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# Books make a difference: A study of access to literacy

Storybooks hold a special place in children's early literacy development. Studies (Bus, Van Ijzendoorn, & Pellegrini, 1995; Clay, 1991a, 1991b; Dickinson & Smith, 1994; Durkin, 1966; Wells, 1985) reflect the sheer range of learned behaviors: As children are read to, they acquire an enormous amount of topical knowledge. They learn that words can create imaginary worlds beyond the immediate here and now. They learn that written language has its own rhythms and conventions. And through these activities, children learn the values and the conceptual tools associated with reading. Although many experiences are said to contribute to early literacy (Snow, Burns, & Griffin, 1998; Whitehurst et al., 1988), no other single activity is regarded as important as the shared book experience between caregivers and children.

Consequently, a critical focus in early literacy has been to get books in children's hands. However, as an accumulation of studies (Entwisle, Alexander, & Olson, 1997; Lareau, 1989; Mullis, Campbell, & Farstrup, 1993; Wilson, 1987) poignantly show, great disparities exist among middle- and low-income communities in resources available in homes or child-care sites. Feitelson and Goldstein (1986), for example, found that 60% of the kindergartners in neighborhoods where children did poorly in school did not own a single book. Given the estimate that a typical middle-class child enters first grade with approximately 1,000 hours of being read to, while the corresponding child from a low-income family averages just 25 hours (Adams, 1990), such differences in the availability of book resources may have unintended and pernicious consequences for low-income children's long-term success in schooling.

Further, changing demographics in the U.S. (Ramey & Campbell, 1991) suggest that many of children's earliest literacy opportunities will likely occur in contexts outside of the home in nearby child-care centers and be modeled by child-care staff, in addition to family members. In poor neighborhoods in particular, early child care has become a necessity. With welfare reforms requiring mothers to return to school or work, the majority of their children, even infants, will be enrolled in programs for more than 8 hours a day (Helburn, 1995) . As a result, child-care programs have had to respond increasingly to parents' needs not only to care and nurture their children, but also to educate them.

Providing for children's educational needs, however, has not been a primary focus of traditional care giving (Spodek & Saracho, 1992). Although boundaries between child care and early childhood education have become increasingly blurred, most child-care contexts are still characterized by the use of minimally trained caregivers whose focus is on ensuring that children are safe, fed, and clean (Hayes, Palmer, & Zaslow, 1990). Yet strong evidence indicates that children in economically distressed communities are especially in need of stimulating early language and literacy learning environments (Hart & Risley, 1995). Economic disadvantage has been associated with both gradual and linear declines in cognition across the entire preschool period, with even stronger declines when tests are predominantly verbal (Burchinal, Lee, & Ramey, 1989). Once in place, these patterns unfortunately have shown remarkable resistance to change (Juel, Griffith, & Gough, 1986).

Some preschool intervention programs (Bereiter & Engelmann, 1966; Tough, 1977; see Stipek et al., 1998, for a review) have translated these needs for economically disadvantaged children into structured, early academic programs specifically designed for at-risk children. The conventional wisdom has been that such children

## *Books make a difference: A study of access to literacy*

THIS STUDY examines the impact of an intervention targeting economically disadvantaged children in child care centers. The program was designed to *flood* over 330 child care centers with high-quality children's books, at a ratio of 5 books per child, and provide 10 hours of training to child-care staff. Conceptualized as a formative experiment, this study examined the project's impact, systematically sampling 400 3- and 4-year-old children randomly selected from 50 centers across 10 regions and 100 control children from comparable child care centers not involved in the project. Children's early literacy skills (receptive language, concepts of print, environmental print, letter name knowledge, concepts of writing, and narrative competence) were assessed prior to and following the study. In addition, a posttest-only sample and a kindergarten sample were included, focusing on the project's longerterm impact. Changes in child care practices were assessed throughout the project, using photographic accounts of the physical environments of classrooms, literacy-related interactions between teachers and children in sample classrooms, and storybook reading activity in both treatment and control classrooms. Process measures indicated enhanced physical access to books, greater verbal interaction around literacy, and more time spent reading and relating to books as a result of the intervention. With greater access, children in the intervention group scored statistically significantly higher than the control group on four of six assessment measures, with gains still very much evident 6 months later in kindergarten. Findings provide powerful support for the physical proximity of books and the psychological support to child care staff on children's early literacy development.

## *Los libros hacen la diferencia: Un estudio sobre el acceso a la lectoescritura*

ESTE ESTUDIO examina el impacto de una intervención dise ada para ni os de sectores económicamente en desventaja que asistían a centros de atención para ni os. El programa fue elaborado para colmar de libros infantiles de buena calidad 330 centros, a un promedio de 5 libros por ni o, así como proveer 10 horas de entrenamiento al personal de los centros. Conceptualizado como un experimento de formación, este estudio examinó el impacto del proyecto mediante el muestreo sistemático de 400 ni os de 3 y 4 a os seleccionados al azar en 50 centros de 10 regiones y, 100 ni os control de centros comparables que no estuvieran involucrados en el proyecto. Antes de comenzar el estudio y al final del proyecto se evaluaron las habilidades tempranas de los ni os en comprensión del lenguaje, conceptos sobre la escritura, lectura de logos, nombre de las letras, conceptos sobre el lenguaje escrito y competencia narrativa. Además se incluyeron una muestra post-test y una muestra de preescolar, poniendo el foco en el impacto del proyecto a largo plazo. Durante el transcurso del proyecto se evaluaron los cambios en las prácticas de atención a los ni os usando fotografías del contexto físico de las aulas, así como las interacciones docente-ni o relacionadas con la lectoescritura en las aulas de la muestra y las actividades de lectura de cuentos en los grupos de tratamiento y en el grupo de control. Las medidas tomadas durante el proceso indicaron, como resultado de la intervención, un mayor acceso a los libros, mayor interacción verbal acerca de la lectoescritura y más tiempo dedicado a la lectura y a la relación con los libros. Con mayor acceso al lenguaje escrito, los ni os del grupo de intervención se desempe aron estadísticamente mejor que los del grupo control en 4 de las 6 medidas de evaluación; la ventaja de los ni os del grupo de intervención fue evidente aún seis meses más tarde, en preescolar. Los hallazgos constituyen evidencia poderosa acerca de los efectos del contacto con los libros y el soporte psicológico al personal de los centros de atención sobre el desarrollo temprano de la lectoescritura.

## *Bücher bilden einen Unterschied: Eine Studie über den Zugang zum Lesen und Schreiben*

DIESE STUDIE untersucht die Auswirkungen mit einer gezielten Intervention von wirtschaftlich benachteiligten Kindern in zentralen Kindertagesstätten. Das Progamm wurde darauf ausgerichtet, über 330 Zentren von Kindertagesstätten mit hochwertigen Büchern zu beliefern, im Verhältnis von 5 Büchern pro Kind, und die Kinderbetreuer mit jeweils 10 Stunden Training zu versorgen. Als formatives Experiment konzipiert, untersuchte diese Studie die Auswirkungen des Projektes, indem sie systematisch 400 3- und 4-jährige Kinder wahllos aus 50 Zentren quer über 10 Regionen aussuchte und zur Kontrolle 100 Kinder aus vergleichbaren zentralen Kindertagesstätten auswählte, die nicht in das Projekt einbezogen waren. Frühe Lese- und Schreibfertigkeiten der Kinder (rezeptive Sprachanwendung, Konzepte des Ausdrucks, Umweltausdruck und -schrift, Buchstabenkenntnis, Konzepte beim Schreiben, und die Befähigung zum Nacherzählen) wurden vor und nach erfolgter Studie bewertet. Zusätzlich wurde ein Anschlußtest-Alleinbeispiel und ein Kindergarten-Beispiel eingefügt, welche auf die Langzeitauswirkungen des Projekts ausgerichtet waren. Veränderungen in der praktischen Handhabung der Kinderbetreuung wurden über die ganze Laufzeit des Projektes erfaßt, durch die Anwendung fotografischer Mittel in gegen ständlich Bereichen des Klassenraums, durch lese- und schreibbezogene Wechselbeziehungen zwischen Lehrern und Kindern in ausgewählten Klassenräumen, und durch das aktive Lesen von Erzählungen und Geschichten—sowohl in beiden Klassenraumtypen—den betreuten und den kontrollierten. Als Ergebnis dieser Eingriffe zeigten die undersuchten Maßnahmen einen verbesserten physischen Zugang zu Büchern, größere mündliche wechselseitige Beteiligung beim Lesen und Schreiben und mehr mit dem Lesen und dem Zugang zu Büchern verbrachter Zeit. Mit ihrem größeren Zugang erzielten die Kinder in der Interventionsgruppe wesentlich höhere statistische Werte als die Kontrollgruppe bei 4 von 6 Bewertungsmaßstäben; mit Verbesserungen, die auch nach sechs Monaten immer noch recht deutlich im Kindergarten erkennbar waren. Die Erkenntnisse unterstützen ganz erheblich die Bedeutung der physischen Nähe von Büchern und des psychologischen Rückhalts des Kinderbetreuungspersonals bei der Frühentwicklung von Lese- und Schreibfertigkeiten.

## 本が違いを作る：読み書きへのアクセスの研究

この研究は、保育園に通う経済的に貧しい子供達を対象とした介入教育の影響を調査したものである。このプログラムは、質の高い児童本が児童1人に対し5冊の割合でを備えられた330箇所の保育所を隈無く網羅し、保育スタッフに10時間の研修を与えるというものであった。この研究は発展的実験として考えられており、10地域にまたがる50箇所の保育所から無作為に抽出した400名の3～4才児とそのプロジェクトに関わらない似たような保育所からの100名の統制群の児童を体系的にサンプリングし、そのプロジェクトの影響を調査した。児童の初期段階の読み書き能力（受容的言語、印刷という概念、周囲の印刷物、文字の呼び方の知識、書くという概念、物語り能力）がその研究の前後で評価された。さらにそのプロジェクトの長期的影響を調べるために、事後テストのみのサンプルと幼稚園のサンプルが抽出された。実験群と統制群の両教室における物理的環境、先生と児童の読み書きに関するやり取り、物語りを読む活動などを写実的に説明することによって、保育活動におけるプロジェクト中の変化を考察した。プロセスを測定してみると、介入教育の結果として本への物理的アクセスの増大、口頭による読み書きに関するやり取りの増加、読みや本に関わる時間の増加を示した。アクセスの増大に伴い、6つの評価測定のうちの4つにおいて、介入教育を受けた子供達は、統制群の子供達より統計的に有意差のあるほど高い成績を示した。また幼稚園に進んで6ヶ月経った後も成績が伸びていることが明らかになった。この結果は本と物理的に接近していることの重要性を強く支持するものであり、子供の初期の読み書き学習に関わる保育スタッフを心理的にサポートするものである。

