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ABSTRACT

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# THE EFFECTS OF READING STORYBOOKS ALOUD TO CHILDREN

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## Abstract

This paper presents findings from a longitudinal study of reading comprehension development that reveal that there is a negative relation between the amount of time kindergarten teachers spend reading to kindergarten children and the children's reading achievement. The amount of time first-grade teachers spent reading to their students was unrelated to the reading achievement of their students. Results are discussed in terms of a "displacement theory." In other words, teachers who read the most spent the least amount of time in teaching activities that were positively correlated with reading achievement. Further information gathered from parent questionnaires about the time they spend reading to their children and the children's independent reading reveal a positive relationship between reading achievement and the time children spend engaged with print, but no relationship between reading achievement and the amount of time parents spent reading to their children. Further analyses revealed no relationship between kindergarten teachers reading and the children's subsequent performance in first grade. These results are discussed in terms of the need to involve children in print in order to improve their reading achievement and the lack of magic that results from parents or teachers reading to children.

# THE EFFECTS OF READING STORYBOOKS ALOUD TO CHILDREN

Reading to children is to literacy education what two aspirins and a little bed rest was to the family doctor in years gone by. Students have an impoverished vocabulary? Read to them. Students struggling with comprehension? Read to them. Students beset with negative attitudes or lack motivation? Read to them. Students have second language acquisition problems? Read to them. Reading to children has also been prescribed as a preventive measure: Want to ensure children's success in school? Want your children to read early? Read to them. *Becoming a Nation of Readers* (Anderson, Hiebert, Scott, & Wilkinson, 1985), the tendered blueprint for a literate society, even draws the bold conclusion that reading to children is "the single most important activity for building the knowledge required for eventual success [in learning to read] (p. 23)." (Hoffman, Roser, & Battle, p. 1, 1991)

Why has reading to children become the panacea for reading problems today? There are probably many reasons. Tradition suggests that elementary school teachers should do many of the same things that loving parents do, and one of the things that warm, loving parents do is read to their children. Furthermore, educators recommend it highly.

The Anderson, et al. (1985) book has assumed high status in many school districts, and administrators and teachers alike have turned to it for recipes to improve their reading programs. In addition, there are numerous other materials and advocates of reading to children. President and Mrs. George Bush appear regularly on television reading to children and encouraging others to do so. Teachers reading to children is also a cornerstone of the whole language movement, which also recommends extensive reading of stories to children, not only preschoolers but older children as well (Strickland & Cullinan, 1990). Finally, articles abound in the professional literature. One such

article is Kay's (1992) piece entitled "Teaching reading: As easy as reading aloud." This article was published in *Reading Today* and was therefore circulated to approximately 93,000 IRA members.

Although common sense and lore support the notion that reading aloud to children will facilitate their early reading performance, there has been surprisingly little research on this topic (Hoffman, et al., 1991) and that research which has been done is equivocal in its support.

The goal of this paper is to begin to unravel the mystique of lore and research from studies of adults reading to children. Our first goal is to present a review of research on reading to children of various ages in several different contexts. These studies were done for a variety of reasons. They illustrate how little is actually known about this phenomenon. When we conducted a comprehensive review of empirical studies (ERIC and PSYCHLIT searches) on reading to children, we took into account the context, school or home; the age of the children; what was being measured--reading development, listening comprehension, or vocabulary development; and the language of instruction teachers used. Our second goal in this paper is to investigate specifically the relationships we found between teachers reading to students in kindergarten and first grade classrooms in the course of a longitudinal study of reading comprehension and science knowledge development in grades kindergarten through sixth grade that was conducted primarily to address the question of how children learn to comprehend what they read.

We will review the effects of being read to by parents and teachers on young children's reading performance in four sections. First we will review studies that looked at general effects of parents reading to children, the general effects of teachers reading to children. Next we will review specific hypotheses about how reading to children might affect specific aspects of learning to read. The remainder of the paper will discuss a study which allows us to look longitudinally at several aspects of adult storybook reading.

## General Effects of Parents Reading to Children

Most of the studies of parents reading to children have been with preschool children. The theory behind this practice is obvious--before children are able to read for themselves, read to them.

Toward this end, several persons have emerged in the field who espouse these practices above all others (e.g., Strickland, 1985; Trelease, 1982). Their work centers on the practice of reading to preschoolers and children in the early grades alike. Therefore, it is aimed at both parents and teachers. They suggest that reading to children prepares them for learning to read, and even teaches them to read.

Research conducted with preschool children generally supports this practice, although when one looks closely at these studies, one finds that parents may have been doing a variety of things, or one finds that the reports focus solely upon a "reading to children" treatment and therefore did not explore other things parents might have been doing with their children. For example, Durkin (1966) in her very important work with children who were reading when they entered school found that parents that she questioned had read regularly to their children. She also found that those same parents had taught their children letter names and letter sounds. In addition, the parents had often provided chalkboards for their children to work on. We therefore do not know from Durkin's study which aspect of the parents' work with their children was most related to the development of the children's early reading ability.

These findings suggest that parents tend to read to precocious readers. In contrast, Scarborough (1992) found that dyslexic students tend not to have been read to as much as normally achieving children. Scarborough began observations of 78 two-year old children, half of which came from families in which at least one parent had a reading disability, and followed them until they were in second grade. She found no differences in the maternal language input given to those children who eventually became classified as dyslexic and those who would achieve normally. Nor was there a difference in their language skills at age 30 months. However, children who would become disabled readers were read to less often than those who become normally achieving. "The children who became disabled readers were typically read to almost daily by their mothers but less than once a week by their fathers, and amused themselves alone with books only 2 or 3 times per week. The preschoolers who became normal readers experienced only slightly more frequent mother-child reading, but were read to several times per week by their fathers and typically engaged

in solitary book activity about 5 to 7 times per week" (p. 40). Scarborough suggests that these differences may have been due the child's lack of interest, rather than by neglect by the parents. Possibly as a result of these differences, by the age of five, the children who eventually would be classified as dyslexic were significantly lower than the normally-achieving children on a number of language and reading measures, including measures of their knowledge of letter-sound correspondences and phoneme awareness.

Mason (1990) reported similar results when reviewing research of reading stories to preliterate children. In these studies with poor preschool children, Mason and McCormick (1989a, 1989b) found a positive relationship between parents' reading and re-reading predictable little books, that McCormick and Mason had written, to children and the children's early reading ability on a test they had developed (Mason & McCormick, 1979). Many of the words on this instrument also appear in the little books. This overlap between what parents and children were reading together and the children's later performance on the test suggests that the children were in fact benefitting from reading and being read to, although their reading performance may have been higher on the author-developed test than it might have been on other instruments.

Edwards, Weems, and Jampole (1988) conducted a study to teach lower SES mothers' book reading strategies. They worked with 30 lower SES mothers from Louisiana in 23 training sessions. Edwards and her colleagues first used the little books. Then they used five other types of books including picture books, easy-to-read books, and environmental print books. This report focuses upon changes in parents' behaviors during book reading. It does not assess changes in student performance in reading. In a later study, Edwards (1989) used regular storybooks. This work met with mixed success. The differences in the Mason and McCormick and Edwards work may be explained by differences between the books, parents, areas of concentration during the research studies, or measures used to determine differences in the children's reading performance.

Different results were found by Share and his colleagues (Share, Jorm, Maclean, & Matthews, 1984) in a comprehensive longitudinal study of 543 children that looked at prereading and oral language abilities, motor skills, home background, and the relationship of each to reading

achievement at the end of kindergarten and first-grade. The frequency with which parents read to their children correlated just .26 with children's reading performance at the end of kindergarten and .21 with their performance at the end of first grade. Similar results have also been reported recently by Chall, Jacobs, and Baldwin (1990) in their longitudinal study of 30 low-performing children.

