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ABSTRACT

Educators frequently recommend that children read aloud to parents at home in the belief that the activity will positively contribute to children's literacy growth. From a research perspective, however, little is known about these at-home reading experiences. Using a social constructivist theoretical perspective, the present study investigated the relationships between children's reading ability, children's sex, mothers' educational level, and mothers' helping behaviors during children's at-home oral reading practice. Seventy-six mother-child pairs from a suburban, middle-class community participated in the project. Accelerated and at-risk third grade readers took home a tape recorder and a third grade science text to read aloud to mothers. The conversations were audiotaped, professionally transcribed, and then coded. Results of the study indicated that the conversations between at-risk readers and their mothers were marked by the frequent use of error correction interventions, while the conversations between accelerated readers and their mothers were marked by children's extensive verbal involvement. A pattern of richer language interaction was also seen in the conversations of mothers and daughters when compared to those of mothers and sons. High school educated mothers used significantly more error correction interventions than did college educated mothers despite the fact that there were equal numbers of accelerated and at-risk readers in each of the educational groups. Additionally, college educated mothers asked significantly more high level questions than did high school educated mothers. Implications for practice are discussed. (Contains 58 references and 5 figures of data; appendixes contain the coding scheme and guidelines for using the scheme.) (Author/RS)

Mothers' Helping Behaviors During Children's At-Home Oral Reading Practice: Effects of Children's Reading Ability, Children's Sex, and Mother's Educational Level

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Abstract

Educators frequently recommend that children read aloud to parents at home in the belief that the activity will positively contribute to children's literacy growth. From a research perspective, however, little is known about these at-home reading experiences. Using a social constructivist theoretical perspective, the present study investigated the relationships between children's reading ability, children's sex, mothers' educational level, and mothers' helping behaviors during children's at-home oral reading practice. 76 mother-child pairs from a suburban, middle-class community participated in the project. Accelerated and at-risk third grade readers took home a tape recorder and a third grade science text to read aloud to mothers. The conversations were audio taped, professionally transcribed, and then coded according to a pre-determined coding scheme based on types of reading error corrections made by mothers, types of comments made by mothers, types of questions asked by mothers, and the number of words spoken by the children, text reading aside. Results of the study indicated that the conversations between at-risk readers and their mothers were marked by the frequent use of error correction interventions, while the conversations between accelerated readers and their mothers were marked by children's extensive verbal involvement. A pattern of richer language interaction was also seen in the conversations of mothers and daughters when compared to those of mothers and sons. High school educated mothers used significantly more error correction interventions than did college educated mothers despite the fact that there were equal numbers of accelerated and at-risk readers in each of the educational groups. Additionally, college educated mothers asked significantly more high level questions than did high school educated mothers. Implications for practice are discussed.

Mothers' Helping Behaviors During Children's At-Home Oral Reading Practice: Effects of Children's Reading Ability, Children's Sex, and Mothers' Educational Level

In a broad sense the issue of children reading aloud to parents at home is an issue of family literacy. Within the past decade awareness of the powerful influence of the family on children's literacy development has gained national prominence (Paratore, 1997). Increasingly, educators, parents, and policy makers have been told of the importance of children's home literacy experiences and of the value of parent involvement in children's school activities. Researchers have validated the significance of family literacy with investigations of: (1) the design, implementation, and evaluation of programs to facilitate the literacy development of family members (Edwards, 1995; Enz & Searfoss, 1995; Gambrell, Almasi, Xie, & Heland, 1995; Graves & Wendorf, 1995; Hannon, 1994; Harrison, 1995; Koskinen et al., 1995; Morrow, 1995; Neuman, 1995; Paratore, 1993; Shanahan, Mulhern, & Rodriguez-Brown, 1995 and Topping;& Wolfendale, 1985) (2) the relationships between literacy use in families and students' academic achievement (Baker, Serpell, & Sonnenschein, 1995; Leseman & DeJong, 1998; McCarthy, 1997; Purcell-Gates, 1996; Senechal, Lefevre, Thomas, & Daly, 1998; Snow, Barnes, Chandler, Goodman, & Hemphill, 1991; and Taylor, 1995) and (3) the ways in which literacy is naturally used within the context of the home (DelGado-Gaitan, 1992; Gadsen, 1995; Madigan, 1995; Purcell-Gates, 1995 and Taylor, 1983). The present paper examines one dimension of the way literacy is used in the home environment, specifically, how mothers help their children when children read aloud at home.

The practice of children reading aloud to parents is extensively recommended by educators (Evans, Barraball, & Eberle, 1998; Hannon, 1994; Toomy, 1993). Despite the frequency with which the activity is recommended, however, little is known about the quality of these at-home reading sessions (Authors, 1994; Lancy, Draper, & Boyce, 1989). For example, few studies to date have examined the quality of the shared literacy experiences when poor readers read at home to their parents (Authors, 1994; Evans, Barraball, & Eberle, 1998; Lancy,

Draper, & Boyce, 1989). The results of these investigations have suggested that at-home, oral reading practice may be a far less positive experience for at-risk readers than for their more accomplished peers. These studies found that the at-home, oral reading practice of poor readers was marked by frustration and failure for the children and by a high incidence of error interventions by well-intentioned parents. Despite the potential significance of these findings, however, at-home oral reading practice remains a cornerstone of teachers' recommendations. It seems apparent that further investigation into the quality of children's at-home oral reading practice should be conducted in order to provide a clearer and objective foundation on which educators' recommendations can be based.

In addition to providing a foundation for practitioners' recommendations, investigations of children's at-home oral reading offer researchers potentially rich data on an alternative form of shared literacy experiences. To date, the literacy research community has given extensive attention to shared literacy experiences in which parents read to children (for example, see Altwerger, Diehl-Faxon and Dockstader-Anderson, 1985; Anderson, Hiebert, Scott & Wilkinson, 1985; Bus & van Ijzendoorn, 1995; Flood, 1977; Pellegrini, Perlmutter, Galda, & Brody, 1990; Scarborough & Dobrich, 1994; Snow, 1983; Snow & Ninio, 1986; Teale, 1981; and Whitehurst, Falco, Lonigan, Fischel, DeBaryshe, Valdez-Menchaca & Caulfield, 1988). These studies and others have provided critically valuable information with regard to the role of parents in children's literacy acquisition. In contrast, far less research attention has been given to shared literacy experiences in which children read to parents. It seems promising that further valuable insights into children's literacy development can be gained from examinations of shared literacy experiences from this alternative perspective.