## *Les livres font la différence: une étude de l'accès à la littéracie*

CETTE ÉTUDE examine l'impact d'une intervention ayant pour cible des enfants de milieu défavorisé fréquentant des centres de jour pour enfants. Le programme a été planifié de façon à plonger plus de 330 centres de jour pour enfants dans des livres de haute qualité, à raison de 5 livres par enfant, et de fournir 10 heures d'entraînement aux équipes chargées des enfants. Conçue comme une expérience de formation, cette étude a examiné l'impact du projet en échantillonnant 400 enfants de 3 et 4 ans choisis au hasard dans 50 centres de 10 régions différentes et 100 enfants témoins provenant de centres de jour pour enfants comparables qui n'étaient pas impliqués dans le projet. Les compétences relatives à l'entrée dans l'écrit (compréhension orale, représentations de l'écrit, écrits de l'environnement, connaissance du nom des lettres, représentations de l'écriture, et capacités discursives) ont été évaluées avant et après l'intervention. On a inclus également un échantillon ne passant que le post-test, et un échantillon de jardin d'enfant, en se centrant sur l'impact à plus long terme du projet. On a évalué les changements des pratiques relatives aux enfants tout au long du projet, au moyen de comptes rendus photographiques de l'environnement physique des classes, des interactions maître-enfants concernant la littéracie dans les classes de l'échantillon, et l'activité de lecture de livres dans les classes de l'intervention et les classes témoins. Les mesures de processus ont montré, suite à l'intervention, un développement de l'accès physique aux livres, plus d'interactions verbales autour de la littéracie, et plus de temps consacré à la lecture et aux livres. L'accès étant plus important, les enfants du groupe concerné par l'intervention ont obtenu des résultats statistiquement plus élevés que les enfants du groupe contrôle dans 4 des 6 évaluations effectuées, ces bénéfices étant encore plus grands six mois après l'intervention quand ils étaient au jardin d'enfants. Ces résultats fournissent un soutien puissant en faveur d'une proximité physique des livres et un soutien psychologique aux équipes s'occupant des enfants en ce qui concerne le développement de l'entrée des enfants dans l'écrit.

need more controlled instructional programs, more review, drill, and practice. As Polakow (1994) described, these settings have often unfortunately become "at risk landscapes" (p. 150), rigidly segregating children by gender, race, and ability, increasing stresses already present in their vulnerable young lives, and providing the very poorest quality of language and literacy instruction. Stipek and colleagues (Stipek, Feiler, Daniels, & Milburn, 1995) warned that such early formal instruction impedes children's natural motivation to learn and further contributes to lower self-esteem.

Thus, the question becomes: How can we expose children to greater quantities of print and meaningful language opportunities at a very early age and so enable them to explore and express their natural curiosity? Overwhelming evidence (Anderson, 1995; Elley, 1989; Feitelson, Kita, & Goldstein, 1986; Whitehurst et al., 1994) in early literacy research suggests an answer: Increase the volume of children's playful, stimulating experiences with good books. Authorities (Bus, Van Ijzendoorn, & Pellegrini, 1995; Dickinson & Smith, 1994; Senechal, LeFevre, Thomas, & Daley, 1998) argue persuasively that listening and responding to stories is the basic means by which children come to understand the functions and structures of written language. Some (King, 1989; Wells, 1990) even suggest that the story is the fabric of all discourse, the place where connections between speech and written language are made.

One approach to increasing the volume of book reading, which has been used successfully in a number of worldwide literacy campaigns, is to flood classrooms with high-interest illustrated storybooks (Ingham, 1981; Pumfrey, 1988) and to train teachers in methods that ensure that children interact with books frequently and productively. For example, in evaluating the effects of *Book Floods* on students' acquisition of a second language in elementary schools, Elley and his colleagues (Elley, Cutting, Mangubhai, & Hugo, 1996) found striking gains for children from ages 7–12 in nine countries in reading comprehension, word recognition, and oral language. Through immersion in meaningful texts, children incidentally learned language and were highly motivated to read and engage in other communicative activities.

Yet there were a number of clear differences in attempting such an approach in child-care centers. For one, nonprofit child-care centers are independent organizations, not centrally administered by an overarching structure; each, therefore, must be considered as a separate entity. Second, although developing countries have used Book Floods successfully in government-sponsored projects, the numbers of schools involved have been small; here, the projected scope for this project was to be far more wide ranging, influencing thousands of young children. Third, unlike school-related programs, training and educational experiences of child-care staff vary dramatically across centers, with many child-care workers having little formal education; estimates of annual turnover rates at child-care centers, in fact, typically range from 23 to 59% (Hayes, Palmer, & Zaslow, 1990). And finally, even though research findings have emphasized the primacy of early experiences from infancy through age 5 in language and literacy, Book Floods have never before been tried with such young children.

Nevertheless, the compelling argument that given certain literacy-specific experiences children might make gains from the start was reason to attempt such a bold strategy. Working with child-care centers, however, required a different approach than previous Book Flood projects. It called for an organizational structure that provided for material supplies, further conceptualized around two powerful predictors of quality in child-care programs (Howes & Smith, 1995): training of staff and an ongoing support network. From this initial formulation a theoretical model of access to books based on physical and psychological proximity emerged—the great Book Flood of '96—providing access to high-interest storybooks, material supplies, and training to child-care workers within an ongoing network of organizational support well known to many child-care centers—the public library.

### What was envisioned?

Known as Books Aloud, the program aimed at enriching the language and literacy opportunities for children in child-care programs in a large metropolitan area in Pennsylvania. Targeting economically disadvantaged children, the US$2.1 million program funded by the William Penn Foundation was designed as a loosely structured collaboration among five county library systems and the Free Library of Philadelphia. By any criteria, the projected reach of the program—its size and scope—was impressive. In total, 337 not-for-profit child-care centers serving 17,675 children, ages infant to 5, were selected to participate on the basis of economic need. At a ratio of 5 books per child, high-quality hardback children's books were to be given to centers for a total of 88,960 books, along with bookcases and storage racks to display them. Collaborative activities between centers and libraries were planned throughout the year, giving 102 local libraries over 54,150 new titles similar to those in the child-care centers, along with special events such as puppet shows, speakers, and storytellers to encourage increased attendance. Equally important, Books Aloud was to provide 10 hours of training to child-care staff at their local library branches on read-aloud strategies and thematic activities.

Conceptualized as a formative experiment (Newman, 1990), this study was designed to examine whether or not or to what extent the project reached its pedagogical goal: to improve the early literacy abilities of economically disadvantaged children. In the course of this experiment, I attempted to address questions such as these: What do people (teachers, aides, children) do with greater access to books? How do social practices change? How does the child-care community fit early literacy into its ongoing history? And, what are the shorter and longer term effects of greater access on children's literacy abilities?

### The experimental design

The study was designed as a formative experiment (Bruce & Rubin, 1993; Reinking & Pickle, 1993). This type of experiment attempts to make explicit connections between theory and field-based research: what works, why it works, and the underlying principles that might guide such interventions in the future. Placing a high value on socially relevant research (Eisenhart & Borko, 1993), a formative experiment entails the collection of data to determine what factors in the educational environment might enhance or inhibit an intervention's effectiveness in achieving its pedagogical goal (Reinking & Watkins, 1997).

Perhaps the most distinctive feature of a formative experiment, however, is its accommodation to revision (Reinking & Pickle, 1993). As Newman, Griffin, and Cole (1989) suggested, "the study of how education interventions work can never be far removed from the task of engineering them to work better" (p. 147). Thus in light of incoming data, adaptations are implemented, carefully documented, and described, allowing for the possibility of reaching the pedagogical goal more efficiently and effectively. Consequently, the formative experiment is well suited for a short-term, longitudinal intervention that can accommodate ongoing revision. Further, it provides for a rigorous analysis of specific outcomes as well as the processes by which these goals may be achieved.

Data collection in this approach typically combines both formative and summative experimental strategies. For these reasons, I used multiple and complementary methodologies, creating a mosaic of methods that combined both a controlled experimental study, with a collection of observational and naturalistic studies (see Table 1 for overview). Analyses and interpretations of the project's impact, therefore, are based on many differ-

**Table 1** An overview of the research strategies used in formative experiment

| Purpose | Research strategy |
|---|---|
| To examine the impact of greater access to books and training | Quasi-experimental study |
| To examine pedagogical techniques for training | Observations of training sessions across contexts; collection of materials, syllabi, and other artifacts |
| To analyze literacy environment | Photographic accounts of literacy-related activity; book corners, functional print interest centers |
| To examine literacy-related interactions in classrooms | Observations of focal children in sample using momentary time samplings |
| To determine center's activities throughout the day | Printouts of daily schedules from centers |
| To examine storybook reading activity | Questionnaire on frequency of storybook reading activity; opportunities for interaction; children's interest and motivation to read and be read to by adults |
| To examine effects of training on daily activities of centers | Whole-day observations of centers over implementation period |
| To focus on trainers' conceptions of their year, expectations, views of success, and challenges | Focus groups with preschool specialists |
| To examine child-care staff's perception of the usefulness of training | Interviews with directors and teachers in centers across all regions |

ent indicators designed to examine whether access to books and training of child-care staff might enhance children's early literacy abilities.

## *Method*

### Participants and settings

Systematic random sampling procedures were used to select a sample from the larger number of centers receiving the intervention. On the basis of economic need, the majority of centers (255) were from Philadelphia. To take into account the disproportionate number of child-care centers in the city, a strategy was devised to oversample five counties (Bucks, Chester, Delaware, and Montgomery in Pennsylvania, and Camden in New Jersey, with a total of 82 centers), and slightly undersample Philadelphia. Philadelphia was partitioned in five separate regions considered to represent differing neighborhoods and economic areas and treated as if they were separate regions. Five centers in each of these 10 regional areas were then randomly selected: five counties and five areas within the metropolitan Philadelphia area for a total of 50 centers. Within each of these centers, four children (two girls and two boys) from two classrooms, one for 3- and one for 4-year-olds, were randomly selected to participate in the study. The initial sample, therefore, represented 50 centers (5 per region) and 100 classrooms (10 per region), for a total of 400 children (40 per region).

At the same time, regional directors were asked for names of comparable child-care centers that would not be involved (e.g., they might have already received a grant from the Foundation for another project or did not have nonprofit status), but shared similar demographic characteristics as those in the Books Aloud program. Ten of these child-care centers agreed to participate; 5 children were then randomly selected from two classrooms in each center, totaling 20 classrooms of 100 children in the designated control classrooms. Tables 2a (the pre- and posttest sample) and 2b (the posttest only sample) give the distribution of the sample by age, gender, and ethnicity, as well as by the percentage of children whose parents received subsidies from the government toward the cost of child care as a general measure of income level.