Meyer et al. (in press) measured student achievement in a longitudinal study of reading in kindergarten through fifth grade and sent questionnaires to parents each of those same years. The correlations for parents' reports of the frequency of their reading to their children and children's measured achievement were never significant (they averaged about .21) at the various grade levels, with about 90% of the parents responding on average. In fact, they found a negative relationship between parents' reading and their children's achievement in one district in second grade. In contrast, correlations between such background factors as children's knowledge of letter names and their phonemic awareness and beginning reading ability were nearly always three times higher, in the .6 range (e.g., Share et al., 1984; Meyer, et al., in press).

Several studies have attempted to capture an element of child participation in the reading process before the children enter school and during their early elementary school years. Work by Athey (1981), Hewison and Tizard (1980), Durkin (1966; 1976), Wedel and Fowler (1984), Tizard, Schofield, and Hewison (1982), Hinchley and Levy (1988), Stanovich, Cunningham, and Teeman (1984), as well as Pikulski and Tobin (1989) all point to the *positive effects of having children actively involved in the reading process at home* both before they enter school and during their early elementary school years. Children's active involvement was most often described by parents as the children trying to read (or reading) materials on their own.

For example, the longitudinal study of Pikulski and Tobin (1989) found that the amount of reading that children did before starting school affected their reading performance once they were in school. Their strongest finding was that the amount of independent reading that children did in first grade, rather than the amount that they were read to, that was the strongest predictor of their later reading. This was the strongest predictor when achievement was measured at the end of first,

second, and fourth grades. However, it could be that early readers read independently because they could read better, rather than the other way around.

In summary, it appears that reading to children is certainly a highly promoted activity by professionals in the field of reading and well-meaning lay persons alike. The positive effects on children's reading achievement from parents reading to them appears to have taken place before children begin school, however. Furthermore, once children are in school, it is their *participation in reading* that appears to be positively related to their reading achievement.

## Research on Teachers Reading to Children

Surprisingly few naturalistic studies of the effects of teachers reading to children have been conducted (Hoffman, et al., 1991), especially if one considers the countless prescriptions to teachers that they read often and at length to their students (see, for example, Smith, 1982; and Clay, 1979, who argue convincingly that being read to helps children to differentiate oral and written language).

**Experimental studies.** Feitelson (1991; see also Feitelson, Kita, & Goldstein, 1986; Feitelson, Goldstein, & Iraqui, 1991; Feitelson, et al., 1991; Feitelson, Rosenhouse, Charadon, & Givon-Oz, 1991) reports the results of a series of experimental studies describing the effects of reading to 5- to 8-year-old Israeli speakers of Hebrew or Arabic. All of these six studies were carried out in naturalistic school settings, children were read to for several months, the texts read to children were action stories from trade books, studies were carried out simultaneously at several sites, located, in most cases, in different towns, and data included classroom observations, teachers' and observers' logs, and interviews with children and teachers, in addition to pre- and posttests. In all studies, children who had listened to story readings significantly outperformed age- or classmates on tests of reading (for kindergartners, listening) comprehension, with the results of pretests serving as covariate, in these and all other measures. Third graders who had participated in a story reading program for two consecutive years outperformed third graders who had taken part for only one year. In addition, children who had listened to story readings outperformed their counterparts in control treatments on a variety of active-use-of-language measures, derived from a picture-story-telling task.

The Feitelson studies merit consideration in a class by themselves. First, they are experimental in design. Second, and most important, all but one study was designed to have the children listen to stories in a language different from their native speaking language. In both Hebrew and Arabic the register used in daily discourse differs in many ways from standard literary language, the medium of school texts and children's literature. Thus, exposure to story-reading not only improved children's ability to comprehend literary language, but extended also to their including elements of standard literary language in their automatic expressive repertoire. Third, the children were then tested on reading achievement in the second language. Given these conditions, it makes a great deal of sense that teachers' reading would result in higher student achievement in reading. This context and treatment are quite different from observing classrooms naturalistically for long periods of time and correlating all activities observed with student achievement in the children's native language. One study (Feitelson, Kita, & Goldstein, 1986), however, was conducted totally in Hebrew. This work was done with first graders. Experimental and control classrooms of disadvantaged children were selected from the same school. Experimental teachers were directed to read to their students for 20 minutes every day for six months. They read from a multi-volume series of books that were very popular in Israel. Feitelson, et al. report that children in the experimental group often asked their parents to buy them books from the series. Then, children began reading the books for themselves. Given this extension of the teachers' reading treatment to children participating, it is not surprising that this study resulted in gains for the students in both comprehension and use of language.

**Naturalistic studies.** In contrast to the experimental studies are the findings of naturalistic studies. A close examination of these *naturalistic* studies of reading achievement in the early elementary grades that have included teachers reading to their students has yielded, however, without exception, a low to moderate negative correlation between this activity and student achievement in reading. A close examination of the studies in this category suggests a relatively straight-forward explanation for these different findings. First, the naturalistic studies (Meyer, et al.,

in press; Stallings & Kaskowitz, 1974) were conducted in similar ways. Researchers went in to entirely English-speaking elementary school classrooms and observed teachers by keeping track of time spent in *all activities* during a school day. They then correlated time spent in each activity to student performance in reading. Without exception, they found activities directly related to the reading process, such as letter sound practice and word reading, to be positively correlated with student achievement in reading. The amount of time teachers spent reading to students, however, correlated negatively with student achievement in reading. It appears that the farther one moves away from activities directly related to the reading process, the lower the correlation between that activity and reading achievement. Teachers reading to students is an example of this phenomenon.

## How Might Storybooks Impact Reading Acquisition

There are at least four proposed benefits of reading to children. Two of these effects are indirect, through the effects of storybook exposure on children's general language facility. Since reading ability is influenced by language ability (e.g. Gough & Tumner, 1986), improvements in children's understanding of oral language will affect their reading skill. Exposure to storybooks is proposed to develop children's knowledge of word meanings and their ability to comprehend more complex grammatical forms. Exposure to storybooks is also supposed to develop children's knowledge of a school-like language register. The third way is more direct. It has been proposed that children will directly learn print-related skills through exposure to words in storybooks. Finally, it has been proposed repeatedly, both in writing and in informal discussions with teachers, that reading storybooks aloud to children makes them more interested in reading. We will review the first two areas briefly, followed by a longer discussion of the third. We will not review the effects of storybook reading on children's interest, because we have been unable to find any research that speaks directly to this issue.

### Storybooks and Language Understanding

The language in storybooks is richer and more complex than language that children are exposed to in their daily conversations. Storybooks contain more descriptive vocabulary and longer

and more complex sentences than ordinary speech. Through exposure to storybooks, children are exposed to new word meanings, and to comprehend more complex grammatical forms.

**Growth in vocabulary.** Children seem to learn new word meanings incidentally from exposure to words in storybooks. In incidental learning, no attention is given to the target words prior to or during reading. Eller, Pappas, and Brown (1988) and Leung and Pikulski (1990) found that repeated reading aloud of storybooks, combined with retellings and discussion, encouraged preschooler's incidental learning of vocabulary. Elley (1989), working with 7- and 8-year olds, found gains of up to 15% in incidental word learning from storybooks. Nicholson (1991) replicated Elley's study, but found lower estimates of incidental gains, 2% for the below-average readers, 4% for average readers, and 10% for above-average readers when the tested words were presented in isolation. Nicholson, however, read the story only once to his subjects; Elley read the stories he used three times. Stahl, Richek and Vandevier (1991) also found gains of about 6% in incidental learning of word meanings for a single reading, using sixth graders. Elley (1989) also found gains of up to 30% if the reader directly discussed the words during reading.

These gains in incidental learning of word meanings through listening to storybooks are comparable to those found in studies of older children learning through reading. Nagy and Herman (1987), summarizing a number of their studies, report gains ranging between 5% and 15%, roughly the same as found in the listening studies. Nagy and Herman estimate that even an incidental learning rate of 5% can make a significant impact on children's vocabulary learning, given an adequate volume of reading over time.