Studies of Children Reading to Parents

In one of the earliest studies of its type, Francis (1975) studied the relationships between early reading achievement, parents reading to children, and children reading to parents. In an examination of middle-class and lower class, six-year-old students in England, Francis found a stronger correlation between the frequency with which children read to parents and reading

achievement, than between the frequency with which parents read to children and reading achievement. The finding of a very high correlation between the frequency with which children read to parents and reading achievement was replicated and extended in a series of three studies by Hewison and Tizard (1980). In the first study, the parents of children from working class homes were interviewed in order to examine the relationships between parental attitudes toward reading, parental practices with respect to reading, and children's reading behavior. The results indicated that whether or not mothers heard their children read was strongly correlated to their children's reading test scores. While the incidence with which children read to mothers was related to the mothers' attitudes towards reading, it was demonstrated that simply possessing a positive attitude toward reading was insufficient to produce the reading gains that resulted from a combination of both a positive attitude and reading practice. In the second study of the series, parental attitudes toward reading, parental practices with respect to reading, and children's reading behavior were once again examined in working class families. Additionally, however, in this study, children's IQ scores as determined by performance on the WISC, and a measure of the mother's language behavior was assessed. Again, it was determined that the strongest correlation existed between children reading to parents (coaching) and reading test performance. In the third study, while the IQ and maternal language factors were not included in the study, the amount of reading done by the child to the parent was addressed. The amount of coaching"provided by the parents was classified as either "regular help", "occasional help" or "no help". With respect to the findings the authors stated:

> The results are very consistent indeed. They fully confirm the earlier findings, and suggest in addition that reading attainment scores vary in stepwise fashion with the amount of coaching in reading which the children have received. (Hewison & Tizard, 1980, p.213)

The work of Tizard, Schofield, and Hewison (1982) was designed to experimentally investigate the correlational findings of Hewison & Tizard (1980). In the study, which became known as the Haringey Project, three groups of multi-racial, inner-city children were randomly

assigned to experimental conditions. In the first experimental group, children's parents were recruited, minimally trained, and occasionally visited and supervised in carrying out an intervention in which they committed themselves to frequently hearing their child read aloud at home and recording what their children read. In the second experimental group, after-school help in reading was provided to children in small groups by a highly qualified and experienced teacher, however, no special parental involvement was initiated. In the control group, children received neither form of extra help. The study was carried out in four classrooms, with students of varied reading ability, and over a period of two years. The results of the study indicated that highly significant gains were made in the parent involvement group in contrast to the control group, but no comparable gain was observed for the students that received the extra help at school. Although this study has been criticized for weaknesses in its experimental design with reference to the comparison of the after-school and parental involvement programs, (Bald, 1987) it clearly supports a causal relationship between children reading aloud to parents and improved reading achievement, and remains one of the most frequently cited studies in the examination of children reading aloud to parents. With respect to the impact that the study has had in England, Bald (1987) wrote, "These results immediately established parental involvement in reading as a national focal point for professional activity and for research..." (Bald, 1987, p.24).

One of the studies prompted by the results of The Haringey Project (1982) was the work of Hannon (1987). In an attempt to further investigate the relationship between children's reading achievement and children reading aloud to parents at home, Hannon designed an experiment in which children from working class backgrounds read to their parents aloud at home on an "almost daily" basis over a period of three years. In contrast to the Haringey Project, however, researchers did not regularly visit the homes to support and supervise the shared literacy experiences. Furthermore, rather than having a concurrent control group, Hannon (1987) compared the performance of the children in the experimental group with the performance of similar children who had passed through the school in previous years. When parental involvement in reading was examined from this perspective, no significant differences between

the two groups were found. In interpreting the findings, Hannon (1987) suggested that the supportive and instructional role provided by the researchers in Tizard, Schofield, and Hewison's (1982) work during their home visitations may have contributed to the experimental effect found. Also, Hannon noted that the populations for the two study were somewhat different; although both represented working class communities, in the Haringey Project (1982) the sample was comprised of primarily minority and ethnic groups, while in Hannon's (1987) study this was not the case.

While the practice of children reading aloud to parents has been supported by important correlational and experimental findings, there exists a paucity of studies which examines these literacy events from a descriptive perspective (Francis, 1987). According to Francis (1987) who wrote a review on the topic, the work of Hannon, Jackson, and Weinberger (1986) was, "Perhaps the only detailed report of parental practices in hearing children read during the early school years" (Francis, 1987, p. 217). In this study, Hannon, Jackson, and Weinberger (1986) compared descriptions of the interactions of children from working-class backgrounds reading aloud to their parents, and reading aloud to their teachers. Analyses of these categories suggested that the most frequent moves for both parents and teachers were in the categories of "providing words" and "giving directions" about reading. Among other observations it was found that a greater proportion of parent's moves were in response to miscues, whereas teachers were more likely to make moves at other times, and that parents were more likely to use criticism than were teachers. Advantages to parent reading sessions were found in the categories of longer at-home reading sessions than school reading sessions, and fewer external interruptions during reading. In summarizing the research, Hannon, Jackson, and Weinberger (1986) concluded that there was no support for the belief that working class parents were inadequate to hear their children read. While this study has added considerably to our knowledge of the reading practices between parents and children, it has also been criticized for a lack of authenticity since parents in the study were provided with a list of "Do's and Don'ts" to adhere to during reading. As Francis (1987) stated " Since the parents were actually advised by the teachers to act in this manner it is

useful to know that they could do so, but one can only speculate on what they might have done without guidance" (Francis, 1987, p. 217). While Francis (1987) emphasized the importance of the "Do's and Don't" sheet on the quality of the reported findings, the authors minimized its influence in the study.

Lancey, Draper, and Boyce (1989) pioneered descriptive work of the differences between the helping behaviors of parents of good and poor readers during children's oral reading practice. In their first study they examined kindergarten and first grade children from ethnically mixed and working class backgrounds during parent-child reading interactions. The children were divided into two groups: good readers who were early, fluent readers and poor, non-fluent readers who were late reading skill acquisition. According to the authors' "global analysis" of the interactions, the two groups differed in important ways. Parents of the early readers reported reading to their children frequently at home, held positive attitudes toward reading, and felt that the most important feature of their children reading aloud was that the experience should be fun. During their children's reading, parents of the good, early readers adopted what the authors coined an "overall underlying expansionist strategy" entailing much scaffolding. Also, the interactions between the good readers and their parents were characterized by great sensitivity on the part of the parents to avoid frustration for the child. In contrast to these points, parents of the poor readers reported rarely reading to their children at home, and perceived reading, and learning to read, as work. The interactions between the poor readers and their parents were characterized by a high degree of frustration for the children and the frequent use of criticism by the parents which was sometimes harsh. The authors reported that the parents of poor readers used "reductionist" strategies when their children read in which the children were taught to use only a very limited array of cues, for example, an almost solo reliance on decoding cues. In another example of a reductionist strategy, the authors cited an instance in which a mother repeatedly covered the pictures when her child read so that the child did not "cheat" when learning to read.

