .71$ .

### **Maternal Use of Facilitating Language Utterance Types**

Mothers in all four groups used few different facilitating language utterance types (see Table 3). Most frequently, mothers across groups used the provision of information facilitating utterance type (70.50%), followed by the request for verbal information type (17.44%) and the developmental paraphrase type (6.69%). No mothers used the closure, expansion, recasting, or sequencing of events utterance types. Independent-samples  $t$  testing for equality of means was used to explore mothers' use of each of the other four facilitating language utterance types based on presence or absence of maternal overall language deficit. After confirming homogeneity of variance, these analyses indicated that there were no statistically significant differences in mothers' percentage use of any of these four facilitating language utterance types based on presence or absence of maternal language deficit: paraphrase  $M = 3.13, t(14) = 0.57, p = .58$ ; elicited imitation  $M = 2.13, t(14) = 0.74, p = .47$ ; provision of information  $M = -3.50, t(14) = 0.31, p = .76$ ; request for verbal information  $M = -11.38, t(14) = 1.46, p = .17$ .

## **Discussion**

Language-based interaction patterns used by mothers who are homeless with their preschool children do not appear to be significantly influenced by context. This exploratory study's findings provide an initial framework for further research of the language used during interactions between these mothers and their children. Study findings also lead to consideration of language-based intervention options for these families.

### **Language-Based Maternal Interaction Patterns**

In the present study, mothers used facilitating language utterances less than 50% of the time across book-reading and game-playing contexts. Although this study did not investigate interaction patterns of other groups of mothers with their preschool children, these results provide initial evidence that overall use by homeless mothers of facilitating language utterances may be lower than those who are not

**TABLE 3. Proportionate means and standard deviations of the facilitating language utterance types used by the 16 mothers across the book-reading and game-playing contexts.**

Utterance type	Mothers and children with LD		Mothers with LD and children with TD		Mothers with TD and children with LD		Mothers and children with TD	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Closure	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00
Developmental paraphrase	3.83%	4.83	21.50%	24.75	2.50%	3.32	7.75%	11.80
Elicited imitation	4.50%	8.24	0.00%	0.00	0.00%	0.00	2.75%	4.86
Expansion	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00
Expectation/prediction	0.00%	0.00	0.00%	0.00	0.00%	0.00	4.25%	8.50
Extension	1.33%	3.27	17.50%	6.36	0.00%	0.00	0.00%	0.00
Provision of information	74.17%	22.82	36.00%	4.24	69.25%	21.28	67.00%	16.31
Provision of positive feedback	5.83%	10.03	7.00%	9.90	0.00%	0.00	0.00%	0.00
Recasting	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00
Request for verbal information	9.83%	14.06	17.50%	12.02	28.25%	20.07	18.00%	16.02
Sequencing of events	0.00%	0.00	0.00%	0.00	0.00%	0.00	0.00%	0.00

Note. LD = maternal language deficit/child language delay; TD = typical development.

homeless. For example, in a cross-sectional study of typically developing and language-disordered 27–45-month-old middle socioeconomic status children engaged in book reading, puzzle completion, and/or free-play with their mothers, mothers of both groups of children used facilitating language utterances more than 50% of the time across contexts (Lasky & Klopp, 1982). In a study of 18 parents and their 3- and 4-year old children (with homes) that was done in Boston community health centers, parents spontaneously used facilitating language utterances during book reading more than 60% of the time (Blom-Hoffman, O’Neil-Pirozzi, Volpe, Cutting, & Bissinger, in press).

The results of this study provide initial statistical evidence that homeless mothers with low educational levels use contextually based facilitating language utterances with their preschool children to the same extent that homeless mothers with higher educational levels do. These findings are inconsistent with published findings regarding other populations of mothers of preschool children (Dollaghan et al., 1999). Possible reasons for these results are speculative. Perhaps the overall low use of facilitating language utterances across the mothers in this study masked any maternal educational differences that may have existed, or perhaps these mothers’ use of facilitating language utterances was related to other factors. For example, the mothers’ use of facilitating utterances with their children may have been learned from informally observing others (e.g., extended family and friends) verbally interact with children in naturalistic environments (Farran, 1982; Kaiser & Delaney, 1996). Finally, many consequences of family homelessness have been documented, such as compromised physical health, increased stress, and depression (Bassuk, 1993). Perhaps the language functioning of at least some of the mothers in this study was vulnerable to the impact of these, regardless of educational level.

The results of this study provide initial statistical evidence that homeless mothers with overall language deficit use contextually based facilitating language utterances when interacting with their preschool children to the same extent that homeless mothers without overall language deficit do.

This investigator is not aware of any published studies investigating the language-based interaction patterns of any populations of mothers with language deficit. Possible reasons for these results are speculative and include those discussed above in reference to the lack of relation between maternal educational level and mothers’ contextual use of facilitating language utterances. Given how adults typically simplify their language when speaking with young children, an additional possibility is that the mothers with overall language deficit may have still possessed the language abilities needed for effective communication with their preschool children. A final possibility is that these mothers’ use of facilitating language utterances may have been related more strongly to sociolinguistic aspects of language than to other aspects (e.g., semantics and syntax) and that they were able to use the language that they had to stimulate their children’s language (e.g., ask/answer questions and request/provide information).

Mothers used few different types of facilitating language utterances across contexts (see Table 3). Seventy percent of the facilitating utterances that mothers produced were the provision of information type, from the parent statement category (see Appendix). The second most frequently used type of facilitating language utterance was the request for verbal information type (17%), from the parent prompt category, and the third most frequently used type was developmental paraphrase (7%), from the parent feedback category. Mothers used other facilitating language utterance types, such as closure (parent prompt), recasting (parent feedback), and sequencing of events (parent statement), minimally or not at all. Given the emphasis that these facilitating utterance types receive in interventions to stimulate children’s language development, their minimal use or lack of use by the mothers in this study is striking.