Dickinson and Smith (under review) compared the effects of different teacher interactional patterns in storybook reading on children's vocabulary growth. From their observations, they derived three instructional patterns. The first was a Co-construction pattern typified by high amounts of teacher and student talk, including analysis, prediction and explanation of vocabulary, clarification, and attempts to extend and amplify comments. They called the second pattern Didactic-Interactional. This pattern was typified by limited talk as the book was being read, and most of the interactions dealing with class management. Some of the Didactic-Interactional teachers

used what Dickinson and Smith called a "basal reader" technique in which the teacher read a small section of the text followed by simple recall and comprehension questions. The third pattern seemed to be Performance-Oriented, which included little talk during the reading, but more talk before and after reading. Instead, the reading itself was treated as a performance, with the emphasis being on the author's words. Similar patterns have been found by Dickinson and Keebler (1989) and Mason, Peterman and Kerr (1989).

Only one of these patterns--the Performance-Oriented style--was significantly related to children's vocabulary growth when measured one year later. There were no differences between patterns on measures of story comprehension or print knowledge. Regardless of the overall pattern of reading, the amount of analytical talk that involved the teacher and the children during the book reading strongly predicted children's later vocabulary growth. The amount of analytical talk also strongly predicted children's performance on a story comprehension measure, also given one year later. These results compare with Elley's (1989) finding that children's learning of word meanings from storybook readings can be enhanced through discussion of the words' meanings during reading.

**Growth in syntactic understanding.** There have been a number of studies relating the reading of storybooks to children's understanding of more complex syntactical structures. Chomsky (1972) found that early school aged (6- to 10-year old) children's recognition of children's books, a measure of their exposure to storybooks, was strongly related to their acquisition of complex syntactic forms. More direct evidence comes from studies such as those of Whitehurst, Falco, Lonigan, Fischel, DeBaryske, Valdez-Menchaca, and Caulfield (1988), who were able to increase the mean length of utterance of 21- to 35-month old children through an experimental reading program.

In these studies, the rates of language acquisition are relatively constant and seem to come through children's attempts to understand what they are listening to (Elley, 1989). By processing the information that they are hearing, children ordinarily accumulate aspects of meaning about new words (see Stahl, et al., 1991), as well as information about the logical relations implied by the syntactic elements of language. These effects seem relatively constant despite different styles of

reading. The next proposed benefit from storybook reading, acquisition of a literary register, seems to be more influenced by different reading styles.

**Acquisition of a school-like orientation to books.** The language of storybooks differs from that of ordinary speech in other ways aside from vocabulary and sentence structure. Storybooks use a literary register, different from that of ordinary conversation. Olson (1977) distinguished between "utterance" and "text." In Olson's terms, "utterances," such as those in ordinary speech, are highly contextualized messages between face-to-face speakers who share a common communicative context. The shared context allows a great deal of information to be omitted from the discourse, since that information can be inferred from the context. The statement, "What is that?" is ambiguous in writing, since the reader has no idea what "that" might be. In speech, what "that" is might be signalled by pointing, or it might be obvious to both speakers. Since the speakers are face-to-face, any ambiguities or lack of understanding can be discerned and corrected on the spot. In contrast, "text," typified by writing and reaching its apotheosis in the work of essayists such as Mills and Locke, is autonomous since writers do not necessarily know their readers personally. While writers do expect that their readers share some knowledge, they need to specify more information than do speakers.

The language of schoolbooks is the autonomous language of text. Olson (1977) hypothesizes that this different register causes problems for children, unless they have made an effective transition from "utterance" to "text." There are a number of means of making this transition. Baker and Freebody (1989) suggest that the language of children's first books helps make this transition, by both using language intermediate between that used in preschool children's conversations and that used in third-grade texts and by the content providing a scaffold to help children learn about schooling. Olson and Nickerson (1978) discuss how teachers explicitly scaffold text to provide the link between the contextualized language of the home and the autonomous language of schooling.

Parents' reading of storybooks also can provide a scaffold to aid this transition. Snow (1983), analyzing the patterns of her reading to her son, suggests that parents try to provide a

scaffold to aid their children's understanding of the story as they read. Parents provide this scaffold through elaboration of points that they feel their child might not understand, questioning of key incidents, and so on. The nature of this scaffolding changes as their children grow more competent in their understanding of book language. Snow and others (e.g., Pelligrini, Perlmutter, Galda, & Brody, 1985) see the interactions between mother and child in terms of Vygotsky's notion of the "zone of proximal development." In this analysis, parents scaffold the story, by providing as much support as the child needs. As the child becomes more competent, the parent provides less support.

There may be social class differences in the pattern of storybook reading exhibited by Snow (1983) and her son. Heath (1982) found that the scaffolding observed by Snow (1983), Snow and Ninio (1986) and others was the predominant pattern found in Maintown, a mainstream, middle-class, school-oriented community in the Southeastern United States. These children learn to give attention to the content of books, acknowledge and answer questions about books, modelling their comprehension processes on the questions asked by adults (cf. Wixson, 1983), accept books as entertainment, and understand that "book talk" is different from real talk. In contrast, parents in Roadville, a white mill community, stress "the letters of the alphabet, numbers, names of basic items pictured in books, and simplified retellings of the plots" (p. 59). In Trackton, a poor black community, there was little or no storybook reading at all. However, in Trackton, there was a rich oral tradition of storytelling. Heath found that these different patterns of interactions around storybooks predicted different types of interactions in school. The Maintown children were best prepared for the demands of school, having practiced school-like behaviors in their home. In Heath's view, Roadville children needed a different orientation to books, from labelling to a participant frame of reference, linking information in the text to their environment. Trackton students need to learn about the stylization and decontextualization that characterizes books, to make that transition between "utterance" and "text" that Maintown students have already made.

## Effects of Storybook Reading on Print Specific Knowledge

It seems clear that storybook reading affects children's language ability, in vocabulary knowledge, ability to comprehend and use more complex syntactic structures and the ability to understand the literacy register typical of school books. Reading to children has also been proposed as a means for children to learn about print (e.g., Goodman & Goodman, 1979). Following multiple readings of favorite storybooks, children have been observed engaging in pseudoreading, or a pretend reading telling a story along with the pictures. As children hear the story more often and become more sophisticated in their use of print, their "story" becomes closer to the text. Through "fingerpointing," or following the print while reading the story, it has been suggested that children learn about print, including the development of letter-sound knowledge and a sight vocabulary (Schickedanz, 1981; Sulzby & Teale, 1987).

In view of these several reasons to expect that parental reading to children, especially to preschool-age children, should have a positive impact on their later reading achievement, including print knowledge, one might also expect that reading to children by teachers would also be beneficial. So how can we further explain the consistent results of teachers reading to students resulting in a negative relationship to student achievement in reading? We will now turn to a close examination of teachers reading to students in kindergarten and first grade in the context of a longitudinal study of reading development.

## Results from a Longitudinal Study

### Subjects and School Districts

The longitudinal study of reading comprehension development has been described in great detail elsewhere (Meyer, Wardrop, & Hastings, 1990). Therefore, this section will focus on those elements germaine to the question of the relationship of teachers reading to students and their achievement in reading. Three districts participated in the study.

District A is a fairly self-contained small town in the center of the state of Illinois. Over the years of the longitudinal study, there were approximately 80 children participating from this district.

Throughout the grades, whole class instruction dominated in all subject areas. Therefore, since a minimal amount of grouping occurred in the early grades, this meant a high number of teacher interactions per child during instructional time and little independent work. Even children with special needs had regular classroom teachers for their primary instruction. District A used *Alpha K Time* (Reiss & Friedman, 1976) at the kindergarten level, and the *Houghton Mifflin* (Durr, LePere, Alsin, Bunyon, & Shaw, 1979) materials for grade 1.