The topic of mothers' helping behaviors during children's at-home oral reading practice was further articulated by Authors (1994). In this study, the variables of the frequency of children's oral reading practice, children's sex, children's reading ability, and text difficulty were examined within the context of children's at-home oral reading. The results of the study indicated that in homes of middle-class, college educated mothers, children read aloud an average of 100 minutes per week at the first grade level, 85 minutes per week at the second grade level, and 53 minutes per week at the third grade level. Unexpectedly, it was also found that at-risk second and third readers read aloud significantly more frequently to their parents than did accelerated second and third grade readers. This finding is consistent with the hypothesis that as the accelerated readers matured, their oral reading to parents was replaced by independent silent reading, while at-risk readers continued reading aloud to parents for practice. Thus, the work of Authors (1994) underscored the importance of the quality of the at-home practice experience for at-risk readers. The study also highlighted the effects of text difficulty and children's reading ability during children's at-home reading practice. Throughout the study, the use of harder texts were associated with a greater use of questioning, commenting, and error interventions by mothers, and with greater verbal involvement (text reading aside) by children. Mothers' helping behaviors were affected by children's reading ability differentially, depending on the difficulty of the text read. Children's sex was not found to be a significant variable affecting middle-class, college-educated mothers' helping behaviors.

Most recently, a study by Evans, Barraball, & Eberle (1998) investigated parental responses to children's oral reading and compared parent's philosophical beliefs about reading with their actual helping behaviors during the reading experience. The results suggested that parents' behaviors were consistent with their beliefs; Parents who held a bottom-up philosophy of reading tended to make corrections that were primarily decoding in nature, while parents that held a top-down philosophy tended to make error corrections that used context and meaning for cues.

Current Investigation

The review of the research presented suggests that the issue of children reading aloud at home is a frequently recommended practice by educators, but one that is largely underexamined from a research perspective (Evans, Barraball, & Eberle, 1998; Hannon, 1994; Toomy, 1993). Although a handful of studies have been completed which suggest that children's at-home reading practice may be significantly related to their reading achievement (Authors, 1994; Francis, 1975; Hewison & Tizard, 1980; Lancey, Draper, & Boyce, 1989; Tizard, Schofield, & Hewison, 1982), the existing research base suffers from several deficits. First, the number of studies completed on the subject is small, particularly in light of the frequency with which at-home reading practice is recommended by educators. Second, the research which has been completed has not been related to a theoretical model which would assist in increased understanding of the issue and with the integration of this body of knowledge with other related bodies of work. Third, and relatedly, the existing research has not demonstrated that the examined variables were selected from a theoretically driven perspective. The failure to provide a theoretical basis for the selection of research variables further diminishes the ability of studies in this field to move forward in a grounded and integrated manner.

The present study attempts to address each of these concerns. First, the study aims to extend the amount of work that has been done on the subject in a way that allows for meaningful, practical implications to be drawn from the investigation. Second, great care is taken to situate the study within a theoretical framework and to use the framework to connect this area of work with other studies of home literacy. Third, selection of the studied variables is theoretically driven, allowing for a more meaningful understanding of the interactions observed and for increased application of the findings of the work to the general field of literacy research.

A Theoretical Framework for Examining Children's At-Home Oral Reading Practice

From a theoretical perspective, research regarding children's at-home oral reading can be viewed as being based on, and offering the potential to inform, the construct of social constructivism. This perspective suggests that during shared literacy experiences one of the

primary phenomena occurring is the construction of literacy meaning through the social and verbal interactions of the participants. Multiple writers have developed and contributed to this theoretical perspective of literacy acquisition (Bloome, 1985; Piaget and Inhelder, 1969; Rogoff, 1990; and Vygotsky ,1978). In brief, Piaget facilitated the general theory of constructivism with his suggestion that children actively construct knowledge as they interact with objects in the world around them (Piaget & Inhelder, 1969). Vygotsky (1978) added the social dimension to this perspective with his ideas regarding the educational role served by more mature individuals interacting with less mature individuals. Bloome (1985) articulated the ways in which social contructivist theory applied to the reading experience. Most recently, Rogoff (1990) utilized the term guided participation to depict the social constructivism that contributes to children's cognitive development. She stated, "Interaction with other people assists children in their development by guiding their participation in relevant activities, helping them adapt their understanding to new situations, structuring their problem-solving attempts, and assisting them in assuming responsibility for managing problem solving" (1990, p.191). The application of social constructivism as a theoretical basis for studying literacy acquisition has been used by many researchers and in a great variety of contexts (Bloome, 1985; Green et al, 1994).

Social constructivism has been used as a theoretical model for studies that fall under the umbrella of family literacy. Most notably, it has been used as a basis for studies of shared book reading in which parents read to young children (Arnold & Whitehurst, 1994; Pellegrini, Perlmutter, Galda, & Brody, 1990; Snow, 1983; Snow & Ninio, 1986; Whitehurst, et al, 1988). Such investigations are based on the premises that children's knowledge about literacy is facilitated by the ways in which parents share books with their young children, and that differences in the quality of these literacy events may lead to differential development of children's literacy abilities. Book sharing studies situated in social constructivism often use language analysis as a method of investigation through which parent-child social interactions can be captured (Arnold & Whitehurst, 1994; Pellegrini, Perlmutter, Galda, & Brody, 1990; Snow, 1983; Snow & Ninio, 1986; Whitehurst, et al, 1988). Within the field of family literacy, in

addition to using social constructivism to illuminate storybook reading experiences, this theoretical model has been applied to the study of the effects of parents' literacy habits and the effects of non-book shared literacy experiences on children's literacy development (Leseman & DeJong, 1998).

Social constructivism is applicable to studies of children reading to parents in the same ways in which it is applicable to the studies of parents reading to children. Such a viewpoint suggests that the social interactions through which parents help children with their oral reading practice at home have the potential to shape children's perceptions, attitudes, and achievement with literacy. As in studies of parents reading to children, aspects of the social interactions that take place during children's oral reading to parents can be captured through language analysis.

Examinations of other studies related to family literacy and grounded within a social constructivist theoretical framework can provide direction for the selection of variables likely to be significant in the study of children's at-home oral reading. For example, Leseman & DeJong's (1998) recent and extensive investigation regarding the relationship between home literacy characteristics and children's literacy achievement suggested that socio-economic status, as computed by parents' educational level, was the most potent factor affecting the frequency and quality of at-home literacy events. The importance of parental educational level has also been reported by Pellegrini, Perlmutter, Galda, & Brody (1990) in relation to parental style of storybook reading.

A second significant variable identified by family literacy studies grounded in social constructivism is that of children's sex. Solsken (1993) has reported that her work and others have "raised the possibility that literacy itself may be regarded, in some subcultures or social classes at least, as primarily a female activity, and that males' engagement is literacy is therefore appropriately restricted" (p. 215). The social constructivist explanation for this finding is that parents may treat sons and daughters differently with regard to, and during, literacy events, and this, in turn, shapes children's differential development in attitude and achievement. Such an explanation may be applied to the recent findings of a large-scale, governmental investigation on

educational progress which indicated that girls scored better than boys in the area of reading achievement at all grade levels examined (Pear, 1998).