**Table 2a** A description of the sample

| Characteristic | Books Aloud ($N$ = 400) | Control ($N$ =100) |
|---|---|---|
| Age in months | 48.30 ($SD$ = 7.13) | 46.05 ($SD$ = 7.86) |
| Age in years | | |
| 2 | 5 | 0 |
| 3 | 183 | 15 |
| 4 | 202 | 82 |
| 5 | 10 | 3 |
| Ethnicity | | |
| Caucasian | 29% | 33% |
| African American | 65% | 59% |
| Hispanic | 4% | 8% |
| Other | 2% | |
| Gender | | |
| Male | 198 | 52 |
| Female | 202 | 48 |
| Percentage of children receiving government subsidies (average) | 65% ($R$ = 0-100) | 68% ($R$ = 0-100) |

**Table 2b** Posttest-only sample

| Characteristic | Books Aloud ($N$ = 71) | Control ($N$ = 57) |
|---|---|---|
| Age (in years) | | |
| 3 | 33 | 32 |
| 4 | 38 | 25 |
| Gender | | |
| Male | 34 | 24 |
| Female | 37 | 33 |
| Ethnicity | | |
| Caucasian | 30% | 63% |
| African American | 69% | 30% |
| Hispanic | 1% | 6% |
| Asian | 0% | 1% |
| Percentage of children receiving government subsidies (average) | 65% | 68% |

### Data collection and analysis procedures

As director of the research project, I headed a team that included 1 postdoctoral fellow and 10 research assistants. All research assistants were doctoral students in school psychology, specializing in preschool intervention. Each was assigned to a region in order to become familiar with the directors, staff, and children in the child-care centers. Once they gained entry in the centers, research assistants worked in pairs to facilitate data collection in each center, conducting pretest and posttest assessments, observing training sessions, and visiting centers on an ongoing basis.

The Books Aloud intervention was supervised by two staff librarians in each county. They worked in conjunction with 21 preschool specialists in the metropolitan

area, who provided all training to child-care staff. Throughout the project, the postdoctoral fellow and I would visit centers in various regions, conduct focus groups, and observe training sessions, events in libraries and throughout the communities, regularly reporting on the project's progress to library staff and the Foundation.

**Measuring children's literacy outcomes**

Children's early literacy development was conceptualized as a multifaceted phenomenon, consisting of a set of attitudes, expectations, and skills related to written language. To ensure an accurate assessment of the range of children's capabilities, the following standardized assessment and performance tasks were selected as pre- and posttest measures. Pretesting was conducted in September, and posttesting 8 months later, in May.

1. *Environmental print*: Measuring visual cue reading, or understanding of print in context, children were asked to identify 10 signs in their environment from the Test of Early Reading Abilities (TERA, 1981). These items were generated by TERA's authors through the systematic observation of print in preschoolers' environment. Interrater reliability, established through time sampling, was reported to be .89, exceeding the minimal requirements. Items included a fast-food sign, candy, letter, stop sign, soft drink, cereal, school crossing sign, menu, coupon, and toothpaste.

2. *Letter name knowledge*: Children were given a set of letters (Clay, 1979) and asked to identify what the symbols were (letters, not numbers), and then asked to identify a string of the first 10 capital letters: A, F, K, P, W, Z, B, H, O, J. Using split-half procedures, Clay reported reliability as .97.

3. *Concepts of print*: Using the first 10 items from Clay's Concepts of Print (1979), children were asked to identify various conventions such as knowledge of the front of the book, understanding that print not pictures tells the story, and directionality, as well as concepts of letter and word and capital and lowercase letters. Using the Kuder-Richardson formula, Clay reported a reliability of .95.

4. *Peabody Picture Vocabulary Test* (PPVT): Children's receptive vocabulary was examined by pointing to representative pictures of objects or actions. It was scored according to standardized procedures.

5. *Concepts of writing*: This task examined how children conceptualized writing as a system. Using a prompt developed by Purcell-Gates (1996), research assistants asked children to write their name and anything else they could. Children's responses to this task were then scored on a typology, reflecting the nature of how close their understanding of writing approached the conventional: 1 = Writing is scribbles (no evidence of writing-like forms); 2 = Writing is drawing (picture symbols); 3 = Writing involves letter-like forms (scribbles with letters, letter-like, and number-like forms); 4 = Writing involves letters mixed with numbers (pictures embedded with print; letters with numbers and number strings); 5 = Writing is making letters (ungrouped letters; letter strings); 6 = Writing is making word-like forms (pseudowords; parts of name); 7 = Writing is making a complete word (word is recognizable); 8 = Writing is making words (more than one word; marked by spaces between words). Two research assistants independently coded 20 of these writings; interrater agreement indicated .90.

6. *Concepts of narrative*: This task examined the development of narrative competence. Using a wordless picture book, children were asked to pretend to tell a story, using *Whose Mouse Are You?* by Robert Krauss (1970) (with the few words eliminated). This task was chosen to ensure that all children would feel that they could successfully do the task, even if they could not yet read. As Berman and Slobin (1994) have suggested, even young children understand that wordless picture books are meant to be read. With the use of a prompt by Purcell-Gates (1996), the task was begun by reading the title of the book, then asking the child to "read" the story to her or his friend (a stuffed animal), prompting "once upon a time" if needed. All stories were audiotaped and later transcribed verbatim.

The story was chosen because the pictures were clear, it was relatively short (12 pages), and it seemed to follow a basic cat and mouse chase game that was neither gender nor culture specific. (We learned, in retrospect, that pictures in the text tended to encourage labeling more than storying, probably depressing scores on this measure.)

Children's responses to this task were scored according to a protocol developed by C. Elster (personal communication, December 2, 1997), based on research by Berman and Slobin (1994). It relies on two factors of written language: local structure (event components) and global structure (overall plotline). Transcripts of children's pretest and posttest stories were coded on a three-level scale: local structure (1 = prenarrative labeling of pictures; 2 = describing pictures and showing events; 3 = inferring relations between situations that are not visible on the printed page); and global structure (1 = no causal relations between events; 2 = chaining events in a temporal series such as "and then"; 3 = overall action-structure with thematic coherence) (see Appendix A).

Interrater reliability was established by two coders independently coding 20 narratives, yielding 100% agreement. Scores in each category were added together for a total score. Piloted carefully beforehand, these tasks col-

lectively took 20 to 30 minutes to individually administer to each child. With the help of the research assistants, pretests were conducted in the beginning of October, and posttests were conducted in May.

At the same time, I attempted to account for the attrition in our treatment and control groups due to the high mobility traditionally found in economically distressed communities (Wilson, 1987), as well as to buttress our findings by ensuring that the posttest findings were not due to the effects of the pretest. Therefore, I added two randomly selected posttest-only groups from the larger population of treatment ($N = 71$) and control classrooms ($N = 57$). Pretest scores for treatment and control groups were examined for comparability. Aside from differences in the letter name knowledge measure (treatment group higher than control, $p < .001$), and the global features of narrative (again, favoring the treatment group, $p < .001$), other measures showed no significant differences between groups.

In addition, the formative experiment also allowed for a follow-up assessment 6 months later to determine the longer term effects of the intervention. This analysis was limited to the sample from the metropolitan area of Philadelphia (due to logistical and funding issues). Directors were asked to provide the names of children likely to attend kindergarten for the coming year. Parent permission slips were then sent to 92 parents (of the 117 4-year-old treatment and control children in the original sample in Philadelphia); 66 parents replied ($N = 35$ treatment; $N = 31$ control). Children were subsequently assessed in the late fall using a modification of the early literacy assessment.

These measures served as benchmarks for recording potential changes in children's early literacy. At the same time, however, it was necessary to understand more about the processes of change: What kinds of changes might or might not occur in classrooms that could influence children's access and early literacy development?

### Measuring processes of change

Three sources of additional data were collected to examine the processes of change: photographic accounts of the physical environments and literacy-related interactions between teachers and children in each of the sample classrooms (not control), and storybook reading activity in both treatment and control classrooms.

Prior to and following the intervention, research assistants examined the physical environments of classrooms, the arrangement of books in library corners, bookcases, bookshelves, or places that might contain books in each of the 100 targeted sample classrooms. The research assistants took photographic accounts of each area (Collier & Collier, 1986). These pictures were analyzed independently by two coders to establish categories of change in environments. Categories included no change, differences in the number of books available, their location, the extent to which an area had been created or enhanced, as well as whether or not labels, functional print, and other literacy extensions, such as areas for writing, were added. Both coders then examined each picture, with disagreements arbitrated by the researcher most familiar with the site who could describe in more detail the types of changes that took place.

At the same time, behavioral observations of children-teacher interactions in their daily activities were conducted, using momentary time samples. Specifically, before the intervention began, two observers visited each treatment classroom two times for 1 hour in the morning (generally considered the most language-rich time). Each focal child was then observed for 3 minutes over five cycles, with the total amount of time observed per child being 15 minutes. For each cycle, observers wrote notes about the child's behavior and his or her interactions to or with the teacher or aide during the 3 minutes, then turned to the next child, and so forth. After the observation, each observer independently coded and counted the number of literacy interactions either initiated by or directed to the child. Once agreement was established (85% and above) between the observers' codings, individual observers visited the majority of classrooms. The total number of interactions for each observation was then averaged for an estimate of teacher-child literacy interactions in an hour per classroom. Seven months later, after the books had been delivered and the bulk of training had been completed, we conducted a second round of observations using similar procedures.

Daily schedules were also collected from each teacher in the treatment group prior to the intervention to provide some indication of teachers' read-aloud activities. In addition, storybook reading activity for treatment and control groups was examined toward the end of the study with a 14-item questionnaire. This questionnaire examined the average frequency of read-aloud activity, interactions during reading and thematic activities, as well as children's reactions to storybook reading.

Throughout the year as well, extensive naturalistic observations and informal interviews with teachers were conducted to capture reactions to training and its consequences on actual classroom practices. Other data gathering techniques including focus groups, debriefings, and surveys are described in a comprehensive technical report (Neuman, 1997).

Together, these data sources attempted to detail classroom processes related to change and early reading

and writing outcomes. They also provided a means for making direct attributions of causal effects: If children's literacy activities increased and their developing skills improved compared to those in control sites, it could be argued with some assurance why, how, and to what extent books and training might make a difference in children's early literacy development.

**The intervention: Materials and training**

As it was envisioned, the project was designed to *flood* child-care centers with books and to train staff on effective reading-aloud techniques through monthly workshops at local library branches. To begin with, all participating directors and child-care staff were invited in early fall to 50 demonstration sites in local libraries across city and county areas to preview children's books from a list of 350 titles, developed by the Free Library of Philadelphia. Titles reflected quality literature in various categories: board books for infants and toddlers, concept books, multilanguage, multicultural, predictable, narrative, classic fairy tales, and folk tales. Children's librarians gave book talks, highlighting various titles, books for different purposes for reading, and books for building thematic units. Child-care staff were then encouraged to browse and make selections for their particular centers. Approximately 2 weeks later, centers received their selected libraries at a ratio of 5 books per child along with open-faced bookshelves to display them.

*The training model.* As designed by the public service support office of the Free Library, the purpose of training was to enhance teachers' knowledge of early literacy and its development through storybook reading, combining basic theoretical and developmental principles with concrete activities that teachers might try in their classrooms. The project originally called for 21 trainers, known as preschool specialists, to serve as liaisons between the library and child-care centers, providing monthly workshops in local library branches to staff, with an occasional visit or two to centers.

Trainers, however, did not anticipate the enormous task that lay before them. There was great variability among centers. Some centers had highly trained staff and were accredited by the National Association for the Education of Young Children (NAEYC). Other centers could be described as good, solid child-care programs, in existence for many years. Still many others, however, were extremely needy, suffering from tremendous turnovers in personnel, little curriculum planning, and paltry budgets. Often in dangerous high-crime, high-poverty areas, some of these centers were in buildings of great disrepair—guards were placed in areas to ensure young children's safety. Further, few teachers, with the exception of two areas in the city, had any qualifications for teaching except high school and previous experience.