District B is located in a small town in Illinois from which many of its residents commute to work in a nearby city. Approximately 150 children participated in the study. Children were grouped for reading instruction in kindergarten and first grade. In these early grades, teachers' interactions during instructional time engaged the children in the teacher-directed small group leaving those not in the group to work independently. In District B, the *Harcourt Brace Jovanovich* (Early, Cooper, Santeusanion, 1979) reading program was used at all grade levels.

District C is located in a suburb of a major city and has many characteristics of an urban school. Only one school from this district participated in the Longitudinal Study. The student population there was quite heterogeneous. Children in this school were of mixed socio-economic and ethnic backgrounds. About 40% of the children were black, 20% were Hispanic, and the rest were white. There were approximately 85 Cohort 1 children in the study. In the early grades, much of the reading instruction in this school was conducted using a "team" approach, in which a group of children would be assigned to one of three teachers on the team. Special teachers played a very important role in this school in District C, and some children were absent during observations used for this report because they had been pulled from the regular classroom. In this district, the *Ginn* (Clymer, Wong, & Benedict, 1976) reading program was used for grades one and two, although some "low-stanine" children with decoding problems were provided additional reading instruction from the *Distar Reading Program* (Engelmann & Bruner, 1983).

As these brief descriptions suggest, there was substantial natural variation between these districts with respect to the way reading was taught. There was also considerable variation in the

characteristics of the populations residing in the three districts. Each of the districts may have been fairly typical of numerous school districts in the United States. Together they yielded a composite of characteristics that typified many American elementary schools at the time data were collected and probably still do. The districts were different enough, however, that most analyses will be reported at the district level.

## Data Collection

**Classroom observations.** The overall classroom observation methodology for this study is described in depth elsewhere (Meyer, Linn, Mayberry, & Hastings, 1985). Therefore, only a brief account of the procedures will be presented here. Teachers are observed for nine full days each school year between the months of October and April using a continuous coding system. Observers tape record and make written scripts of the time each activity begins and ends while recording each instructional interaction the teacher has with individuals, small groups, or the whole class within each activity. This coding system allows analysis of instruction at the individual student, small group, and whole class level. Managerial comments (praise and corrective statements) to individuals or groups are tallied separately from instructional interactions.

Instructional interactions are coded on the basis of the task the teacher's interaction requires the students to perform. For example, when a teacher says, "I'm going to read you a story about a polar bear. Who can tell me what a polar bear is?" we would code that as a background knowledge question because the children have to answer it from information already in their heads. If, on the other hand, a teacher pointed to a letter on the chalkboard and asked, "What sound is this?" the interaction would be coded as a letter sound interaction. When a teacher is not working with an entire class (when children are grouped for instruction, or when they are doing independent work, for example) the coding procedure expands to sweep the entire classroom and record the percentage of students on task, regardless of the "task" they are assigned. At the end of each observational day, we interview teachers to ask: Was this a typical day? Are there any new

materials or children in your classroom? Have you been absent, or have there been any changes in curriculum since we were here last? And, is there anything else you would like to tell us?

This procedure has produced 36 "full-day" observations of the half-day kindergarten teachers described herein, and 18 "full-day" observations of the three whole-day kindergarten teachers in one district. All of the first-grade teachers in all three districts participating in this study have been observed for full days as well. Inter-rater reliability has consistently been above .90 for observations each year when measured by paired observations, double coding of scripts, and practice sessions for observers with audio and video tapes.

## Kindergarten Measures

When the children were in kindergarten, we administered five tests in the fall, one test about midyear, and six tests in the spring. Each is described next.

**Early Reading Test.** Mason (1983) developed this test to measure kindergarten children's ability to recognize words in familiar and unfamiliar contexts. The test also included arranging magnetized letters and reading predictable short stories.

**WPPSI Sentences.** We administered the Sentences subtest of the Wechsler Preschool and Primary Scale of Intelligence, WPPSI (Wechsler, 1967) in the fall of kindergarten. The examiner read 10 sentences of increasing length that the children were to repeat. Testing was discontinued after three consecutive errors. Omissions, transpositions, additions, and substitutions were scored as errors.

**Wide Range Achievement Test.** We administered the reading subtest, Level I of the Wide Range Achievement Test (WRAT) (Jastak, Jastak, & Bijou, 1978) both in the fall and spring of kindergarten. Items on the WRAT reading subtest consist primarily of a series of increasingly difficult words which children read aloud to an examiner. The measure is individually administered and has a stopping rule whereby 12 consecutive errors terminate administration.

**CIRCUS Listening Test.** The first of the CIRCUS listening tests, Listen to the Story (Educational Testing Service, 1976a) was administered in October of the kindergarten year. The

next level of the same instrument was administered in the spring of that same year. Each test presents a simple story. Children listen to the examiner read and then mark pictures that answer questions raised about the story.

**The Language and Problem Solving Battery.** Mason and Meyer developed the Language and Problem Solving Battery (1983) for a longitudinal study of reading comprehension. The Analogies Subtest of that battery has been used in most of the analyses.

**Chicago Reading Test.** The Chicago Reading Test (Barr, 1983) was given during the winter of the kindergarten year. The Chicago tests children on consonant sounds, vowels, and word endings, word families (e.g., *cat, fat, . . . nat*), and nonsense words (e.g., *fon*).

**California Achievement Test.** The reading subtest of the California Achievement Test (CAT) (CTB/McGraw-Hill, 1973) was administered to all children in the spring of their kindergarten year. This subtest was selected because one of the participating districts routinely administered this test and because we felt it was important to include a norm-referenced reading test at the kindergarten level.

**Stanford Achievement Test.** The reading subtest of the Stanford Achievement Test (SAT) (Madden, Gardner, & Collins, 1982) was also administered at the end of kindergarten. This subtest was also routinely administered in a district participating in the study. It is a traditional measure of children's abilities to select words after they have been given a beginning sound.

**TOBE.** The *Test of Basic Experiences* (*TOBE-2*) (Moss, 1978) was used as an end-of-year measure for kindergarten and first grade. On this instrument, children were asked to choose one of four line drawings in response to orally-administered item stems.

**Woodcock Reading Mastery Test.** Like the WRAT reading subtest, the Reading Comprehension Passages subtest of the Woodcock test (Woodcock, 1973) was administered out-of-level in the spring of kindergarten. The basic format of this test consists of increasingly difficult cloze passages children read. This measure is also individually administered and a stopping rule based on five consecutive errors is used to terminate administration. In kindergarten, the mean

scores were so low because it was given out-of-level (averaging <5 correct) that we considered this measure to be invalid because of its restricted range and did not include it in the analyses.

## First Grade Measures

The WRAT and the Woodcock were administered again in first grade as were the Chicago and the CIRCUS Listening Test.

**Error Detection.** The *Error Detection Test* (Meyer, Hastings, Greer, & Linn, 1985) was administered to both first- and second-graders in the study. This instrument attempts to measure a cognitive domain (detection of errors in written sentences and sequences), number of decoding errors, and children's ability to provide support for detected errors. The instrument used reading vocabulary which was common to all three districts. Finally, it depended on science concepts and processes about plants, content which was common to all three schools.

**CIRCUS-Think It Through.** The *CIRCUS-Think it Through* (Educational Testing Service, 1976b) was used as a beginning of year variable for both first and second grade. In first grade, it appeared to measure only verbal performance.

**Evans.** This 34-item measure was developed by Evans in 1983 to measure children's early childhood school sentiment. The questionnaire makes statements about Ziggy the dog's feelings about school. It was used in first grade. We supplied each child with an answer sheet. They circled yes if the item read to them matched how they felt about school and no if it did not.