A third variable suggested by social constructivist research in family literacy is that of children's reading ability. Presumably because of its profound implications for educators, this variable is widely investigated. As described above, the hypothesis that differences in the ways in which parents interact with their children at home during and around literacy events are related to differences in children's reading ability has been investigated with regard to parental book reading styles, parental literacy habits, and non-book shared literacy experiences (Arnold & Whitehurst, 1994; Leseman & DeJong, 1998; Pellegrini, Perlmutter, Galda, & Brody, 1990; Snow, 1983; Snow & Ninio, 1986; Whitehurst, et al, 1988. When applied to the study of the relationship between children's oral reading practice at home and children's reading achievement, social constructivist theory suggests that differences in the ways in which parents help children with their oral reading practice will be related to differences in children's reading achievement. The following investigation used a social constructivist perspective and variables suggested by related research using the same theoretical orientation to examine children's at-home oral reading practice.

Methods

Participants All third graders, approximately 350, and their families from a northeast, middle-class suburban community were invited to participate in a descriptive study of the ways in which mothers help their children with reading at home. Data was collected on 170 families who chose to participate in the project. Of these, a sample of 76 mother-child pairs (34 boys, 42 girls) who met the following criteria was included in the present study: (a) Children were either accelerated or at-risk 3rd grade readers as measured by performance on local percentiles of the California Achievement Test and by classroom teacher evaluations. Children were grouped as either accelerated readers, scoring at or above the 65th percentile, or as at-risk readers scoring at or

below the 35th percentile. Following this determination, teacher's recommendations were used to confirm the accuracy of the students' placement. In six cases the children's teachers did not agree with the placement determined by the standardized test performance, and subsequently those students' data were not included in the present analysis. (b) Children came from homes in which English was the primary language spoken. (c) Children were free of special education classification; and (d) Mothers had either a high school or a college level education. 40 students were accelerated readers and 36 were at-risk readers. 24 of the mothers had high school degrees and 52 had bachelor's degrees. 18 boys were low readers and 16 were high readers. 22 girls were low readers and 20 were high readers. 8 of the boys had mothers who were high school educated and 26 of the boys had mothers who were college educated. 16 of the girls had mothers who were high school educated and 26 of the girls had mothers who were college educated. In both the college educated and high school educated groups, half of the children were at-risk readers and the other half were accelerated readers. The at-home reading conversations of the 52 college-educated mother-child pairs were previously examined and reported on by Authors (1994). The data are re-examined here to provide a basis for statistical comparison regarding the variable of mothers' educational level.

Procedure Each child met individually with a researcher on one occasion at school. During this time the child was given a tape recorder, a blank audiocassette, and set of third grade reading materials to take home and read to his or her mother that evening. Mothers, rather than fathers, were chosen for this research because it has been demonstrated that mothers tend to help their children with schoolwork, including at-home reading, more often than do fathers (Solsken, 1993). Each child also took home a note reminding the mother to be "as natural as possible" during the child's reading. The brief, one paragraph note reminded mothers that the study was

designed to capture the ways in which mothers naturally helped their children when children read aloud at home, and requested that the mothers try to help in as normal a way as possible. The note requested that the tape-recorder be turned on at the beginning of the reading session and turned off at the end. It also requested that all materials be returned to school the following day.

Materials Children read 4 pages of pre-selected, 3rd grade material from the science text series used in the school district. The reading was on the topic of plants. None of the children's classes had yet covered this material in school. Expository text was chosen because it has been demonstrated that expository text elicits more conversation between parents and children than does narrative material (Pellegrini, Perlmutter, Galda, & Brody, 1990). Grade level material was used rather than instructional level material in order to minimize the problems associated with comparing children reading different texts and also because the reading of a grade level science text was viewed as being ecologically valid.

Data Analysis Audio tapes were professionally transcribed and then coded according to a pre-determined coding scheme. The coding scheme, developed by the authors (1994) and adapted from DeBaryshe, Daly, & Rodarmel, (1992) and Snow (1983), was based on four main categories and accompanying sub-categories of interaction: (a) Error Correction Strategies Used by Mothers (decoding, semantic, word supplied, modeling, error indicated, and pause); (b) Questions Used by Mothers (yes/no, what questions, attribute questions, distancing questions, directions, and other); (c) Comments Used by Mothers (praise, repetitions, expansions, topic continuations, directions, and other); and (d) Total Words Spoken by the Child (aside from text reading). A fuller description of the coding system is presented in Appendix A, with guidelines for use presented in Appendix B.

Inter-rater reliability for the coding system was established by randomly choosing 10 transcripts and having them coded independently by two, trained graduate student research assistants. The percentage of agreement between two coders was established by dividing the number of instances of agreement by the total number of possible agreements. The inter-rater reliability between the two research assistants was .88, which is consistent with findings from similar studies (Pellegrini et al., 1990).

The data were examined using a three-way factorial analysis of variance with children's reading ability, children's sex, and mother's educational level as independent variables, and the scores on the components of the coding system previously described as the dependent variables. Following use of ANOVA, post-hoc analyses were completed to further clarify the direction of the significant differences.

Results

Reading Ability Effects Within the category of error correction, mothers of accelerated readers used word supplied error corrections most frequently (x=1.75), followed by modeling error corrections (x=.86) and error indicated error corrections (x=.72). Mothers of at-risk readers used word supplied error corrections most frequently (x=7.33), followed by error indicated error corrections (x=3.68) and modeling error corrections (x=2.90).

Within the category of types of questions used, mothers of accelerated readers used yes/no questions most frequently (x=7.39) followed by distancing questions (x=4.33) and what questions (x=1.78). Mothers of at-risk readers used yes/no questions most frequently (x=9.13), followed by distancing questions (x=5.15) and what questions (x=1.78).

Within the category of types of comments used, mothers of accelerated readers used topic continuation comments most frequently (x=14.25), followed by other comments (x=9.19) and

direction comments (x=6.25). Mothers of at-risk readers used topic continuation comments most frequently (x=15.58), followed by other comments (x=9.00) and direction comments (x=7.93).

Mothers of at-risk readers made significantly more Total Error Corrections during their children's oral reading practice than did mothers of accelerated readers ($F= 16.84$, $p<.001$). Mothers of at-risk readers corrected their children significantly more often than did mothers of accelerated readers in the following subcategories: decoding error corrections made by the mother ($F= 8.25$, $p< .01$), word supplied error corrections made by the mother ($F= 11.71$, $p<.001$) modeling error corrections made by the mother ($F= 10.25$, $p< .01$), and error indicated error corrections made by the mother ($F= 9.73$, $p< .01$). In the main category of Total Words Spoken by the child, text reading aside, accelerated readers spoke significantly more than did at-risk readers ($F= 6.27$, $p<.05$). The effects of children's reading ability on mothers' helping behaviors are reported in Table 1.

Insert Table 1 about here

Children's Sex Effects Mothers of males used word supplied error corrections most frequently (x=5.53), followed by error indicated error corrections (x=2.53) and modeling error corrections (x=1.94). Mothers of females used word supplied error corrections most frequently (x=4.0) followed by error indicated error corrections (x=2.07) and modeling error corrections (x=1.93).

Mothers of males used yes/no questions most frequently (x=7.00), followed by distancing questions (x=4.09) and what questions (x=0.97). Mothers of females used yes/no questions most frequently (x=9.36), followed by distancing questions (x=5.31) and what questions (x=2.62).