Logistical issues, as well, served as a major stumbling block to the original training model. Teachers were reluctant to return to dangerous areas for library workshops at night. Scheduling workshops at lunch or naptime often meant trying to find coverage for an already overextended staff. In addition, there was the issue of the benefits of such training. Skills, socialization, safety, and nurturance were seen from our focus groups as the primary goals in child care, not early literacy. Although new children's books and furniture were regarded as most welcome additions to the centers, unknown trainers bringing largely imported content were not greeted with open arms.

Poor turnout and limited implementation (in some centers, boxes of books remained unpacked) forced the 21 trainers collectively to rethink the original training model. For one, it was clear that training goals needed to be differentiated: What was appropriate for one center would not necessarily be the same for another. Second, staff development designed to enhance reading aloud and alter heavily skill-based instruction needed to acknowledge and work within teachers' beliefs. Recognizing that these beliefs reflected a social reality and understanding of the world from individuals' experiences and unique perspectives, trainers would seek not so much to change beliefs but to stretch them in ways that might allow for new practices. Third, it became obvious that some centers would not take advantage of training unless it was on site.

What emerged was a more context-specific approach than had been originally anticipated. This staff training and support model called for site-based training focusing on differentiated goals, demonstrations, and coaching activities in centers. Working 15 hours a week, trainers scheduled workshops and visits to 15 to 20 centers in an area, trying to make biweekly contact with directors and staff. More than *trainers*, most viewed their role as *facilitators* or *resource people*. As one specialist put it, "I'm not this huge knowledge base; rather, let me come in to the center and share what I know with you and what you know with me."

Thus, trainers attempted to cover a specific series of topics, though the order of presentation and length of time spent on them varied across centers and regions. Basic outlines highlighting key content included training on developmentally appropriate practice, storybook read-aloud techniques, story stretcher techniques, and ways to enhance the physical environment to provide access to books. Description of the content of training, based on hundreds of hours of observations in training workshops, shadowings of key preschool specialists, and

observations of centers is summarized below (see Neuman, 1997, for greater detail).

*The development of literacy.* The first part of the training focused on the importance of the early years in establishing a foundation for literacy development. Trainers emphasized the ways in which storybook reading may initiate children into the world of print, capturing their imagination and interest through words and illustrations. They encouraged teachers to view storybook reading not only as a pleasurable activity but as an important learning tool. They emphasized that children learn vocabulary and the ways in which words and sentences are organized through listening to stories. They also focused on the development of skills subsumed under literacy—recognizing letters, distinguishing print from other marks on the page, understanding that print represents spoken words, learning how to hold a book, to turn pages, to start at the front, to wait for the ending, and a myriad of others skills that serve children well once they enter formal schooling. Trainers encouraged teachers to consider children's age and developmental level when selecting books for their center, describing a variety of familiar text genres including board books and narratives.

Because directors and teachers were able to select the books that *flooded* their individual centers, trainers focused on several additional characteristics to consider in the everyday activities of the child-care program. Books for settling down, chewable books, classics, multicultural books in which children can see themselves, and stories that children might enjoy reading on their own were shown as trainers emphasized both child development principles and appropriate practices in selecting materials to read to young children.

*Reading aloud to children.* The training focused on the techniques of reading aloud. Trainers encouraged teachers to put storytime into their written schedules and to prepare a special cozy place in their rooms where storybooks could be read. They emphasized the importance of picking books appropriate for children's interest and understanding. Key aspects included the predictability, pattern, and rhythm of the story lines, the length of the text, and the level of vocabulary and concepts. Teachers were shown how to adapt the book, if necessary, by modifying the language or reading only a portion of the story at a time. Other considerations included teachers' interests. “Read only the books you like,” one trainer reminded teachers. “Never read a story cold—Be sure to read it aloud ahead of time, so that you can pause at significant places and look into your children's beautiful eyes.”

Trainers focused on the importance of establishing storybook reading routines. These included developing a consistent seating arrangement so children knew where to sit, cueing them with a particular song that storytime was about to begin, and outlining rules of conduct for children. One trainer suggested, “You might think it impossible, but you have to do magic.” Especially in the beginning, trainers recommended ways to avoid interruptions while reading so that children could hear the rhythm and language of text. They suggested ways to deal with disruptive behavior, such as allowing each child to hold a book, or developing a buddy system with an aide to take care of the child, but “to try never to stop the reading.” Rereading books was highly recommended for helping children to attend and to understand language patterns, the structure of stories, and the functions of language apart from the present, ongoing events. At the end of the storyreading, teachers were encouraged to engage children in discussions by asking questions and then to thank them for listening so well. Teachers received handouts of both read-aloud tips and 100 great read-aloud books.

*Story extenders.* This part of the training focused on techniques to enhance children's responses to stories. Extenders or *stretchers* were described as *stretching the ideas* of the story to create greater meaning for children. Teachers were encouraged to use books to stretch children's ideas in science, art, and other areas by involving them in active, hands-on activity. Trainers emphasized the importance of manipulatives, such as stick puppets and flannel board activities, in helping children develop a better understanding of concepts and vocabulary.

Knowing the teachers' interests in skill-based instruction, trainers highlighted the types of skills that could be taught in developmentally appropriate ways through storybook reading and story extenders. They demonstrated how flannel boards could be used to teach common sequencing activities like getting dressed, as well as colors, subtraction, and addition. Teachers could also use puppets as valuable visual cues to new words when teaching children finger plays, rhymes, and singalong activities.

Trainers also emphasized the importance of story retellings, suggesting that it reflected children's assimilation and reconstruction of the story. Children often use the language that goes with the story (“Once upon a time...”) as well as the intonation of the teacher who reads them the story. Visual aides like flannel boards and stick puppets provide prompts for remembering story sequence and help children to use more vivid vocabulary in elaborating the story. Following demonstrations by the trainers, each center was given a flannel board along with ideas for making materials to enhance children's learning of their favorite stories.

*Taking care of books.* This topic focused on the care and maintenance of storybooks. With the prop of a

*book buddy*, a stuffed animal-like book with long arms and legs, trainers modeled the care and handling of books for teachers with the children in the classrooms. The trainer would begin, "Books are wonderful friends and I brought a special friend with me today. This book buddy has a jacket to protect him—just like you and I might wear a jacket to protect ourselves from the rain and snow." Trainers described the book cover as a "face" and the book pages as "arms," encouraging children to personify its features. "You wouldn't want to write on Buddy's face, would you? You wouldn't want to bend a book's pages, just like you would never bend your arms way back. A book gets hurt when you bend its pages." Each child would then practice touching a book's delicate spine, and turning pages, following the sequence of across, down, and over. Book buddy lessons were designed to teach children to respect books, take care of them, and not to rip their pages.

Teachers were encouraged to design their own libraries for children's independent readings. Trainers recommended moveable furniture, books accessible at children's eye level, small tables where children could sit and read, rugs or sit-upons, and the regular circulation of books at least once a week to keep children's interest and enthusiasm. Information books placed in other centers, as well, were recommended, like cookbooks in kitchen areas, weather books in science, and counting books in math areas.

Within these library-like settings, each classroom was provided with a *book hospital*, a small box where books could be placed for repair. "Even the best-cared for books occasionally get sick." Materials for the book hospital included invisible tape, glue, eraser for crayon marks, and cleaner for book covers. Taking tattered books, trainers showed teachers how a fix-it lesson might provide a wonderful opportunity for children to show their love and caring of books. In this respect, trainers hoped to convey the message known long ago by the Velveteen Rabbit (Bianco, 1958), that to be *real* was to be touched, cared about, and loved for a long, long time.

Generally, trainers held workshop sessions for teachers and aides during children's naptimes. Sessions might often combine topics and revisit various issues (such as classroom management) according to the needs of the center. Following these more formal sessions, trainers would then visit classrooms, model each of the activities, and provide additional ideas or supports as needed. Visits to centers occurred biweekly throughout the 7-month period.

Teachers and staff were either asked or required by directors in the centers to participate in sessions, with the understanding that they would receive one inservice credit for every hour in training. Since teachers were required by the state to participate in at least 6 hours of training a year, workshops in most areas tended to be very well attended. In fact, the majority of teachers took advantage of the 10 credit hours possible throughout the project.

## *Results*

The results are reported in three sections. The first section examines the impact of access on social practices in classrooms. Here, I focus on the ways in which greater access to books and training appeared to influence the physical environments of classrooms and the frequency of teacher-child literacy interactions. I also examine teachers' storybook reading activity, focusing on how practices might differ between treatment and control settings. The second section examines the impact of greater access on a construct of early literacy abilities, comparing children's development in treatment and control groups. Last, I focus on the project's longer term effects. In this final analysis, I assess the effects of the intervention on kindergartners' early reading and writing skills compared to their control group counterparts.

### Changes in the social practices in the child-care community

*The physical environment of classrooms.* Initial analyses in sample classrooms, prior to the intervention, had indicated a paucity of print in the child-care environments. Relatively few classrooms had book areas or library nooks for children. Of the 100 classrooms in the sample, for example, only 21 had book corners and 25 had bookshelves. For the most part, books in these areas appeared tattered and terribly worn.

In contrast to books, the most predominant forms of print shown in 84 of the 100 classrooms were signs, alphabet letters, numbers, and color names on bulletin boards. Some of these signs were at the children's eye level, but most were not, typically high above on top of chalkboards. Thirty of the 100 classrooms had television and video machines, 20 had record players and audiocassettes, and 2 had writing centers.

Results of the intervention indicated impressive transformations in these classrooms. Out of the 100 classrooms examined, 83 made efforts to enhance children's access to print. Table 3 describes the types of physical design changes in classrooms. For example, following the intervention 56 classrooms now dedicated an area solely to books and reading. In 25 of the classrooms, teachers added comfortable pillows, beanbag chairs, or rugs to their library area, creating a warmer, cozier environment for reading. Posters and book covers

**Table 3** Summary of physical design changes in child-care classrooms ($N$ = 100)

| Category | Number of classrooms |
|---|---|
| Before intervention: | |
| Book corners | 21 |
| Bookshelves | 25 |
| TVs and VCRs | 30 |
| Record players | 20 |
| Writing centers | 2 |
| After intervention: | |
| Fewer books available to children | 16 |
| More books available to children | 68 |
| Designated book area | 56 |
| Inviting furnishings (rugs, pillows, beanbag chairs) | 25 |
| Additional book case | 37 |
| Author of the month display | 10 |
| Appropriate literacy-related labeling and functional print | 35 |
| Literacy-related props (e.g., puppets, dress-up clothes) | 4 |
| Book area placed in one interest center | 19 |
| Books incorporated in other classroom areas (e.g., science, math, music) | 23 |
| Writing centers | 20 |
| No changes | 1 |

depicting some of their favorite book titles added color and dimension to the walls. Some 35 classrooms labeled areas in their library, with titles such as "Little Lambs Library" or with children's artwork that extended the themes of books read and reread. Suggesting greater integration in other curriculum areas, 23 classrooms now included books in interest centers, such as science, math, and music.