**Interactive Reading Assessment System (IRAS).** The Interactive Reading Assessment System (IRAS) (Calfee & Calfee, 1982) requires students to read lists of eight words each until a stopping rule applies or until the last list is read. Rate, accuracy, and self-corrections are recorded. Students then read passages of increasing length and difficulty until they have made more than 10 decoding errors and missed at least half of the comprehension questions. Rate, accuracy, and self-corrections are recorded for this section as well. Correctness of response to questions based on the passages with or without a prompt is also recorded.

# Results

## Relationships Between Classroom Activities and Student Performance

The data we have of this negative relationship between the amount of time adults spend reading to children in Kindergarten and their reading achievement, and the lack of a relationship in first grade is puzzling. It also contradicts the experimental evidence, from studies which were well done, and which we expected to be confirmed in the observational data.

Therefore, we went looking in the data for reasonable explanations that make sense. We started with a series of hypotheses about why adult reading to children might have a negative correlation and interrogated our data about these hypotheses. Because of the richness of our data set and its longitudinal nature, we could test a number of competing hypotheses.

One possible explanation for this negative correlation is that teachers who spend a lot of time reading also engage in other activities that are relatively ineffective or that time spent reading to children displaces other instructional activities that are more effective. The correlations among the observational variables provide some indirect support to both of these possibilities. As can be seen in Table 3, amount of reading to children is positively correlated with both the amount of time spent in opening and closing and in transition, the two other activities that have negative correlations with achievement. On the other hand, amount of reading is negatively correlated with the remaining, more instructionally-oriented teacher activities.

## Kindergarten Analyses

**Measures.** The first thing we looked at was the measures that were used. One explanation might have been that the measures were not particularly sensitive to the effects of story reading. We had a variety of measures, largely standardized reading achievement measures, because of the time this data was collected (1984) and the logistics of testing 309 subjects in three different communities. Meyer and Linn and their colleagues gave these students the Kindergarten versions of the CAT (California Achievement Test), and the Stanford. In addition, they gave the comprehension section of the Woodcock Reading Mastery test and the WRAT, the Wide Range Achievement Test.

Although the WRAT and the Woodcock are both wide-range measures, only the WRAT is normed from Kindergarten to Grade 12. The Woodcock was given out-of-level at the end of kindergarten so that an individually-administered measure of reading comprehension would be part of the kindergarten data set. No kindergarten reading comprehension measure could be found. They wanted to be able to use these measures throughout the years of the study to examine growth. They also used a measure developed by Barr, The Chicago, which largely measured children's decoding skills, and a Listening measure, from the Circus test.

Therefore, the measures did weigh very heavily on the decoding side of reading. Measures like the WRAT and Chicago were pure measures of decoding. The reading subtests of the CAT and Stanford were also strongly weighted toward letter recognition and early sound-symbol correspondence skills.

**Correlations of measures and adult reading.** Examining individual correlations, we did find that the correlations between adult story reading and achievement were more strongly negative on the two most decoding-oriented tests--the Chicago and the WRAT--and somewhat less so on the CAT and Stanford. The correlations between adult story reading time and the listening measure of the CIRCUS, on the other hand, were positive and moderate in strength. These results appear in Figure 1.

**[Insert Figure 1 about here.]**

Therefore, one explanation of these results is that adult story reading may have a negative effect on children's knowledge of decoding (letter names, letter sound correspondences, etc.) while it has a positive effect on their listening skills.

The idea that made most sense from the beginning to explain the negative relationship between the time teachers spent reading to children and their performance in reading was a displacement theory--that the amount of time that adults spent reading stories may have displaced something else, and that this something else positively affected children's reading achievement. The obvious thing to be displaced was activities involving written text. It would make sense that the more time students spend engaged with print, the better they will be at decoding it.

We had a number of classroom observational variables concerned with print-related activities. These include the amount of time spent reading text, the mean number of letter sound interactions, sounding out word interactions, etc. We combined these into three general categories--phonics, comprehension, and text reading. Our intention was to correlate the amount of time spent in these categories with reading achievement. A new problem presented itself immediately. Only one of the three districts spent an appreciable amount of time on "reading" activities in kindergarten. The others did not. These results appear in Figure 2. District A was the only setting in which one could find reading activities in Kindergarten, and as Figure 2 shows, these activities were largely phonics, they averaged 30 minutes per day. The teachers in this district also spent considerably more time on comprehension and text reading than the other districts. In addition, District A also had the lowest amount of adult story reading and the highest reading achievement of the three districts. So, in terms of district policy, in District A print was emphasized, while adult story reading was de-emphasized. In District C, the opposite was true. These children spent only a small amount of time on text reading, but a great deal of time on adult story reading. District B spent relatively little time on either.

**[Insert Figure 2 about here.]**

When we compared the correlations between the total amount of reading activity--phonics, comprehension, and text reading--and print knowledge, as you might expect, they were strong and positive. These results are evident in Figure 3. However, the correlations between amount of reading activities and performance on the listening measure were moderately strong and negative. Thus, they are the mirror image of the results for adult story reading. This would be in accordance with our displacement theory, but because of the confounding of story reading, reading activities, and district, it is still difficult to explain the results.

**[Insert Figure 3 about here.]**

It is possible that, if reading to children improves their listening comprehension, through acquisition of new vocabulary, learning the "register" of written language, etc., then the effects of reading to children may be delayed and might be found on a later reading achievement measure.

Because this is a longitudinal study, we have data from later years which we can use to test this. We have correlated the amount of adult reading time in Kindergarten with children's reading achievement at the end of first grade, and found roughly the same relationships we found in Kindergarten. The correlations are negative, although of slightly less magnitude than those in Kindergarten. They range from -.11 for the Woodcock, -.15 for the WRAT, and -.16 for the IRAS, a measure of oral reading and reading comprehension. So the effects of adult reading in Kindergarten do not seem to be seen as early as first grade. In parallel analyses, we correlated the amounts of time spent in reading activities in Kindergarten to various reading achievement measures. These were all positive, and moderate in strength, ranging from .19 on the Woodcock, to .27 on the WRAT, and .24 on the IRAS. Note that at the first-grade level, the Woodcock and the IRAS are valid measures of reading comprehension. Once again, reading activities seem to improve children's reading, just listening to stories does not.

**Correlations of parents' reports of children's reading and children's reading achievement.** Another way to look at these two variables, the amount of adult story reading and the amount of print-related activities, and their effect on reading achievement is through the parent questionnaires. We had two parallel categories--and index of the amount of time that parents said they read to their children and an index of the child's participation in reading activities in the home. The parent reading to children index is based on questionnaire items such as "Do you read to your child? DAILY WEEKLY OCCASIONALLY HARDLY EVER NO" and "Does your child have a favorite book? YES NO. If yes, how many times have you read it?" The child participation index is based on items such as "Does the child ever try to read to you? DAILY WEEKLY OCCASIONALLY HARDLY EVER NO" and "Do any family members help the child read? DAILY WEEKLY OCCASIONALLY HARDLY EVER NO."

Unlike in the school data, the relationships between parents reading were positive, but they were weak and not statistically significant, as seen in Figure 4. The relationships between the children's participation in reading and achievement were much stronger, however, and statistically reliable.

Putting these two sets of analyses together, we can make a case, not an ironclad one, but a case nonetheless, that merely reading aloud to a child will not really help him or her to become a better reader. Instead, the child has to participate actively in reading text. In other words, "just reading" is not magic, but having the child actively participate with the print may be the essential ingredient. This appears to be true, at least in Kindergarten.

## First Grade Analyses

**Correlation of measures and adult reading.** In first grade, we found no relationships between the amount of adult story reading and reading achievement, nothing positive or negative. The correlation was as close to zero as possible, ranging from .02 for the WRAT to .07 for the Woodcock. In addition, the correlations between adult reading time and listening comprehension at the end of first grade were also close to zero (.04). Given the power of our data because of the large number of subjects, one might conclude that no linear relation exists. (In addition, we looked for a curvilinear relationship between these two variables and failed to find one.)