Mothers of sons used topic continuation comments most frequently (x=9.76), followed by direction comments (x=6.12) and other comments (x=5.71). Mothers of daughters used topic continuation comments most frequently (x=19.14), followed by other comments (x=11.83) and direction comments (x=7.95).

Mothers of daughters made nearly significant more topic continuation comments than did mothers of sons ($F=3.72$, $p<.057$) and mothers of daughters made significantly more other comments than did mothers of sons ($F=5.37$, $p<.05$). Girls spoke significantly more than did boys during these conversations, text reading aside ($F=11.87$, $p<.001$). The effects of children's sex on mothers' helping behaviors are presented in Table 2.

Insert Table 2 about here

Mother's Educational Level High school educated mothers used word supplied error corrections most frequently (x=8.71), followed by error indicated error corrections (x=2.83) and modeling error corrections (x=2.08). College educated mothers used word supplied error corrections most frequently (x=2.83), followed by error indicated error corrections (x=2.02) and modeling error corrections (x=1.87).

High school educated mothers used yes/no questions most frequently (x=4.96), followed by what questions (x=3.13) and attribute questions (x=1.63). College educated mothers used yes/no questions most frequently (x=9.85), followed by distancing questions (x=6.63) and what questions (x=1.31).

High school educated mothers used topic continuation comments most frequently (x=16.21), followed by other comments (x=11.79) and direction comments (x=8.79). College

educated mothers used topic continuation comments most frequently (x=14.37), followed by other comments (x=7.85) and direction comments (x=6.37).

High-school educated mothers made significantly more Total Error Corrections during their children's reading than did college-educated mothers ($F=3.85$, $p<.05$). High-school educated mothers made significantly more word supplied error corrections than did college educated mothers ($F=9.64$, $p<.01$) and and high-school educated mothers used significantly more semantic error corrections ($F=3.89$, $p<.05$). High-school educated mothers asked significantly more what questions than did the college-educated mothers ($F=7.67$, $p<.01$). High-school educated mothers also asked significantly more attribute questions than did college-educated mothers ($F=8.64$ $p<.01$). College-educated mothers asked significantly more yes/no questions than did high-school educated mothers ($F=4.48$, $p<.01$), and college-educated mothers asked significantly more distancing questions than did high-school educated mothers ($F=17.61$, $p<.001$). The effects of mothers' educational level on mothers' helping behaviors are reported in Table 3.

Insert Table 3 about here

Interaction Effects Several statistically significant interactions were observed between children's reading ability and mother's education level. For the variable of what questions ($F=5.48$, $p<.05$), the higher mean occurred for the accelerated reader if the mother was high school educated, but the higher mean occurred for the at-risk reader if the mother was college educated. This same pattern of interaction was observed for other questions ($F=5.09$, $p<=05$), expansion comments ($F=4.63$, $p<.05$), topic continuation comments ($F=6.13$, $p<.05$), other comments ($F=5.17$, $p<.05$),

and Total Words spoken by children (text reading aside) ($F=16.76$, $p<.001$). Interactions between children's reading ability and mother's educational level are reported in Table 4.

Insert Table 4 about here

Several statistically significant interactions were observed between mother's educational level and children's sex. For the variable of attribute questions ($F=8.99$, $p<.001$), the higher mean occurred for high school educated mothers if the child was a girl while the higher mean occurred for college educated mothers if the child was a boy. This same pattern of interaction was observed for what questions ($F=5.31$, $p<.05$), direction questions ($F=6.80$, $p<.05$), praise comments ($F=4.28$, $p<.05$), other comments ($F=5.30$, $p<.05$), direction comments ($F=9.20$, $p<.001$), and Total Comments ($F=6.54$, $p<.01$). Interactions between children's sex and mother's educational level are reported in Table 5.

Insert Table 5 about here

Discussion

The purpose of the present project was to meaningfully extend the body of knowledge available regarding the study of mothers' helping behaviors during children's at-home reading. The work supplemented previously existing studies on the topic by providing a theoretical basis from which the issue could be viewed and by examining variables related to the topic whose selection was theoretically driven. Using a social-constructivist theoretical lens, the research

examined the relationships between the variables of children's reading ability, children's sex, mother's educational level, and mother's helping behaviors during children's at-home reading practice.

Reading Ability Effects

A descriptive analysis of the effects of reading ability illustrates that mothers of accelerated readers used word supplied error corrections most frequently, followed by modeling error corrections and error indicated error corrections. Mothers of at-risk readers used word supplied error corrections most frequently, followed by error indicated error corrections and modeling error corrections. Within the category of types of questions used, mothers of both accelerated and at-risk readers used yes/no questions most frequently, followed by distancing questions, and what questions. Within the category of types of comments used, mothers of both groups of readers used topic continuation comments most frequently, followed by other comments and direction comments.

While the above descriptive statistics revealed similar profiles of helping behaviors for mothers of both at-risk and accelerated readers, a comparative analysis revealed that mothers of at-risk readers used significantly more total error corrections during their children's at-home reading than did mothers of accelerated readers. Moreover, accelerated readers spoke significantly more (text reading aside) than did at-risk readers. Although these finding are understandable in light of the fact that the text was more difficult for the at-risk readers than it was for the accelerated readers, they are also illuminating because they illustrate the qualitative differences in conversations between at-home reading experiences of at-risk and accelerated students. When at-risk students practice reading at home with grade level material their experiences are dominated by mothers' error correction interventions. In short, they are

experiences of frustration and failure. In contrast, the quality of the accelerated readers' at-home reading experience is one of rich conversation with the parent. Thus, when examining the effect of children's reading achievement on mothers' helping behaviors when grade level text is used the results of this study underscore the dramatic differences between the quality of the at-home reading experiences of accelerated and at-risk readers.

These findings, which are consistent with earlier works on the effects of children's reading ability on parents' helping behaviors during children's at-home reading (Authors, 1994, and Lancy, Draper & Boyce, 1989) suggest important directions to guide recommendations regarding children's at-home reading practice. In the belief that conversations dominated by excessive error correction interventions will be damaging to children's self esteem and motivation to read, as advocates of careful attention to text readability levels presume (Fry, 1977), educators can attempt to minimize this effect in at least three ways. First, in understanding the propensity of mothers of poor readers to intervene in this direction, educators can forewarn such parents and advise them to minimize their error corrections by intervening only when absolutely necessary, for example, to intervene only when the meaning of the text has been altered. Second, educators can suggest that parents read to their children instead of having children read to them when the text is found to be at the frustration level of difficulty, as is often the case when at-risk readers are faced with the task of reading grade level materials. Third, and most desirable, educators can send home instructional level texts rather than grade level text for at-risk readers. A comparison of accelerated and at-risk readers reading at home with their middle-class, college educated mothers revealed that maternal error correction interventions are greatly reduced when at-risk readers practice with instructional level rather than grade level text (Authors, 1994). While it is acknowledged that many practitioners strive to achieve this goal in

the area of reading, it is believed that most often grade level texts are sent home in the other content areas such as science and social studies. Finally, educators can strengthen the helping behaviors of mothers of at-risk readers by teaching them about the role and importance of general verbal ability in literacy acquisition, and providing them with information about how to facilitate their children's verbal expressions during practice reading sessions.