The older the child, the greater was the percentage of facilitating language utterances used by the mothers. Extrapolating on research that at least some parents of children with specific language impairment use even one type of facilitating language utterance more often than parents of non-language impaired children (Fey et al., 1999), perhaps



this statistically significant finding relates to the significant finding in the first part of this study that the older the child, the more likely it was that that child presented with an overall language delay (O'Neil-Pirozzi, 2003). Further investigation of maternal interaction patterns with a larger number of families is needed.

### **Intervention Implications**

Mothers and their preschool children who are homeless are at risk for language deficits and delays, respectively (Bassuk & Rudin, 1987; Gewirtzman & Fodor, 1987; O'Neil-Pirozzi, 2003). Overall use of facilitating language utterances across contexts by mothers who are homeless may be lower than by those who are not homeless. Both these mothers and their preschool children are potential candidates for intervention to improve language functioning.

Some educational programs and services exist that may help preschool children who are homeless improve their overall development (e.g., child care, day care, early intervention, Even Start, and Head Start). Although more research is needed, the benefits of these types of programs for economically disadvantaged children are supported (Campbell & Ramey, 1994; Reynolds, Temple, Robertson, & Mann, 2001). Many preschool programs are parent- or family-focused and may help these children's mothers improve the quality of their language-based interactions with their preschool children as well as their children's language development (Girolametto, Pearce, & Weitzman, 1996; Kaiser et al., 1996; Tannock & Girolametto, 1992).

Legislation can help ensure that these at-risk preschoolers receive needed services and support. For example, under the Education of the Handicapped Act Amendments of 1986, Individualized Family Service Plans (IFSPs) may be written for children who are homeless between birth and 6 years of age. IFSPs are family-focused in nature and address family-level needs for comprehensive services and supports to enhance children's overall development (e.g., educational, housing, transportation, and vocational services and supports; Dunst, Trivette, Starnes, Hamby, & Gordon, 1993).

As evidenced by the educational status of many of the children who participated in this study (see Table 1), not all homeless children are enrolled in educational programs. Other types of across-context language-based interventions may benefit these children and their parents. For example, parent-directed education and/or training might be provided at individual family homeless shelters and at community health centers where these families often receive their medical care. No research has been reported regarding the effectiveness of teaching or training mothers who are homeless how to facilitate their preschool children's language development. However, some research has been done supporting the position that this kind of intervention may be beneficial to children's language development and to parent-child interactions in general (Arnold & Whitehurst, 1994; Girolametto et al., 1996; Kaiser et al., 1996; Tannock & Girolametto, 1992; Whitehurst et al., 1988) and to low socioeconomic status parents and their preschool children in particular (Edwards, 1989; Hockenberger, Goldstein, & Haas, 1999; Whitehurst et al., 1994).

### **Study Limitations**

Several limitations are associated with this study. First, the sample size was small. This initial, exploratory study should be followed by studies with larger sample sizes that, in turn, will yield more statistically powerful findings. Second, English was the native and primary language spoken by all of the study families. The context-based interaction patterns of non-native English-speaking families should also be investigated. Third, all families in this study completed the two contextual activities in the same order. What effect the order of these activities may have had on the results is not known. Fourth, families knew that they were being observed. Although the 21 participating families reported that their study-related reading and game-playing interactions were typical, their awareness of being observed may have affected their usual behavior. Lastly, this study did not include a comparison group of families living in homes. A follow-up study should include families who are and are not homeless to better understand the impact of homelessness on the interactions of these parents with their children.

### **Conclusions**

Mothers and children who are homeless confront many crises, difficulties, and stressors in their lives. What role language plays in relation to all of these challenges (e.g., cause of or result of, facilitator or obstacle) is not known. This initial exploratory study provides a foundation for describing contextual characteristics of the mothers' language-based interactions with their preschool children, identifies intervention alternatives available to these at-risk families, and offers compelling reasons for continued investigation.

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Contact author: Therese M. O'Neil-Pirozzi, Northeastern University, Department of Speech-Language Pathology and Audiology, 103 Forsyth Building, Boston, MA 02115.  
E-mail: [t.oneil-pirozzi@neu.edu](mailto:t.oneil-pirozzi@neu.edu)

## Appendix

### Facilitating Maternal Utterance Types

Utterance type	Description of utterance type
Closure <sup>a</sup>	Encourages child to fill in predictable word or phrase regarding the activity
Developmental paraphrase <sup>b</sup>	Rewords info in book/game instructions to facilitate child's comprehension
Elicited imitation <sup>a</sup>	Says something contextually based and asks child to imitate/repeat verbalization
Expansion <sup>b</sup>	Enlarges child's incomplete/telegraphic utterance about activity and makes it more complete
Extension <sup>b</sup>	Adds meaning, information, or "linguistic richness" to what child has said regarding activity
Facilitation of expectation/prediction <sup>a</sup>	Encourages child to anticipate "what's next" in activity
Provision of information <sup>c</sup>	Initiates imparting of contextually related knowledge or responds to child's contextually based question
Provision of positive feedback <sup>c</sup>	Affirms child for appropriate contextually based behavior, effort, or performance
Recasting <sup>b</sup>	Expands child's contextually based utterance into different type of sentence
Request for verbal information <sup>a</sup>	Uses open-ended question/statement to obtain contextually based information from child
Sequencing of events <sup>c</sup>	Reviews, in an orderly fashion, contextually based information

<sup>a</sup>Parent prompt category. <sup>b</sup>Parent feedback category. <sup>c</sup>Parent statement category.

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