As in the Kindergarten analysis, we also looked at the relationships between time spent reading text and reading achievement. These correlations were moderate and positive. For example, this variable had a .35 Spearman correlation with the composite reading achievement variable, .31 with the WRAT and .25 with the Woodcock. We also found a -.24 correlation of time spent reading text with time spent on adult reading. That is, there was a moderate tendency in classes which spent more time in adult story reading for the students to spend less time on text reading.

# Discussion

There seems to be no magic in just reading to children. Instead, the magic comes as you engage students with print, and it is this engagement with print that helps children become readers. Although it appears that parents reading to children before kindergarten has a positive relationship with children's entering reading ability at the kindergarten level, the relationship is weak. Only about 5% of the achievement variance is predicted by differences in amount of reading to children

by parents. Activities more directly related to print, however, both at home with preschoolers and once children enter kindergarten and first grade and are with teachers show positive relationships with children's print knowledge. It would make sense that the more time students spend engaged with print, the better they will be at decoding it. Without exception, studies such as Meyer et al. (in press) found activities directly related to the reading process such as letter sound practice, and word reading to be positively correlated with student achievement in reading. The farther one moves away from activities directly related to the reading process, however, the lower the correlation between that activity and reading achievement. Teachers reading to students is a clear example of this phenomenon.

The effects of storybook reading on children's reading acquisition are indirect, through facilitation of language development and through exposure to the "register" of written language. Children can learn new word meanings through exposure to them in storybook reading, and this incidental learning can measurably improve children's vocabulary knowledge. Exposure to storybooks also seems to improve children's ability to understand and use complex sentence structures, another form of knowledge related to success in reading (Chomsky, 1972). Vocabulary knowledge is, of course, strongly related not only to children's reading achievement, but also to measures of more general aptitude (see Anderson & Freebody, 1981). However, the effects of vocabulary knowledge on reading skill seem to be greatest in later school years, and lowest in the primary grades (see Stanovich, Cunningham, & Freeman, 1984). More important in the primary grades are phoneme awareness, letter knowledge, and word recognition, abilities which seem to be prerequisite to learning words from exposure to storybooks, rather than developed through such exposure.

Children also learn the register of literary language through exposure to storybooks. They learn to play the "game" of school as well, especially through the questioning interactions typical of middle class households (Heath, 1982). Storybooks can aid in the transition from the contextualized language use of the home to the autonomous language use typical of textbooks and learned discourse.

As we said in the beginning of this paper, we could not find research that spoke to the question of whether reading books aloud to children makes them more interested in reading or in learning to read. There is a need, not only for research in this area, but for research that speaks to the more general question of what makes children interested in reading.

In summary, it appears that reading to children is certainly a highly promoted activity by professionals in the field of reading and well-meaning lay persons alike. The positive effects on children's reading achievement appears to have taken place before children begin school. Furthermore, once children are in school their *participation in reading* appears to be positively related to their reading achievement.

We are not suggesting that parents, kindergarten, and first-grade teachers stop reading to students. We believe that there are numerous positive effects for adults and children alike from these times together. But, reading storybooks to children is not a reading program. It is part of a reading program. The direct benefits from exposure to storybooks can only come if children develop print related skills, such as phoneme awareness and some word recognition. These should be developed in addition to the language development that can come through storybook reading. Reading books to children should not supplant the instruction in reading that leads to phoneme awareness before children enter school and practice with text after children enter school that have been found to be positively related to their achievement in reading. The strong recommendations for adult storybook reading, cited earlier, are beginning to be reconsidered. For example, Frank Smith (1992), a noted whole language theorist, proposes a stronger role for teacher assistance in children's learning to read:

> . . . Children do not learn to read by osmosis (maliciously said to be a whole-language belief) or by being left to their own devises. It may not be necessary to instruct children on how to read, but it is essential to encourage and assist them. Teachers do not abdicate responsibility when they embrace the philosophy of whole language . . . instead, they accept the responsibility of ensuring that every child join

> the readers' club, fully admitted into the company of authors and not left frustrated on the doorstep. It is the role of teachers . . . to teach. . . . Children must learn from people: from the teachers (formal and informal) who initiate them into the readers' club and from the authors whose writing they read . . . . (p. 441)

What Smith seems to be saying is that children learn about reading through an active interaction with adults about books, rather than passively observing others read. Our results certainly support this conclusion: it is through active involvement in reading that children acquire the print-related knowledge and skills needed to become good readers. Being read to is not enough.

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## Table 1

Intercorrelations of Fall and Spring Measures for Cohort 1 (N = 325)[a]

| | ERT PIC WDS 101 | ERT WDS 102 | ERT SP PHONEM 103 | WPPSI 104 | TOTAL WRAT 105 | MONK PIC SCORE 106 | ANALOGIES 107 | STATE. REP 108 | CLASSIFICA. 109 | # T UNITS 110 | CIRCUS-COMP 111 | CIRCUS INTERP 112 | C & V's:ORD 201 | ENDINGS:ORD 202 | WFAM's:ORD 203 | CAT 301 | SAT 302 | CIRCUS 303 | TOBE 2 304 | WRAT-WDS 305 | WOODCOCK 30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.00 | | | | | | | | | | | | | | | | | | | | |
| 2 | .64 | 1.00 | | | | | | | | | | | | | | | | | | | |
| 3 | .23 | .44 | 1.00 | | | | | | | | | | | | | | | | | | |
| 4 | .47 | .43 | .32 | 1.00 | | | | | | | | | | | | | | | | | |
| 5 | .49 | .59 | .44 | .52 | 1.00 | | | | | | | | | | | | | | | | |
| 6 | .27 | .26 | .30 | .51 | .44 | 1.00 | | | | | | | | | | | | | | | |
| 7 | .33 | .34 | .34 | .57 | .49 | .54 | 1.00 | | | | | | | | | | | | | | |
| 8 | .30 | .25 | .32 | .56 | .42 | .47 | .64 | 1.00 | | | | | | | | | | | | | |
| 9 | .36 | .37 | .31 | .53 | .52 | .51 | .64 | .54 | 1.00 | | | | | | | | | | | | |
| 10 | .00 | .07 | .03 | .16 | .08 | .25 | .07 | .16 | .05 | 1.00 | | | | | | | | | | | |
| 11 | .36 | .33 | .28 | .45 | .47 | .39 | .50 | .40 | .44 | .10 | 1.00 | | | | | | | | | | |
| 12 | .30 | .28 | .26 | .39 | .43 | .35 | .48 | .43 | .41 | .09 | .59 | 1.00 | | | | | | | | | |
| 13 | .33 | .44 | .43 | .41 | .61 | .29 | .40 | .38 | .39 | .05 | .37 | .34 | 1.00 | | | | | | | | |
| 14 | .20 | .40 | .53 | .36 | .47 | .31 | .33 | .29 | .31 | .08 | .29 | .29 | .55 | 1.00 | | | | | | | |
| 15 | .22 | .39 | .61 | .34 | .46 | .33 | .32 | .30 | .31 | .04 | .28 | .24 | .57 | .81 | 1.00 | | | | | | |
| 16 | .47 | .43 | .27 | .38 | .57 | .29 | .48 | .42 | .38 | .05 | .43 | .41 | .55 | .29 | .30 | 1.00 | | | | | |
| 17 | .42 | .50 | .32 | .38 | .58 | .32 | .44 | .35 | .41 | .10 | .47 | .37 | .60 | .36 | .37 | .75 | 1.00 | | | | |
| 18 | .45 | .43 | .32 | .53 | .58 | .51 | .64 | .57 | .59 | .05 | .56 | .52 | .50 | .37 | .34 | .49 | .59 | 1.00 | | | |
| 19 | .46 | .39 | .26 | .49 | .50 | .46 | .57 | .51 | .52 | .06 | .53 | .41 | .40 | .27 | .25 | .47 | .54 | .69 | 1.00 | | |
| 20 | .28 | .50 | .50 | .35 | .56 | .32 | .34 | .23 | .29 | .16 | .30 | .28 | .59 | .69 | .72 | .43 | .53 | .41 | .30 | 1.00 | |
| 21 | .27 | .44 | .44 | .34 | .50 | .25 | .29 | .21 | .30 | .14 | .26 | .23 | .48 | .55 | .60 | .30 | .40 | .37 | .27 | .80 | 1.00 |