Sixty-eight classrooms had more high-quality books available to children as a result of the intervention. Ten centers added author of the month displays, with the author's picture, a summary of the author's life, and scenes from the author's books. Instead of the 2 writing centers shown before the intervention, now there were 20 in classrooms for children to practice writing and sending messages to one another (see Figure 1 for examples of before and after intervention).

These data suggest that the arrival of books and furniture in Books Aloud classrooms seemed to set off a chain reaction. In order to make room for books and bookshelves, teachers had to rearrange furniture, rugs, and interest centers. With guidance and coaching from the preschool specialists, teachers carved out spaces for children to independently spend time with books and other materials. These changes in the physical environment helped set the stage for children's greater access to literacy activity.

*Teacher-child literacy interactions.* Whether or to what extent these physical changes might affect behavioral changes was the next logical question. Research (Hart & Risley, 1995; Snow, Baines, Chandler, Goodman, & Hemphill, 1991) has indicated that verbally rich environments in which children converse with others enable them to accumulate experiences with the qualitative features of language. However, adult-child interactions have never been described as particularly rich in early childhood settings. In fact, studies (Bruner, 1980; Helburn, 1995; Wood, McMahon, & Cranstoun, 1980) have documented that the small amount of adult-child talk tends to be relatively brief and adult-dominated, with children's roles often confined to following teacher directives and imperatives. Nevertheless, on the basis of ecological studies (Barker, 1968; Gump, 1989), it was reasonable to consider that the physical changes in classrooms might influence behavioral changes like literacy-related interactions. These interactions were defined as talk related to reading a book, singing a song, doing a word puzzle, spelling, or writing/drawing activity.

Figure 2 examines the teacher-child literacy interactions in the 10 classrooms per area and as a total sample (100 classrooms), both before and after the intervention. These data indicate that literacy interactions almost doubled over the 7-month period. Before Books Aloud, about 5 literacy-related interactions between focal children and teachers were observed per hour. After Books Aloud, about 11 interactions per hour were recorded. Observations indicated that as a result of the intervention, teachers were engaging children more in talking about stories, using song books, counting, and rhyming books interactively for skill development, and providing more one-on-one or small-group interactions around books. Consequently, these data indicate that not only

**Figure 1** A photographic example of the physical environment in a child-care center before and after intervention

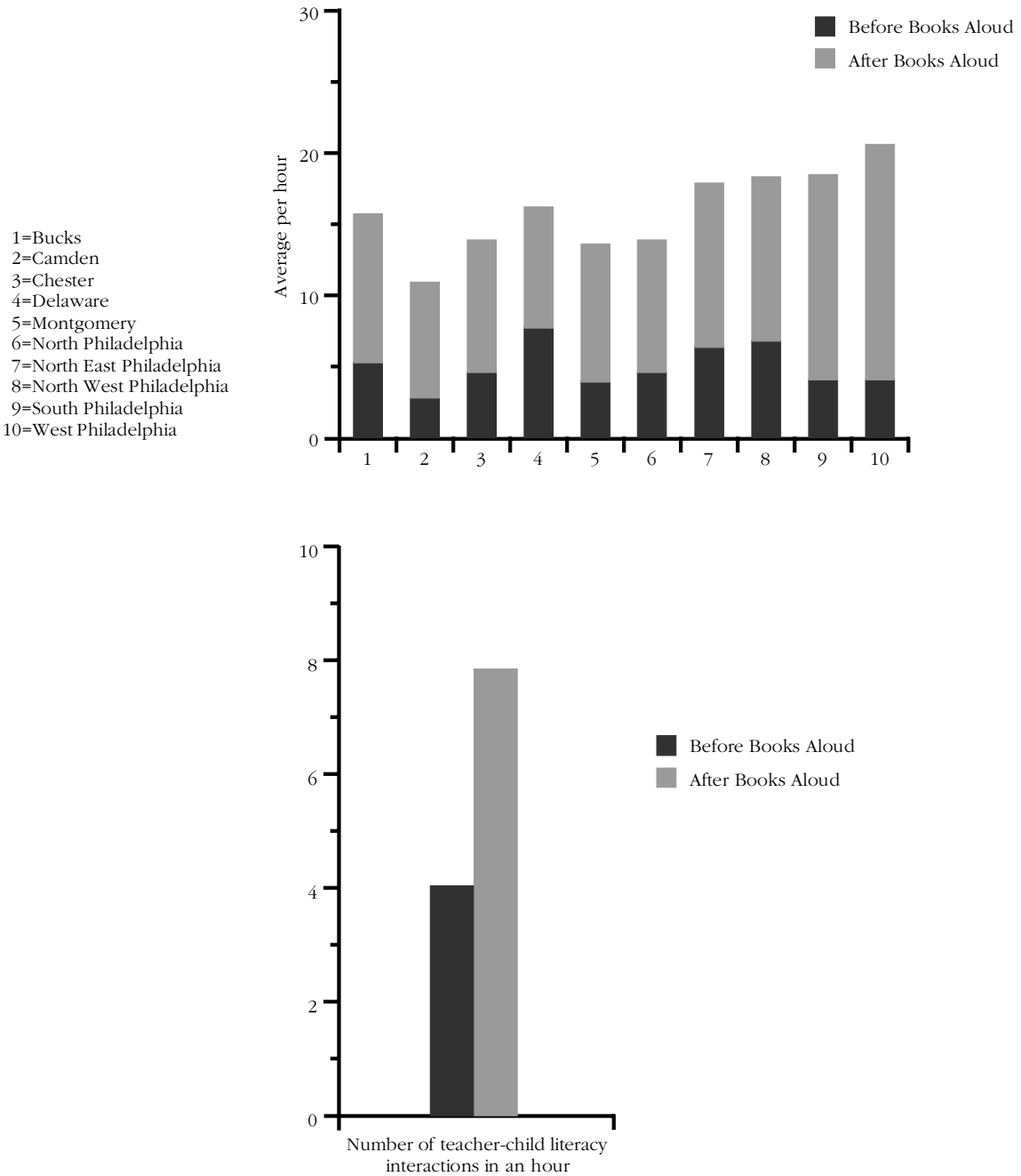
Classroom for 4-year-olds before Books Aloud

Same classroom after Books Aloud

the physical but also the social environment appeared to become more literacy enriched, promoting greater access and greater opportunity for literacy learning to occur.

Clearly, a limitation of this analysis was the lack of a comparison between treatment and control groups. The metric used to gauge the amount of talk per class could not easily be estimated because more children came from each class in the control group. But given the fact that these changes occurred in 10 different regions—essentially replicating a similar finding 10 different

**Figure 2** Number of teacher-child literacy interactions by area




times—it could be argued with some assurance that the language environment in Books Aloud classrooms became increasingly supportive of literacy development.

*Reading to children.* Prior to the intervention, storybook reading in sample classrooms was hardly a ubiquitous phenomenon, as some research (Dickinson & Smith, 1994) has suggested. Daily schedules collected from all treatment classes indicated that the majority of classrooms in these economically depressed centers focused on skill-based instruction. Some schedules, for example, showed no evidence of any storybook activity during the day (20%). On the other hand, the majority of classrooms seemed to indicate brief time periods generally sandwiched in with other circle-time activities (73%).

Only a very small number of centers appeared to schedule more than one reading time per day (7%). (See Appendix B, for example.)

Thus, more than any other activity, reading often, and reading in a manner to actively engage children's minds was the central focus of this project. Because the gathering of information from a survey questionnaire was less intrusive than the other process measures (taking teachers approximately 10 minutes), here I sought to compare storybook activity between treatment and control groups after the completion of the intervention.

Table 4a compares teachers' self-reports of reading aloud activities in the treatment and control classrooms. These data reveal that Books Aloud teachers were likely to read more often for more minutes in more subject areas to groups and to individual children than teachers in the control group. In fact, differences between groups were recorded for almost every measure of time spent reading.

Further, Books Aloud teachers seemed to regard storybook reading not as an isolated activity but as an interactive event. These teachers more frequently involved children in learning activities both during and after reading than control group teachers. Table 4b compares interactions in the two groups.

Moreover, there was a reciprocal effect. Children in Books Aloud classrooms wanted to be read to more fre-

**Table 4a** Teachers' storybook reading habits: Books Aloud versus control classrooms

| Question | Books Aloud | Control |
|---|---|---|
| Number of times per day spent reading to children | | |
| 4 times | 21% | 11% |
| 3 times | 29% | 17% |
| 2 times | 36% | 50% |
| Once | 13% | 17% |
| Not at all | 1% | 5% |
| Reason for not reading more often to children in class | | |
| Does not apply (I always read to them) | 36% | 27% |
| Too busy with other things | 47% | 56% |
| Children not interested | 17% | 11% |
| No books available | 0% | 6% |
| Times children are read to individually | | |
| Frequently | 37% | 11% |
| Sometimes | 39% | 56% |
| Not very often | 23% | 28% |
| Not at all | 1% | 5% |
| Average number of minutes spent reading in class | | |
| More than 20 minutes | 31% | 12% |
| 11–20 minutes | 49% | 44% |
| 1–10 minutes | 19% | 33% |
| 0 minutes | 1% | 11% |

**Table 4b** Interaction during storybook reading activity: Books Aloud versus control classrooms

| Question | Books Aloud | Control |
|---|---|---|
| Do you.... | | |
| Engage children in an activity like singing before reading? | | |
| Frequently | 32% | 29% |
| Sometimes | 50% | 50% |
| Not very often | 14% | 17% |
| Never | 4% | 4% |
| Interact with children while reading? | | |
| Frequently | 26% | 11% |
| Sometimes | 44% | 56% |
| Not very often | 24% | 25% |
| Never | 6% | 8% |
| Discuss a book after reading? | | |
| Frequently | 64% | 45% |
| Sometimes | 28% | 45% |
| Not very often | 7% | 10% |
| Never | 1% | |
| Do activities that go along with the book? | | |
| Frequently | 42% | 40% |
| Sometimes | 50% | 45% |
| Not very often | 8% | 5% |
| Never | | 10% |
| Use books to teach in other areas? | | |
| Frequently | 57% | 35% |
| Sometimes | 37% | 47% |
| Not very often | 6% | 0% |
| Never | 0% | 18% |

**Table 4c** Children's storybook reading activity: Books Aloud versus control classrooms

| Question | Books Aloud | Control |
|---|---|---|
| Frequency of children reading books on their own | | |
| Frequently | 85% | 83% |
| Sometimes | 15% | 17% |
| Frequency of children asking to be read to | | |
| Frequently | 58% | 39% |
| Sometimes | 37% | 56% |
| Not very often | 5% | 5% |
| Frequency of pretending to read | | |
| Frequently | 66% | 61% |
| Sometimes | 34% | 39% |
| Frequency of asking questions about reading | | |
| Frequently | 72% | 50% |
| Sometimes | 28% | 50% |

quently, to spend more time pretending to read, and to look at books during free play than did their counterparts in the control classrooms (see Table 4c).

Greater access to books and training, therefore, seemed to influence teachers' interactions, attention, and time devoted to storybook reading. With books in close physical proximity and support from trainers who strongly encouraged teachers to engage in storybook reading, teachers appeared to increase their repertoire of routines and behaviors to include more literacy-related activity; this, in turn, appeared to have a powerful effect on children's motivations, interests, and time spent reading.