Children's Sex Effects

A descriptive analysis of the effects of children's sex on mother-child conversations illustrates that mothers of both males and females used word supplied error corrections most frequently, followed by error indicated error corrections and modeling error corrections. Mothers of both groups of children used yes/no questions most frequently, followed by distancing questions and what questions. Mothers of both sons and daughters used topic continuation comments most frequently, followed by direction comments and other comments.

A comparative analysis between these groups showed that mothers of girls used topic continuations (comments which embellish on a previous comment) nearly significantly more often than did mothers of boys. Furthermore, girls spoke significantly more during the conversations than did boys. Combined, these findings draw another picture, one of richer conversations for mothers and daughters than for mothers and sons during at-home reading practice. It is plausible that the differences captured in this literacy situation may be ultimately related to the consistent findings of higher reading achievement scores and more favorable attitudes for reading among girls rather than boys (McKenna, Kear, & Ellsworth, 1995; Pear, 1998).

Practical implications can be built upon the differences between the ways in which mothers interacted with daughters versus sons during at-home reading practice. Mothers can be

informed of the discovery that their conversations tend to be richer with daughters than with sons and can be encouraged to try and enrich the conversations with their sons accordingly. Specific conversational strategies which they can be prompted to use more frequently with their sons include: all types of questions, especially, what questions, attribute questions, and high level distancing questions, and all types of comments, especially topic continuing comments and praise. Furthermore, like mothers of at-risk readers, mothers of sons can also be helped to learn about the role and importance of general verbal ability in literacy acquisition and be guided to help their sons to speak more during these at-home reading conversations. It is important to note, however, that helping behaviors related to children's sex were also related to strong interaction effects. These are discussed further below.

Mother's Educational Level

A descriptive analysis of the effects of mother's educational level indicated that both high school and college educated mothers used word supplied error corrections most frequently, followed by error indicated error corrections, and modeling error corrections.
High school educated mothers used yes/no questions most frequently, followed by what questions, and attribute questions. College educated mothers used yes/no questions most frequently, followed by distancing questions, and what questions.

A comparative analysis of the effects of mother's educational level revealed that high-school educated mothers used significantly more: total error corrections, word supplied error corrections, semantic error corrections, what questions, and attribute questions than did college-educated mothers. College-educated mothers asked significantly more yes/no questions and distancing (high level, critical thinking) questions than did high-school educated mothers. Again, the pictures drawn for these two groups are different, with high-school educated mothers

using an abundance of error correction interventions while college-educated mothers use high level, thought provoking questions. This finding is particularly potent in light of the fact that there were equal numbers of accelerated and at-risk readers in both the high school educated and college educated groups. Practical implications from this finding include helping high school educated mothers learn to make error corrections only when the meaning of the text is altered by a child's reading error, and also helping them learn how to construct and use more high level, thought provoking questions during their children's reading practice.

Interaction Effects

Several statistically significant interactions were observed between children's reading ability and mother's education level. For the variable of what questions, the higher mean occurred for the accelerated reader if the mother was high school educated, but the higher mean occurred for the at-risk reader if the mother was college educated. This same pattern of interaction was observed for other questions, expansion comments, topic continuation comments, other comments, and Total Words spoken by children (text reading aside). The consistency of the pattern of interactions suggests that actual, rather than random, profiles of interaction are being captured. One interpretation of these findings is that in both cases mothers are using these helping behaviors to facilitate further growth in their children. In the case of the high school educated mothers, this may be related to the accelerated performance of their children. In the case of the college educated mothers, this may be related to their attempts to help improve their at-risk children's performance.

Similarly, several statistically significant interactions were observed between children's sex and mother's educational level. For the variable of attribute questions, the higher mean occurred for high school educated mothers if the child was a girl while the higher mean occurred

for college educated mothers if the child was a boy. This same pattern of interaction was observed for what questions, direction questions, praise comments, direction comments, other comments, and Total Comments. Although the patterns revealed in these interactions are, again, consistent, an interpretation of them is not readily apparent, and further investigation of the findings seem warranted.

Significant interactions between children's the variables of sex and children's reading ability were not found.

Social Constructivist Theory

In addition to extending the research base in this area of shared literacy experience and providing direction for practitioners, the present work also further informs the social constructivist perspective on reading through articulation of the specific ways in which mothers of different educational backgrounds scaffold the literacy growth of their sons, daughters, better, and poorer readers. Application of the social-constructivist perspective to this area of study indicates that children's literacy performance is related to parent-child interactions during these episodes in much the same way that children's literacy performance is related to parent-child interactions when parents read to children. In both cases, language analyses show that mothers' higher level questions and richer commenting behaviors are associated with increased literacy achievement for children (Arnold & Whitehurst, 1994; Snow, 1983; Whitehurst et al., 1988). Application of the social-constructivist theory to this area of investigation also extends the usefulness of the theory for examining parental error correction interventions, an area not examined in the case of parents reading to children. In short, the application of social-constructivism to this area of study allows the results of this work to be more meaningfully

integrated with the results of other family literacy investigations, which in turn facilitates a more cohesive understanding of the field of family literacy as a whole.

Limitations Important limitations regarding this work need to be noted. First, the power of the research findings is limited by the nature of the single reading episodes in which each of the mother-child pairs participated. It is likely that the validity of this work would be further increased if participants had completed the reading sessions several times rather than just once. While the requirement of a single reading session most likely increased participation rates, it is recognized that the validity of the findings would be greater if multiple reading sessions had been examined. Second, it is recognized that the presence of the tape recorder may have affected the mother-child interactions, despite repeated requests by the researchers that the mothers help their children in "as natural a way as possible". On this point, however, it is also important to note that the presence of the tape recorder most likely influenced all participants in the same direction, that is, to help their children in ways that they perceived as most desirable. A third limitation of the study is that of text effects. Text effects for difficulty (Authors,1994) and genre (Pellegrini et al., 1990) have been reported in studies of shared reading. It is essential that readers be reminded that any interpretations drawn from this work are relevant only to readings of grade level, expository text. A fourth limitation of the study is in the area of experiment-wise error. It must be noted that the possibility exists that one or more of the significant results revealed within this paper were spurious, resulting from the large number of variables examined. Finally, this work is limited by the theoretical lens through which it is viewed. We have chosen to examine mother-child interactions during children's at-home reading from a social-constructivist perspective that uses language analysis as its basis in the belief that this theoretical stance is best suited for capturing and explaining the phenomena. A choice of a different

theoretical lens would most likely lead to the choice of different variables for examination, different methods of analysis, and different conclusions drawn.