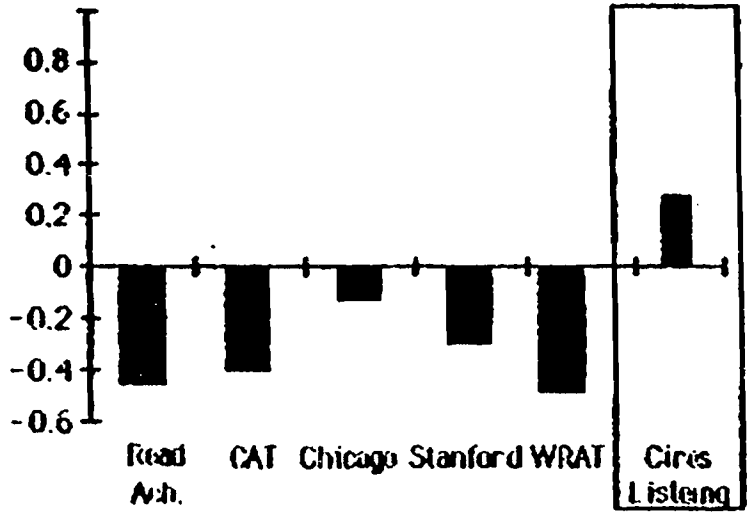
[a]Instruments 101-112 were administered in the early fall. The three scores (201, 202, and 203) for the Chicago test were obtained in the winter. The remaining measures were administered in the spring. All instruments except the CAT, SAT, CIRCUS, and TOBE 2 were administered individually.

## Table 2

Intercorrelations of Selected Classroom Variables and Test Scores for Cohort 1 (N = 14 Teachers; N = 325 Children)[a]

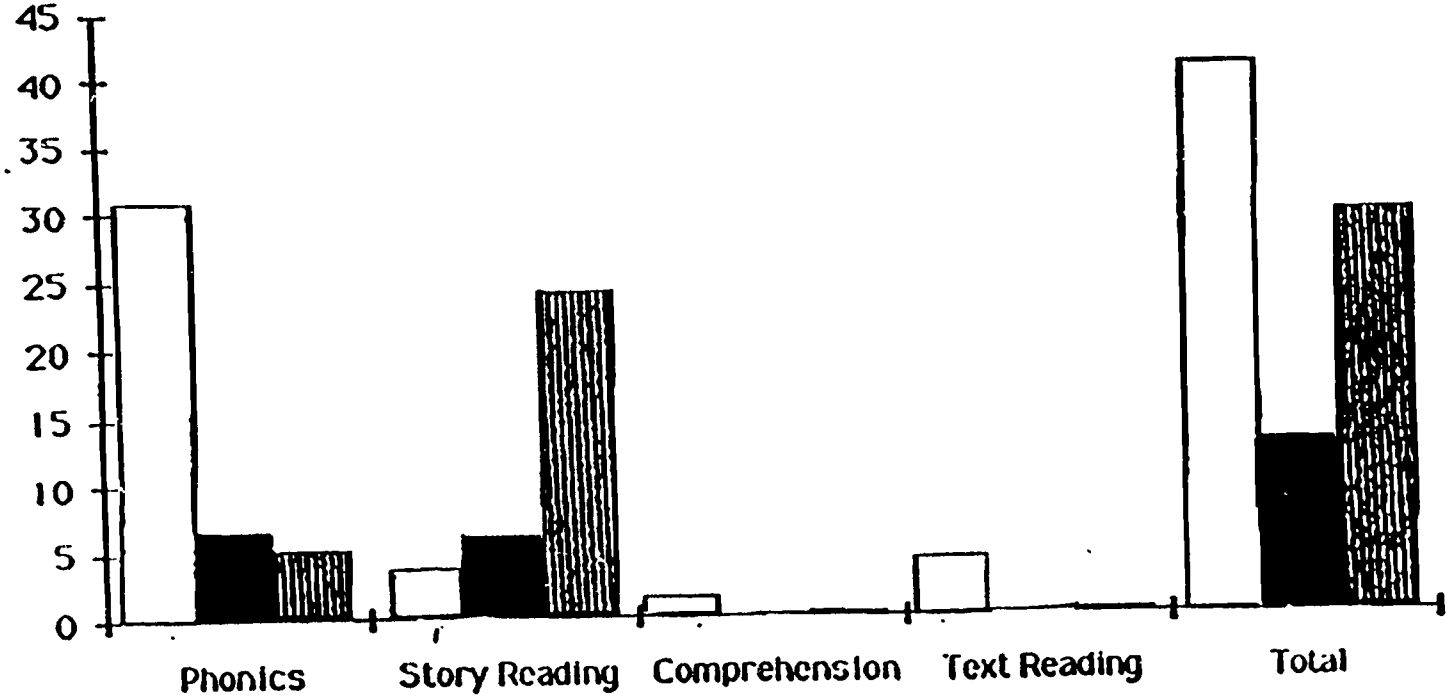
| | OPEN/CLO | TRANSITION | DECODING | SMGRD | SMGRP | ADULT RDG | OTHER (MOVIE, ETC.) | FREQ INTER | FREQ FB | CAT | SAT | CIRCUS | TOBE 2 | WRAT-WDS | WOODCOCK | CHICAGO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 13 | 14 | 23 | 28 | 29 | 33 | 51 | Q | F | | | | | | | |
| Mean | 87.9 | 76.4 | 48.9 | 11.6 | 6.5 | 45.8 | 31.1 | 569.2 | 87.1 | 17.7 | 22.7 | 25.8 | 20.8 | 27.5 | 2.3 | 32.0 |
| S.D. | 36.3 | 39.2 | 41.1 | 19.4 | 14.3 | 31.9 | 21.4 | 280.4 | 69.1 | 1.4 | 1.5 | 1.4 | .9 | 1.9 | 1.1 | 11.2 |
| 13 | 1.00 | | | | | | | | | | | | | | | |
| 14 | .70 | 1.00 | | | | | | | | | | | | | | |
| 23 | -.19 | -.37 | 1.00 | | | | | | | | | | | | | |
| 28 | | -.33 | .80 | 1.00 | | | | | | | | | | | | |
| 29 | | -.24 | .54 | .80 | 1.00 | | | | | | | | | | | |
| 33 | .66 | .71 | -.26 | -.44 | -.31 | 1.00 | | | | | | | | | | |
| 51 | -.38 | -.39 | .48 | .56 | .54 | -.55 | 1.00 | | | | | | | | | |
| Q | -.62 | -.57 | .82 | .84 | .75 | -.60 | .72 | 1.00 | | | | | | | | |
| F | -.17 | -.33 | .71 | .70 | .35 | -.14 | .10 | .55 | 1.00 | | | | | | | |
| CAT | -.58 | -.71 | .46 | .52 | .45 | -.69 | .50 | .64 | .14 | 1.00 | | | | | | |
| SAT | -.53 | -.32 | .44 | .61 | .50 | -.45 | .51 | .61 | .17 | .79 | 1.00 | | | | | |
| CIRCUS | -.25 | .00 | -.24 | -.19 | -.12 | .22 | -.01 | -.05 | .04 | -.16 | -.06 | 1.00 | | | | |
| TOBE 2 | -.15 | .12 | -.36 | -.27 | -.22 | .05 | -.28 | -.27 | -.34 | .23 | .36 | .09 | 1.00 | | | |
| WRAT-WDS | -.75 | -.66 | .62 | .62 | .42 | -.71 | .65 | .84 | .40 | .63 | .61 | -.08 | -.30 | 1.00 | | |
| WOODCOCK | -.31 | -.17 | .54 | .57 | .36 | -.33 | .34 | .58 | .62 | .12 | .31 | -.22 | -.41 | .64 | 1.00 | |
| CHICAGO | -.29 | -.14 | .62 | .85 | .66 | -.44 | .50 | .72 | .54 | .38 | .59 | -.26 | -.36 | .69 | .80 | 1.00 |

[a]In this table time in the following activities observed: opening and closing exercises, transitions, decoding without a written text, small group reading followed by a written text and in a reading book, adults reading to children, and other activities such as movies were correlated with the frequency of teachers' interactions and feedback and subscores on the spring administrations of the CAT, SAT, CIRCUS Listening Test, TOBE 2, WRAT words, Woodcock, and total Chicago score.