Taken together, these data reveal the ways in which certain critical features of instruction may shape children's literacy development. These include an environment rich in print with attractive accessible books close by and a caring adult who reads to children, exposing them to the rich vocabulary and linguistic forms of the language; who talks about the events in the stories; who focuses the children's attention on ways to better understand the text; and who shows them how they may also participate as readers by predicting, chiming, and retelling stories. All of these behaviors may convey the important message that written language makes sense, is enjoyable, and can and should become an integral part of their young lives. Children take in these earliest messages and respond in kind. And it is in these collaborative settings that literacy learning may begin for young children.

### Children's early literacy development

The next analysis examined the impact of these changes on 3- and 4-year-old children's early literacy abilities. Because literacy acquisition is known to involve a variety of skills encompassing receptive language, print knowledge, and concepts about writing and narrative, it seemed important to investigate to what extent each of the individual tasks developed and potentially changed as a result of the intervention, rather than to examine the measures as a collective battery.

Using a Solomon-Four design, I conducted a series of one-way ANOVAs to examine differences between treatment and control groups. A similar procedure was followed for each of the six assessment tasks. First, I examined pretest scores to determine whether or not initial differences existed between treatment and control groups. No significant differences were recorded with the exception of the letter name knowledge test, which favored the treatment group ($p < .001$), and one of the two features of narrative competence, the global features

**Table 5** Comparing growth in reading and writing

| | Books Aloud | | Control | |
|---|---|---|---|---|
| Measure | Pretest | Posttest | Pretest | Posttest |
| Receptive vocabulary | | | | |
| | 28.17% (*SD* = 24.47) | 29.34% (*SD* = 26.16) | 25.34% (*SD* = 21.23) | 27.10% (*SD* = 25.65) |
| Concepts of print** | | | | |
| | 20.80% (*SD* = 18.24) | 33.67% (*SD* = 24.29) | 24.17% (*SD* = 17.34) | 27.30% (*SD* = 20.04) |
| Environmental print | | | | |
| | 38.53% (*SD* = 15.71) | 48.03% (*SD* = 16.43) | 40.14% (*SD* = 14.29) | 44.86% (*SD* = 16.89) |
| Letter name knowledge*** | 39.03% (*SD* = 43.00) | 66.75% (*SD* = 40.69) | 18.89% (*SD* = 29.62) | 39.73% (*SD* = 37.96) |
| Concepts of narrative* | | | | |
| Local structure | 1.84 (*SD* = .72) | 2.21 (*SD* = .62) | 1.26 (*SD* = .64) | 2.00 (*SD* = .62) |
| Global structure | 1.18 (*SD* = .82) | 1.63 (*SD* = .74) | .81 (*SD* = .74) | 1.26 (*SD* = .84) |
| Total | 3.02 (*SD* = 1.46) | 3.83 (*SD* = 1.28) | 2.51 (*SD* = 1.34) | 3.31 (*SD* = 1.37) |
| Concepts of writing*** | | | | |
| | 3.31 (*R* = 1-8) (*SD* = 4.99) | 5.53 (*SD* = 2.11) | 3.13 (*SD* = 1.84) | 4.14 (*SD* = 2.29) |

* $p < .05$
** $p < .01$
*** $p < .001$

of narratives ($p < .001$). To account for these differences, analysis of covariance was conducted for all subsequent analyses on these measures.

Second, I conducted one-way ANOVAs with each posttest measure to examine if there were differences between the two treatment groups (pretest-posttest; posttest-only groups), or the two control groups. Differences between scores were not significant. These results indicated that posttest scores had not been sensitized by pretest measures, thus allowing me to combine the two treatment groups together and the two control groups. Finally, I conducted a series of ANOVAs to determine differences between treatment and control groups on posttest scores (see Table 5).

The analysis indicated that access to books and training of child-care staff, indeed, made a difference. On all measures, Books Aloud children outdistanced their control counterparts. For four of the six measures, these differences were statistically significant. Books Aloud children showed greater gains than the control group on concepts of print ($p < .01$), letter name knowledge ($p < .001$), concepts of writing ($p < .001$), and concepts of narrative ($p < .05$). In contrast to these measures of decontextualized language, there were no statistically significant differences on environmental print. Further, receptive language scores remained rather flat throughout the year.

As shown in Figures 3–8, some differences were more striking than others. For example, though the Books Aloud groups' letter name knowledge scores were higher than the control groups' to begin with, their posttest scores on letter name knowledge were far more dramatic than those of other measures. Nevertheless even the more modest differences reported on other measures, like concepts of print, indicated educationally meaningful differences.

Not only did Books Aloud children learn more about the basic print conventions and letter names, but they also appeared to develop a better sense of how these abstract symbols actually work. Concepts of writing and of narrative are skills that are typically learned not through formal instruction, but through active engagement in the activities themselves, thus reflecting children's cognitive perceptions and their knowledge of how literacy functions. Yet, on these measures as well, developmental gains favored the Books Aloud children.

Children's writing served as a mirror of their motoric and graphic control. For example, both groups tended to write their names using linear scribbles or mock letter-like forms in the beginning of the year (see Figure 9).

At the end of the year, however, there were discernible differences between groups. On average, Books