Summary and Conclusions This paper is built on the premise that the practice of children reading at home is a highly recommended yet infrequently researched topic within the area of family literacy. The findings suggest children's reading achievement, children's sex, and mother's educational level are all factors that are significantly related to mother-child interactions during children's at-home reading. Furthermore, the results of the analyses indicate that unique within group profiles of mother-child interactions exist for each of the groups. The findings from this work confirm the usefulness of applying a social-contructivist theoretical stance to this type of shared literacy experience, allow for greater understanding of the relationship between children's oral at-home reading practice and other family literacy experiences, and provide direction to educators for educational interventions. Future research in this area should include examining the helping behaviors of mothers of average ability readers in contrast with those of accelerated and at-risk readers, creating and assessing interventions to remedy the problematic interactions uncovered in this work, and documenting the chronological development of the mother-child patterns revealed within this paper.

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Appendix A

Coding System

Error Correction Techniques Used By Mothers

Decoding Strategies. An error correction strategy that focuses on sound-symbol relationshipd (e.g. "What sound does this letter make?").

Semantic Strategies. An error correction strategy that focuses on the use of text meaning (e.g. "What word would make sense to you?")

Word Supplied. An error correction strategy in which a single word is supplied (e.g. "bread" or "That says, "bread".).

Modeling. An error correction strategy in which multiple words are supplied (e.g. mother reads, "jumped over the fence").

Error Indicated. An error correction strategy in which an error is indicated, but no other help is offered (e.g. simply saying, "no" or "look again").

Pause. A pause of five seconds or more preceding an error correction intervention.

Types of Questions Used By Mothers

Yes/No Question. "Request for which a yes or no response is appropriate". (DeBaryshe, Daly, & Rodarmel, 1992, p. 34), (e.g. "Do you like this book?").

What Question. "Request for a specific name or label" (DeBaryshe, Daly, & Rodarmel, 1992, p. 34), (e.g. points to a picture and says, "What is this?").

Function/Attribute Question. "Request for information about an attribute (e.g. size, color, shape, function, emotional state, location, number, action)" (DeBaryshe, Daly, & Rodarmel, 1992, p. 34).

Distancing Question. "request for information that goes beyond immediately present evidence. Includes why questions, asking for inferences about future events, drawing comparisons between the text and the child's experience and asking for a verbal definition" (DeBaryshe, Daly, & Rodarmel, 1992, p. 34), (e.g. "What does the word 'sensitive' mean?").

Directions. Questions regarding where to read, what to read, or who should read (e.g. "Do you want to read first or should I").

Other. Questions about topics clearly unrelated to the reading, or utterances of "O.K.?"(e.g. "do you have soccer practice today?'

Comments

Praise. "Reinforcement or verbal acceptance of the child's utterance" " (DeBaryshe, Daly, & Rodarmel, 1992, p. 35), (e.g. "good", or "You read that beautifully".).

Directions. Statements regarding where to read, what to read, or who should read (e.g. "I will read first and then you can go.").

Repetitions. "An exact or reduced copy of a preceding child utterance", (DeBaryshe, Daly, & Rodarmel, 1992, p. 35),

Expansions. A comment that grammatically extends what the child has previously stated, but one in which no new information is added (e.g. Child says, "a plant". Mother says, "That's a plant").

Topic Continuation. A comment that adds significant, new information to that which the child has said or read (e.g. "The child reads, "this plant needs a lot of water to grow". Mother says, "We saw that kind of plant when we were in Florida last year").

Other. Comments about topics clearly unrelated to the reading, or utterances of "O.K."(e.g. "Let's remember that you have soccer practice today").

Number of Child Utterances. Total number of words spoken by the child, text reading aside.

Appendix B

Guidelines for Use of the Coding System

Step 1. Review the coding scheme (see Appendix A) and coding guidelines completely before beginning.

Step 2. Listen to the audio tape from beginning to end to get a "feel" for what has transpired, and read the transcript (assuming professionally transcribed) through completely before beginning any coding.

Step 3. Begin coding using the first three major categories (error correction techniques, types of questions, and types of comments) to code the mother's utterances. Code each sentence or sentence fragment separately. Everytime the mother speaks (other than taking a turn text reading) code the utterance according to the following series of decisions:

3a. Each time the mother speaks try to determine if the mother is responding to a child's reading error. If the mother is responding to a reading error, make sure to code a strategy from this category. Use a RED pencil or pen, and mark directly onto the transcript.

3b. If the mother has not responded to a reading error, try to determine if the mother's utterance requires a verbal response. If so, make sure to code the utterance as one of the items in the Questions category and to use a GREEN pencil or pen.

3c. If the mother's utterance does not require a verbal response, code it as a type of Comment and use a BLUE pencil or pen.

3d. As you code these three categories, try to think about the cognitive complexity of the interactions. If the mother is asking a question that requires a high level of cognitive complexity to answer, make sure you code it as a Distancing Question. Likewise, if the mother is adding information to the conversation, make sure you code it as a Topic Continuation.

Step 4. Following the completion of the mother's responses, return to the beginning of the transcript and begin coding for the fourth category, Child Utterances. Count and tally the number of the child's words spoken, text reading aside.

Step 5. Tally the number of each kind of mother and child utterance onto a tally sheet.

Table 1

Effects of Children's Reading Ability

Variable	DF	Type I SS	Mean Square	F Value	Pr > F
Decoding Correction	1	65.43289474	65.43289474	8.25	0.0054**
Semantic Correction	1	1.18421053	1.18421053	3.71	0.0583
Word Supplied Correction	1	588.8960526	588.8960526	11.71	0.0011**
Modeling Correction	1	78.76549708	78.76549708	10.25	0.0021**
Error Indicated	1	165.2001462	165.2001462	9.73	0.0027**
Pause Correction	1	0.58026316	0.58026316	1.68	0.1994
Yes/No Question	1	57.1089181	57.1089181	0.61	0.4369
What Question	1	0.95921053	0.95921053	0.13	0.7174
Attribute Question	1	0.25789474	0.25789474	0.10	0.7473
Distancing Question	1	12.6368421	12.6368421	0.37	0.5424
Directions Question	1	0.00526316	0.00526316	0.01	0.9407
Other Question	1	1.49137427	1.49137427	3.42	0.0688

Praise Comment	1	58.3953216	58.3953216	2.02	0.1595
Directions Comment	1	53.1592105	53.1592105	0.96	0.3315
Repetitions Comment	1	1.23742690	1.23742690	0.24	0.6245
Expansion Comment	1	1.34736842	1.34736842	0.82	0.3678
Topic Continuation	1	33.264474	33.264474	0.11	0.7455
Other Comment	1	0.7163743	0.7163743	0.01	0.9338
Total Child Utterances	1	68704.0474	68704.0474	6.27	0.0147*
Total Error Corrections	1	3128.636842	3128.636842	16.84	0.0001**
Total Questions	1	116.8473684	116.8473684	0.43	0.5133
Total Comments	1	309.081287	309.081287	0.23	0.6326