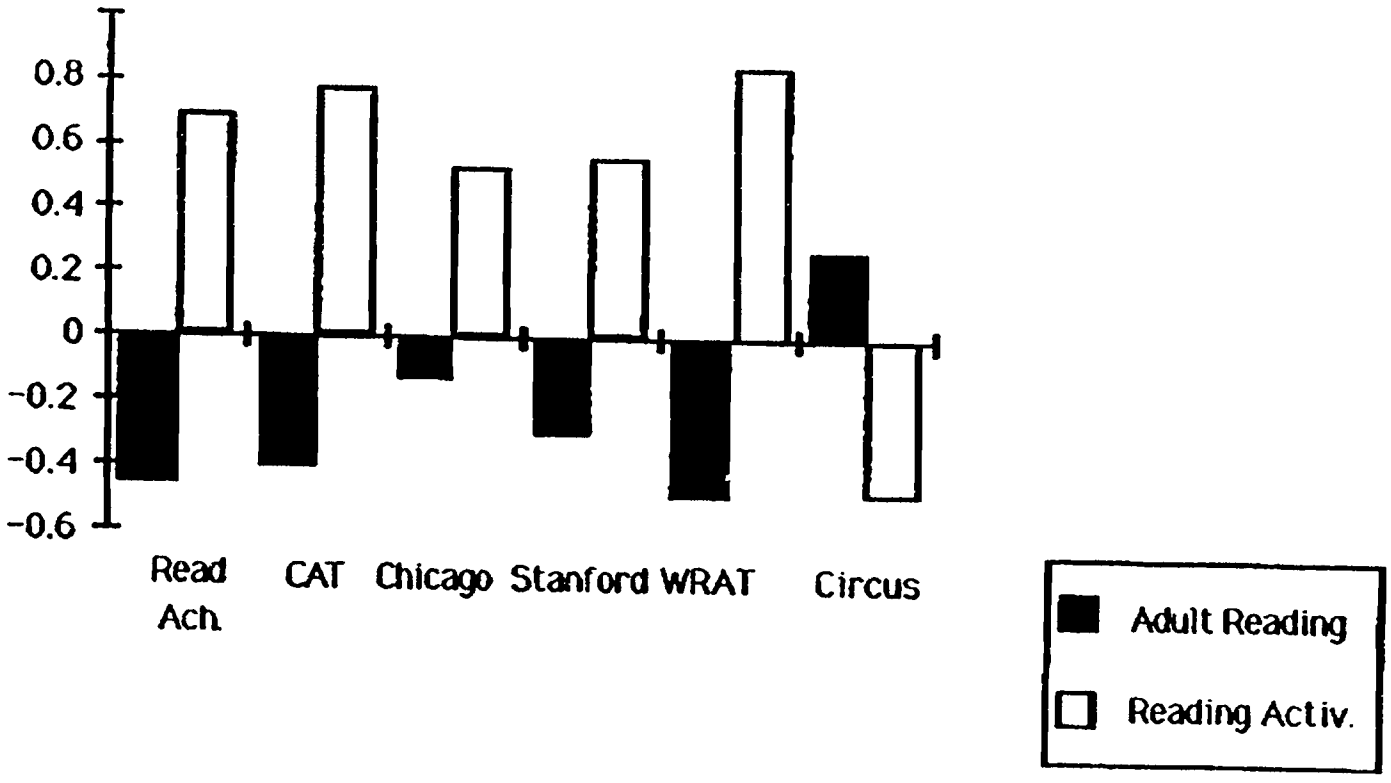

Spearman Correlations Between Achievement Variables and Adults Reading to Children in Kindergarten

**Figure 1**



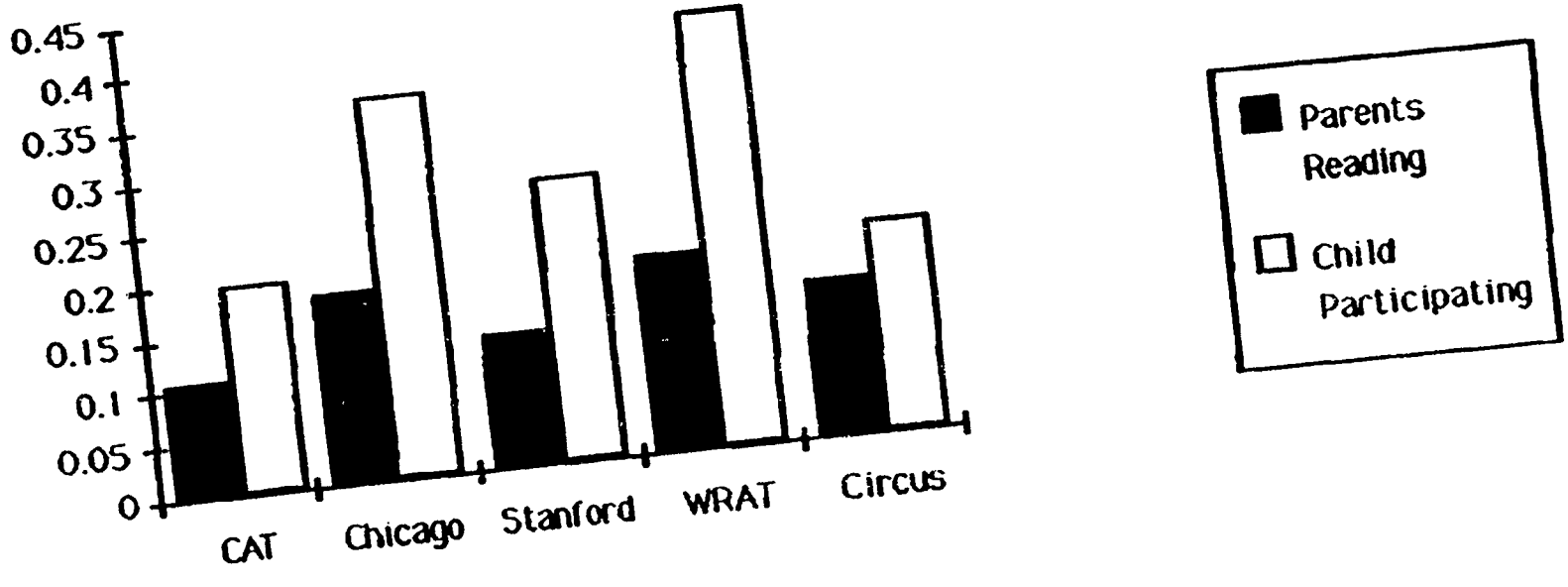

Amount of Instructional Time in Kindergarten, by District

Figure 2




Spearman Correlations Between Achievement Variables and Adults Reading to Children & Reading Activities in Kindergarten

**Figure 3**




Correlations between Parent's Reading to Children and Children's Participation and Achievement

**Figure 4**