**Figure 3** Pre- and posttest differences between Books Aloud and control groups: Receptive vocabulary

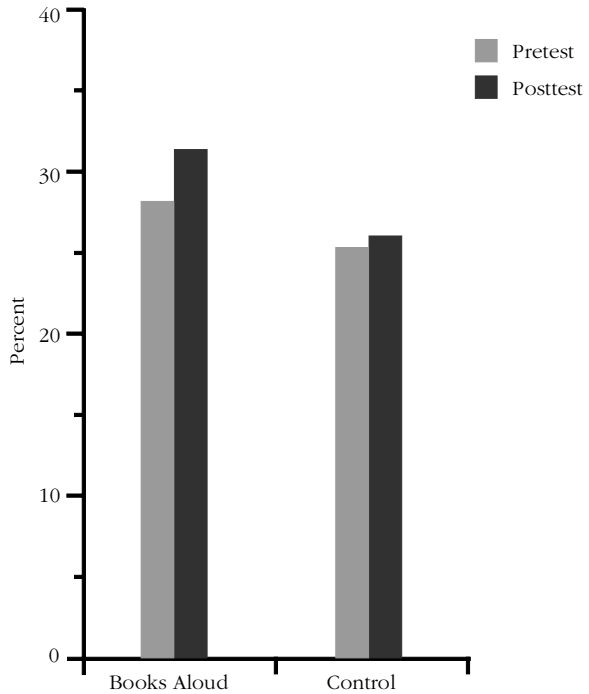



**Figure 4** Pre- and posttest differences between Books Aloud and control groups: Letter name knowledge

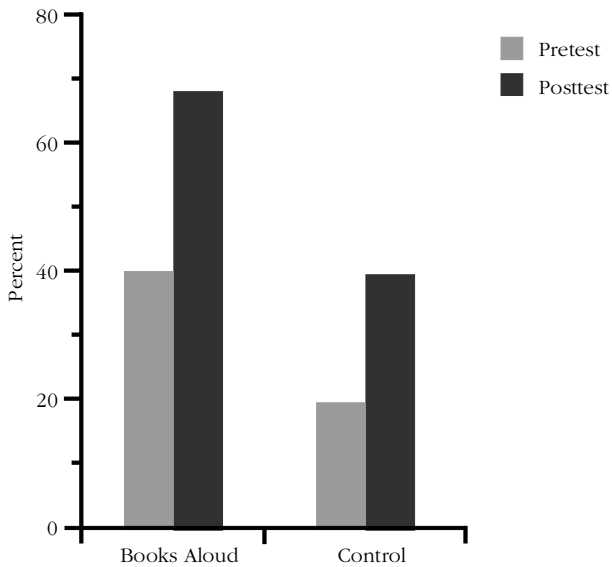


**Figure 5** Pre- and posttest differences between Books Aloud and control groups: Concepts of writing

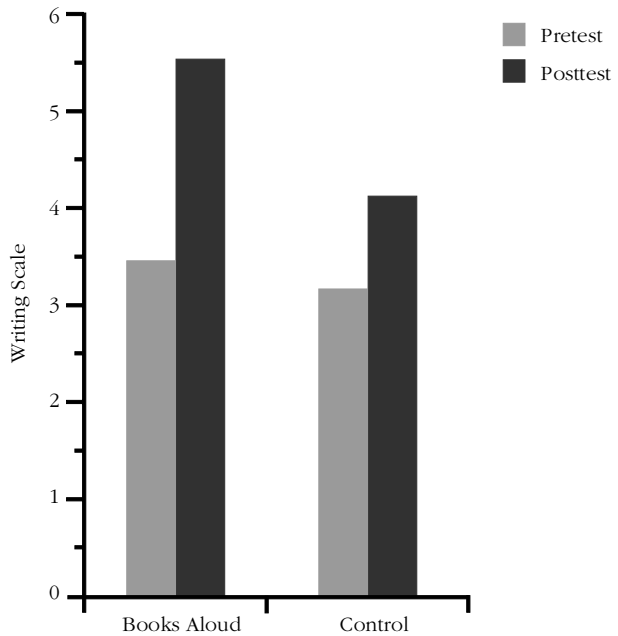



**Figure 6** Pre- and posttest differences between Books Aloud and control groups: Concepts of narrative

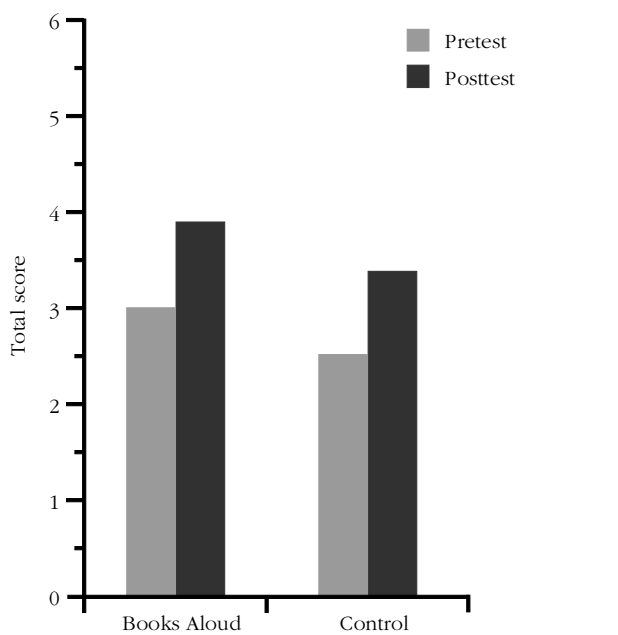



**Figure 7** Pre- and posttest differences between Books Aloud and control groups: Concepts of print

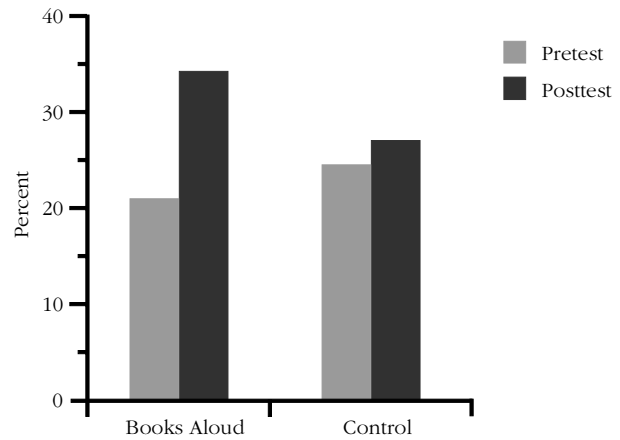
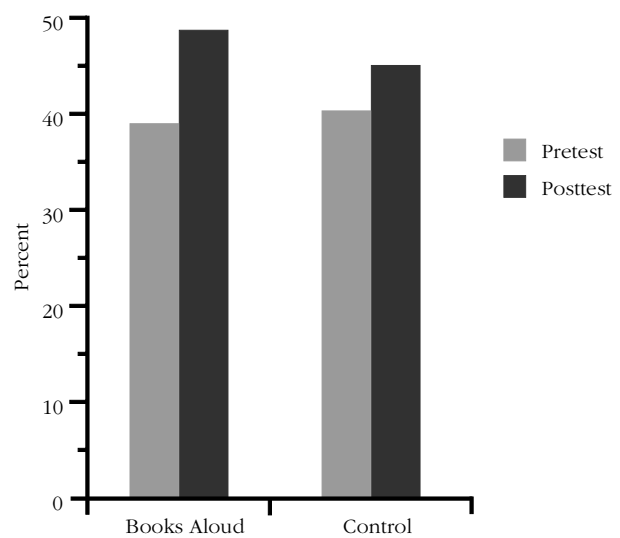



**Figure 8** Pre- and posttest differences between Books Aloud and control groups: Environmental print




Aloud children were now making strings of letters, using more conventional forms, indicating that they knew what was, and what was not, a letter (see Figure 10).

On the other hand, control group children were still mixing letters, numbers, and pictures, indicating their view that multiple symbols may be used for reading (see Figure 11).

Similar developmental changes were evident in children's understanding of narrative. Compared with their control counterparts, Books Aloud children seemed

**Figure 9** Example of a child's writing from the treatment group on the pretest

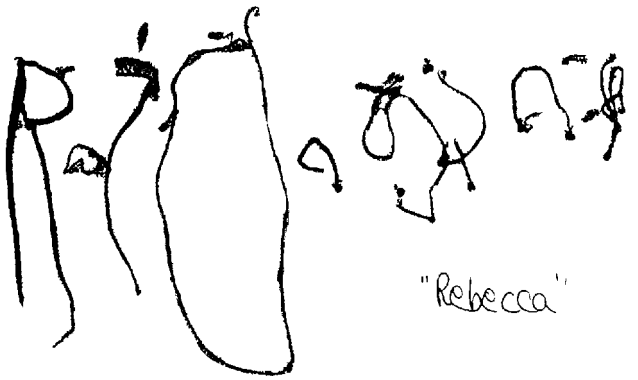



**Figure 10** Example of a child's writing from the treatment group on the post-test

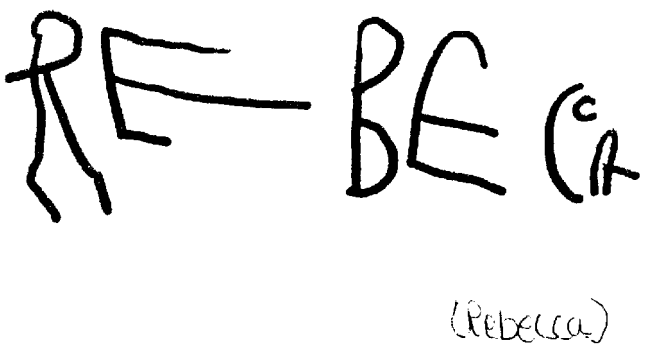
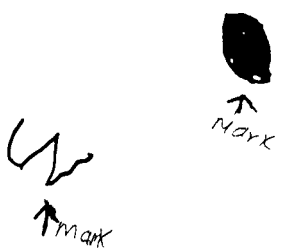



**Figure 11** Example of a child's writing from the control group on the posttest




to develop a better sense of what constitutes the story form of discourse. As described by Berman and Slobin (1994), prior to the intervention the 3- and 4-year-olds produced verbal accounts in response to the pictures, describing scenes and events as if they were static, only occasionally referring to sequential relations between pictures. Samantha's (pseudonym) pretest story, for example, illustrates many of these features:

> There was a mouse. He got in a cage. It's dark. Mouse got in his mouth. White one and a black one. He got in a cage. He made a mess. The end. (No. 249)

At the end of the year, however, Books Aloud children were more likely to elaborate on sequences of pictures and focus on temporal, or even occasionally, causal relations between events, evident of overall plot structures. This is Samantha's posttest story:

> This is a story about a silly mouse. Once there was a mouse that lived in a castle with a ghost. A haunted house. There was a cat in the house that ate the mouse. And the jack box put the mouse into the cage and the jack box popped out. Then the mouse went to the Rocky mountains, and he got off of one of the mountains, and stood down on the haunted house. And the cat spit out the other mouse. And cut the jack box. And they all went to get their other friend. Then there was a mouse named Tony and that mouse lived just in a house. Then they had jello cake and food everywhere. And they had a car race. And they painted. And then the mouse was done painting. And that's the end. (No. 249)

Growth in children's stories in the control group, on the other hand, tended to focus less on relations between events, and more on picture saliency rather than narrative importance. For example, although DeShawn's (pseudonym) story depicted some of the pictures as dynamic events, there was little evidence of organization (temporal or causal) in story line:

> There was two mouses. That's what it is. There was one in the cage; he was trying to get out. One was up on a building. One was crying. One was a tiger; ROAR! He was trying to jump up this cage but he couldn't. It was two mouses. One was tired. One was sleepy. One was tired. BJ came over to paint; and BJ sat down, right there. It was two mouses with big ears. One was sleeping then there was a big one with big ears.

The results of this analysis argue forcefully for the impact of storybook reading on young children's early literacy development. Examination of both process and outcomes variables suggests the following equation: > physical access to books + > verbal interaction around literacy + > time spent reading and relating to books = > reading and writing development.

### The longer term impact of the intervention

The last analysis was to determine whether the measured gains in children's literacy development were still evident in kindergarten, 6 months following the intervention. It was not an easy task. Even in the metropolitan area, kindergarten children from treatment and

control child-care centers did not naturally attend certain school clusters. Rather, children dispersed to 45 different schools and 52 different classrooms. Over 40% of the children attended kindergarten in their child-care centers, more than one third went to religiously based kindergarten classes, and about one quarter went to public schools in various parts of the city.

In addition to other data sources including teacher interviews and observations (Neuman, 1997), the research team individually assessed each child's early literacy skills. To avoid a ceiling effect, the assessment battery was modified to account for children's developing skills and longer attention spans. For example, the letter name knowledge task in kindergarten included all 26 letters, presented randomly on individual cards first in uppercase, then in lowercase form. The Concepts of Print (Clay, 1979) task was given in its entirety, including all 24 items. In addition, two phonemic awareness measures, tapping children's rhyming and alliteration capability (Maclean, Bryant, & Bradley, 1987) were included, because these abilities have been shown to be highly predictive of early reading. Each task involved 10 items and two practice trials. In each trial, the child was given three pictures, two of which rhymed (or, for the alliteration task, two of which began with the same sound). Using a hand puppet, the child was asked first to say the words and then to point to the picture that did not rhyme or that did not begin the same as the others. A word recognition task of 10 high-frequency words was also included (Felgus, 1997). The receptive language measure (PPVT) and the concepts of writing were administered with the use of similar procedures as in the earlier assessment. Table 6 summarizes the comparison of the kindergartners' literacy abilities.

**Table 6** Kindergartners' early literacy abilities: Books Aloud versus control

| Characteristic | Group: Books Aloud ($N$ = 35) | Group: Control ($N$ = 31) |
|---|---|---|
| Age in months | 65.71 | 64.71 |
| Ethnicity | | |
| Caucasian | 8 | 7 |
| African American | 20 | 18 |
| Hispanic | 0 | 4 |
| Asian | 0 | 2 |
| Gender | | |
| Male | 14 | 13 |
| Female | 14 | 18 |
| Receptive language (PPVT) | 32.79% ($SD$ = 24.31) | 23.29% ($SD$ = 29.44) |
| Concepts of print | 56.43% ($SD$ = 30.46) | 44.84% ($SD$ = 33.05) |
| Uppercase letters*** | 93.27% ($SD$ = 4.06) | 55.85% ($SD$ = 11.57) |
| Lowercase letters*** | 76.38% ($SD$ = 7.14) | 44.81% ($SD$ = 11.03) |
| Rhyming* | 58.60% ($SD$ = 3.42) | 39.70% ($SD$ =3.35) |
| Alliteration* | 60.00% ($SD$ = 3.30) | 42.60% ($SD$ = 3.29) |
| Concept of writing*** | 7.93% ($SD$ = .60) | 6.74% ($SD$ = 1.61) |
| Word recognition | 28.60% ($SD$ = 6.41) | 24.00% ($SD$ = 3.85) |

* $p < .05$
*** $p < .001$

The results of this analysis were striking. On every measure, performance of the Books Aloud children was superior to the control group. On five of these measures, these differences were statistically significant. As shown in Table 6, scores indicated statistically significant differences on uppercase ($p < .001$) and lowercase ($p < .001$) letter name knowledge, rhyming ($p < .05$), alliteration ($p < .05$), and concepts of writing ($p < .001$). Even after 6 months had elapsed, results indicated that the gains made by children in the Books Aloud program were still very much evident.

These findings suggest the cumulative reach of reading storybooks to children. Regular book reading influenced not just one but many skills related to reading success. Through engagement in storybook reading, children learned more about written forms, about how the abstract symbolization worked, about how stories are told and retold, and even about letters apart from their context. Kindergartners' performance, as well, appeared to indicate that crucial skills were likewise influenced by storybook reading. Letter name knowledge, concepts of writing, and even phonemic awareness skills were more highly developed, suggesting that these skills may indeed be a by-product of exposure to books and learning to read (Ehri, 1994). Only receptive language skills continued to remain static over time (Burchinal et al., 1989; McCartney, 1984). Consequently, these results provide further reason for the importance of reading storybooks in young children's lives: Children's growth in reading and writing serve to confirm and extend storybook reading's importance in these early years.

## Discussion

### Limitations

This study attempted to examine the impact of greater access to literacy for over 18,000 children, focusing on a randomly selected sample of centers. Although the research team visited more than 150 centers for various events, shadowed preschool specialists, and developed cases for centers representing different levels of implementation, it was impossible to take in all the events, activities, and trainings throughout the year. Further, because training was differentiated according to the needs of each center, it cannot be argued with full assurance that all centers received training that reflected their needs. In some instances, for example, centers simply refused training. Finally, the research team was not able to monitor activities in control centers throughout the year. Although each center was given a small library at the conclusion of the study, the intrusiveness of our methods (i.e., observations, photographs) meant, that in some cases, comparisons between centers were not possible.