Table 2

Effects of Children's Sex

Variable	DF	Type I SS	Mean Square	F Value	Pr > F
Decoding Correction	1	0.18581250	0.18581250	0.02	0.8788
Semantic Correction	1	1.05488048	1.05488048	3.30	0.0735
Word Supplied Correction	1	93.6906287	93.6906287	1.86	0.1768
Modeling Correction	1	0.15994904	0.15994904	0.02	0.8857
Error Indicated	1	4.9751913	4.9751913	0.29	0.5900
Pause Error Correction	1	0.58144353	0.58144353	1.68	0.1990
Yes/No Question	1	152.6965817	152.6965817	1.64	0.2053
What Question	1	26.99364338	26.99364338	3.72	0.0580
Attribute Question	1	0.82027855	0.82027855	0.33	0.5658
Distancing Question	1	77.8266430	77.8266430	2.31	0.1333
Directions Question	1	0.28546136	0.28546136	0.30	0.5843
Other Question	1	0.30576466	0.30576466	0.70	0.4054

Praise Comment	1	43.2693010	43.2693010	1.50	0.2250
Directions Comment	1	29.9259819	29.9259819	0.54	0.4655
Repetition Comment	1	0.78220690	0.78220690	0.15	0.6971
Expansion Comment	1	0.90998940	0.90998940	0.56	0.4588
Topic Continuation	1	1166.519747	1166.519747	3.72	0.0578
Other Comment	1	451.5867575	451.5867575	4.39	0.0399*
Total Child Utterances	1	130049.8611	130049.8611	11.87	0.0010**
Total Error Corrections	1	119.931048	119.931048	0.65	0.4246
Total Questions	1	739.7172089	739.7172089	2.73	0.1029
Total Comments	1	4801.337721	4801.337721	3.58	0.0626

Table 3

Effects of Mother's Educational Level

Variable	DF	Type I SS	Mean Square	F Value	Pr > F
Decoding Correction	1	2.98776378	2.98776378	0.38	0.5415
Semantic Correction	1	1.24063989	1.24063989	3.89	0.0528*
Word Supplied Correction	1	484.7441967	484.7441967	9.64	0.0028*
Modeling Correction	1	0.03812873	0.03812873	0.00	0.9440
Error Indicated	1	5.3306123	5.3306123	0.31	0.5771
Pause Error Correction	1	0.36775017	0.36775017	1.06	0.3059
Yes/No Question	1	418.3980505	418.3980505	4.48	0.0379*
What Question	1	55.69232471	55.69232471	7.67	0.0072**
Attribute Question	1	21.27168142	21.27168142	8.64	0.0045**
Distancing Question	1	593.6153165	593.6153165	17.61	0.0001**
Directions Question	1	0.86923077	0.86923077	0.92	0.3409

Other Question	1	0.35452878	0.35452878	0.81	0.3705
Praise Comment	1	15.2085621	15.2085621	0.53	0.4704
Directions Comment	1	86.3854493	86.3854493	1.55	0.2167
Repetition Comment	1	4.69664927	4.69664927	0.92	0.3415
Expansion Comment	1	5.80422056	5.80422056	3.54	0.0642
Topic Continuation	1	49.588989	49.588989	0.16	0.6919
Other Comment	1	259.2922245	259.2922245	2.52	0.1171
Total Child Utterances	1	36706.2519	36706.2519	3.35	0.0716
Total Error Corrections	1	715.932539	715.932539	3.85	0.0538*
Total Questions	1	984.5343091	984.5343091	3.64	0.0607
Total Comments	1	1338.148408	1338.148408	1.00	0.3212

Table 4

Interactions- Children's Reading Ability and Mother's Educational Level

Variable	DF	Type I SS	Mean Square	F Value	Pr > F
Decoding Correction	1	0.14218127	0.14218127	0.02	0.8939
Semantic Correction	1	0.98463483	0.98463483	3.08	0.0836
Word Supplied Correction	1	11.6819022	11.6819022	0.23	0.6314
Modeling Correction	1	6.30808616	6.30808616	0.82	0.3680
Error Indicated	1	0.4523242	0.4523242	0.03	0.8708
Pause Error Correction	1	0.29186521	0.29186521	0.84	0.3613
Yes/No Question	1	96.1577798	96.1577798	1.03	0.3138
What Question	1	39.80025771	39.80025771	5.48	0.0222*
Attribute Question	1	3.19809880	3.19809880	1.30	0.2585
Distancing Question	1	12.9506175	12.9506175	0.38	0.5374
Directions Question	1	1.55219780	1.55219780	1.64	0.2043
Other Question	1	2.22199747	2.22199747	5.09	0.0272*

Praise Comment	1	36.2654916	36.2654916	1.26	0.2663
Directions Comment	1	70.8054848	70.8054848	1.27	0.2629
Repetition Comment	1	2.73509676	2.73509676	0.53	0.4673
Expansion Comment	1	7.58533988	7.58533988	4.63	0.0350*
Topic Continuation	1	1919.368978	1919.368978	6.13	0.0158*
Other Comments	1	531.6972138	531.6972138	5.17	0.0262*
Total Child Utterances	1	183612.8415	183612.8415	16.76	0.0001**
Total Error Corrections	1	5.798230	5.798230	0.03	0.8603
Total Questions	1	594.4629437	594.4629437	2.20	0.1429
Total Comments	1	7346.857148	7346.857148	5.48	0.0221*

Table 5

Interactions- Children's Sex and Mother's Educational Level

Variable	DF	Type I SS	Mean Square	F Value	Pr > F
Decoding Correction	1	0.47539581	0.47539581	0.06	0.8074
Semantic Correction	1	1.04654646	1.04654646	3.28	0.0747
Word Supplied Correction	1	5.7279360	5.7279360	0.11	0.7368
Modeling Correction	1	7.53977280	7.53977280	0.98	0.3253
Error Indicated	1	3.5193900	3.5193900	0.21	0.6503
Pause Error Correction	1	0.35611650	0.35611650	1.03	0.3136
Yes/No Question	1	155.5314430	155.5314430	1.67	0.2012
What Question	1	38.57776331	38.57776331	5.31	0.0242*
Attribute Question	1	22.13604305	22.13604305	8.99	0.0038**
Distancing Question	1	6.5611807	6.5611807	0.19	0.6605
Directions Question	1	6.42520425	6.42520425	6.80	0.0112*

Other Question	1	0.90789257	0.90789257	2.08	0.1537
Praise Comment	1	123.3978952	123.3978952	4.28	0.0425*
Directions Comment	1	511.2850117	511.2850117	9.20	0.0034**
Repetition Comment	1	8.40961826	8.40961826	1.64	0.2042
Expansion Comment	1	3.38757581	3.38757581	2.07	0.1552
Topic Continuation	1	1010.907615	1010.907615	3.23	0.0768
Other Comment	1	545.2081439	545.2081439	5.30	0.0244*
Total Child Utterances	1	27333.0877	27333.0877	2.49	0.1189
Total Error Corrections	1	12.435551	12.435551	0.07	0.7967
Total Questions	1	583.9077863	583.9077863	2.16	0.1464
Total Comments	1	8761.897864	8761.897864	6.54	0.0128**

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