### Conclusions

Eisenhart and Borko (1993) have argued that field-based, formative experiments should be held to two standards: (a) a standard of usefulness and value to educational practitioners and policy makers, and (b) a standard of theoretical and methodological practice as defined by the research community. This research provides such evidence, building a compelling case for the importance of books in children's early literacy development. It argues that young children need rich and diverse reading materials to acquire the complex set of attitudes, skills, and behaviors associated with literacy development.

In spite of this need, however, recent statistics show the paucity of high-quality children's books in economically disadvantaged communities. Monies available for books in child-care centers are typically scarce; in Pennsylvania, for example, less than one dollar per week per child is available in government-subsidized child care for supplies (Pennsylvania Department of Education, personal communication, 1997)—a budget item that must be shared with crayons, paper, and diapers. School libraries in many areas essentially are nonexistent (Executive Board of the Association of School Librarians, 1997). Local public libraries in these poor neighborhoods, as well, tend to be terribly underfunded. In this state, for example, libraries receive fewer funds than in 48 other states ("Libraries in Distress," 1997). It seems hardly surprising, therefore, that many children may be ill prepared for literacy instruction.

This project suggests the benefits for young children when these conditions are dramatically changed. The intervention flooded high-quality books into child-care centers and engaged child-care staff in using books frequently, interactively, and developmentally appropriately with young children. In doing so, the research team observed changes in both the physical and social environments—changes that we suggest might be attributed to a theory of physical and psychological proximity.

From ecological research (Bronfenbrenner, 1979; Gump, 1989), it was evident from observations, teacher questionnaires, and teacher-child interactions that close, physical access to books mattered. The physical proximity of books—especially attractive, high-quality books within young children's sight lines—seemed to have a coercive effect. In such literacy-enriched environments, however, young children were not merely passive recipients bombarded with stimuli. Rather, they appeared to be active agents in their own development, exploring, discovering, and using the physical environment as an important medium for their transactions. Numerous observations of free choice time, for example, often indicated that it was the children, even more than the adults, who generated the reading activity. It was through this dynamic series of transactions, as much previous research has substantiated (Morrow & Weinstein, 1986; Neuman & Roskos, 1997; Weinstein, 1991), that young children seemed motivated to use and learn more about literacy.

The physical placement of books in close proximity to children is critical for early literacy. Nevertheless, it is by itself insufficient. Children need an excellent instructional environment as well. Recent studies (Helburn, 1995; Whitebook, Howes, & Phillips, 1989) have confirmed the importance of providing high-quality instructional assistance for children's cognitive and social development in child-care settings. Five million children in the U.S. attend child-care centers every day, yet only one in seven centers is considered to be of sufficient instructional quality (Helburn, 1995). Staff development, therefore, has become an imperative policy issue in early child care (Kagan & Cohen, 1997), with even modest amounts shown to influence child-care workers' attitudes and behaviors (Arnett, 1989). In a previous study (Neuman & Roskos, 1993), for example, we found that training paraprofessionals in assisted instruction in ecologically supportive environments provided powerful incentives for children's active engagement in literacy and subsequent learning from print. Vygotsky (1978), in fact, considered such assisted performance by more capable adults the fundamental nexus that distinguished the proximal zone from developmental learning.

Child-care workers in large urban areas, however, often come to their teaching positions with little professional training. What they teach tends to build on their best instincts and experience, their own values, and their sense of what is right for young children (Katz, 1994). Consequently, training in child care remains especially complex (e.g., wide variance in knowledge base as well as logistical issues). As evidence of this complexity, the classic workshop model of training in this study was not originally successful; rather, it had to evolve to become increasingly contextualized, sensitive to teachers' existing beliefs and varying child-care contexts.

To assess these challenges, the research team held debriefing interviews with preschool specialists and some 20 directors, teachers, and aides in randomly selected centers after the conclusion of the study. Table 7 gives an overview of staff members' impressions of training.

Responses from child-care staff indicated that trainers seemed to create excitement about books. Preschool specialists brought new ideas, suggestions for story extenders, and themes that helped to make storybook reading a more central activity. Although some teachers reported learning "nothing much new," most felt that they benefited substantially from training—wanting even more contact, more often. In brief, the elements attributed to the success of training were these:

- Trainers took time to establish relationships based on trust, respect, and collaboration with child-care staff.
- Differentiated goals for training were established, reflecting varying levels of child-care workers' knowledge, skills, and needs.
- Acknowledging teacher beliefs, trainers demonstrated the teaching of skills in developmentally appropriate ways.
- Workshops and demonstrations focused on visually based, concrete, easy-to-implement ideas for increasing children's exposure to books.

Demonstration lessons, the in-class collaboration between trainers and staff, provided social and psychological supports to teachers in the process of change. Trainers visited teachers regularly in their centers, modeled, cotaught, and held special events and celebrations together at local library branches throughout the year. These trainers encouraged, collaborated, and often prodded teachers to try out new behaviors—to take on new risks, supporting their efforts along the way. Acting like coaches (Neuman & Gallagher, 1994), they served as constant advocates for the importance of reading to children.

**Table 7** Child-care staff members' impressions of training ($N = 60$)

| Statement | Percentage |
|---|---|
| What teachers learned... | |
| Hands-on ideas to use with books | 27% |
| How to create flannel board stories | 21% |
| How to manage storybook reading | 9% |
| How to teach children to take care of books | 7% |
| To take trips to the library | 7% |
| How to make books more accessible to children | 6% |
| How to read expressively to children | 6% |
| How to incorporate puppets in reading | 4% |
| How to use big books | 4% |
| Ideas to get parents involved | 4% |
| To spend more time on reading | 3% |
| How to create a puppet stage | 1% |
| To select age-appropriate books | 1% |
| What made the most impression... | |
| Created excitement about books | 22% |
| Trainers' interaction with the children | 20% |
| Trainers' ideas and support | 14% |
| I learned nothing new | 12% |
| Trainers' positive demeanor | 8% |
| Someone to affirm what teachers are doing right | 6% |
| Great liaisons to other programs | 4% |
| The materials | 4% |
| Trainers expanded our thinking | 4% |
| Great training for the aides | 2% |
| Selection of books too narrow | 2% |
| Trainers sensitive to different teaching styles | 2% |

These results suggest that it was both the physical proximity of books and the psychological proximity of people around them that enhanced the placement, opportunity, and access to books for children. With these supports, caregivers began to play a more critical role in children's literacy, reading more often and offering them helpful assistance and encouragement. As reported in our data, children's concepts of print, writing, letter name knowledge, and concepts of narrative improved substantially over the year's intervention compared to those of the control group.

But the question remains whether these improvements in early literacy skills are sufficient. Despite greater frequency and interaction in storybook reading, children's environmental print knowledge, and especially their receptive language skills, did not appear to be influenced by the intervention. Although the lack of statistically significant gains in environmental print could be easily explained since it represents visual cue reading and not decontextualized language, few gains in receptive language (both in preschool and in kindergarten) were more troubling. Further, contrary to the findings reported here, previous studies of storybook reading (Elley, 1989; Neuman, 1996; Neuman & Gallagher, 1994) have shown statistically significant gains in vocabulary as well as receptive language. In a study of the impact of storybook reading and literacy-related play, teen mothers and their 4-year-old children (Neuman & Gallagher, 1994) reported dramatic gains on receptive language skills as a result of a 3-month intervention.

Yet these previous studies involved training parents and teachers to develop greater intersubjectivity with children, guiding their participation in language and literacy events. In contrast to this research, although improvements in the language environment were clearly noted, such responsivity was rarely observed. Particularly for children from economically distressed communities, meaningful language growth may necessitate a longer term intervention, involving print-rich activities, literacy-related play, and stimulating conversations. Oral language development, therefore, must become a priority in developing curriculum for young children. Snow and her colleagues (Snow, Tabors, Nicholson, & Kurland, 1995) suggested that oral decontextualized language skills may increasingly account for variance in reading success as reading becomes a task of comprehension rather than decoding.

This project, therefore, must be viewed as the beginning of a process rather than an end point, as our profession begins to engage the child-care community in supporting young children's early reading skills (IRA/NAEYC Joint Statement, 1998). As caregivers involve children in more developmentally appropriate literacy activity, they may begin to shape what skills children may know and how they may come to see the role of literacy in their lives. Such efforts, as this formative experiment powerfully demonstrates, may prove to be a wise and timely investment, likely to reap enormous benefits for children's future achievement.

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## *APPENDIX A*

### The coding of children's narratives

No. 54

Once upon a time (prompted). A rat. Runnin. A cat. A box. The mouse was in a cage. The mouse was on the rocks. The mouse was sad. The cat was tryin' to eat the mouse. The mouse got out the cage. The mouse was gonna get the udder mouse. The mouse was happy. Them both mouses was there. They both had a car. They both was there. The mouse...the mouse and that mouse was right there (pointing). The little mouse was on the big mouse. (Local structure = 1 [labeling the picture]; Global structure=1 [isolated events])

No. 79

Once upon a time, the mouse. The mouse. The cat was mad. The mouse is not mad. The mouse was staying in his house. The thing came on his house. The box came off. The mouse is sad. The cat got teeth, and the cat bites the mouse. That's a bad cat. The other mouse got the cat. And then the mouse came out of his house. And then the thing came off and went in the box. And they got the mouses out. The mouse came out. Then the mouse went up the air, and had fire on it. The other mouse was sad again. And it was eating time, and the mouse ate the candy. The mouse was on a race course. And he went over here and here, and here. The end. (Local structure= 3 [more complex events; child is making inferences about what is not visible on printed page]; Global structure = 2 [evidence of chaining—temporal relationship; child is using "and" and "then."])

## *APPENDIX B*
**Examples of daily schedules**

H.H. center

| | |
|---|---|
| 7:30 a.m. | Arrival time |
| 8:00–9:30 | Breakfast |
| 9:45 | Bathroom |
| 10:00 | Circle time—Stories |
| 10:15 | Arts and crafts |
| 10:45 | Outdoor/indoor play |
| 11:15 | Lunch preparation |
| 12:00 p.m. | Lunch |
| 12:45 | Bathroom |
| 1:00 | Naptime |
| 3:00 | Bathroom |
| 3:15 | Snack time |
| 4:00 | Recreational time/TV/puzzles |
| 4:00–6:00 | Children depart |

P.C.C. center

| | | |
|---|---|---|
| 8:00 a.m. | Snack | |
| 8:10 | Supervise centers | |
| 9:00 | Pledge of Allegiance, opening prayer, attendance, welcome | |
| 9:20 | Circle time | |
| | Weather | Review classroom rules |
| | Shape | Story |
| | Color | Songs |
| | Letter | Group games |
| 9:45 | Coloring sheets | |
| | Crafts | |
| 10:15 | Snack | |
| 10:35 | Bathroom | |
| 10:50 | Free play | |
| 11:30 | Bathroom | |
| 11:45 | Lunch time | |
| 12:15 p.m. | Lunch over/clean up | |
| 12:30 | Naptime | |
| 3:00 | Wake up children, bathroom | |
| 3:20 | Snack | |
| 3:30 | Bible story | |
| 4:15 | Outdoor play | |