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# Home Literacy Environments of Young Children With Down Syndrome

## Findings From a Web-Based Survey

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Early home literacy experiences, including parent-child book reading, account for a significant amount of children's later reading achievement. Yet there is a very limited research base about the home literacy environments and experiences of children with cognitive disabilities. The purpose of this study is to describe findings from a Web-based survey of home literacy environments of young children with Down syndrome. Respondents ( $n = 107$ ) were mostly mothers; a majority were well educated. Findings suggest that respondents gave literacy a higher priority than reported in prior research on children with disabilities. More than 70% of respondents had 50 or more children's books and also had literacy materials including flash cards, magnetic letters, and educational videos or computer games. Most parents read to their children and used these literacy materials 10 to 30 min per day. Respondents reported that their children had reached many important early literacy milestones, and they also described having relatively ambitious lifelong literacy goals for their children. Important implications for research and practice are discussed.

**Keywords:** *home literacy environment; mental retardation; exceptionalities; family/parental involvement; families/parents*

For all children, learning to read is a long-term developmental process that begins with emergent literacy, the period of time between birth and when children begin to read and write (Sulzby, 1985; Teale, 1986; Whitehurst & Lonigan, 1998). More than 30 years of converging research findings agree that reading aloud to young children develops vocabulary, improves reasoning skills, introduces story grammar, and builds knowledge about the alphabetic principle, or the relationship between letters and sounds (Arnold, Lonigan, Whitehurst, & Epstein, 1994; Crain-Thoresen & Dale, 1992; Ninio & Bruner, 1978; Senechal, LeFevre, Thomas, & Daley, 1998). Additionally, parents who create a home literacy environment that is book rich and who read frequently to their children also tend to provide a richer array of environmental literacy materials, such as magazines, magnetic letters, and flash cards, for their children (Teale, 1986).

Parent-child book reading is the most widely researched aspect of emergent literacy, in large part because of the

well-documented association between the frequency of early parent-child book reading and how well children learn to read (Bus, van Ijendoorn, & Pellegrini, 1995; Griffin & Morrison, 1997; Stevenson & Fredman, 1990). Researchers have found that children read to fewer than four times a week have significantly lower IQ scores than children who were read to more frequently (Stevenson & Fredman, 1990). Converging findings regarding the important role of home literacy environments support what

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Stanovich (1986) termed “the Matthew effect,” in which most children rich in early literacy experiences grow to be good readers and it is difficult for children with impoverished early literacy experiences to ever catch up.

In light of the important relationship between book reading, home emergent literacy environments, and future school achievement, it is concerning that so little research has examined the home literacy environments and emergent literacy experiences of children with disabilities. The present study addresses this important gap in the research literature on home literacy environments of students with disabilities, specifically focusing on young children with Down syndrome (DS). DS is one of the most frequently occurring causes of cognitive disability, a condition experienced by more than 350,000 individuals in the United States. Children with DS typically have IQs in the range of mild to moderate retardation.

It is not unusual for children with DS to have delayed expressive and receptive language, with expressive language relatively weaker than receptive language, but an emerging database has demonstrated that many individuals with DS can learn to read (Al Otaiba & Hosp, 2004; Appleton, 2000; Bochner, Outhred, & Pieterse, 2001; Byrne, Buckley, MacDonald, & Bird, 1995; Kay-Raining Bird, Cleave, & McConnell, 2000; Lorenz, Sloper, & Cunningham, 1985). On average, the reading levels of children with DS are below the reading levels of typically developing younger children matched on IQ scores (Casey, Jones, Kugler, & Watkins, 1988; Cossu, Rossini, & Marshall, 1993). Within the group of individuals with DS, however, there appears to be considerable variability in reading achievement. IQ seems to be an important predictor of this variability (Carr, 1995). However, it is vital to understand other potentially important factors, such as children’s home literacy environment. To do so, we conducted a review of the literature describing home literacy experiences of students with disabilities that included children with cognitive disabilities or language delays.

### **Home Literacy Environments and Emergent Literacy Experiences of Students With Disabilities**

A small handful of researchers have used survey or observational data to describe home literacy environments of students with disabilities. Marvin and Miranda (1993) were the first to use survey methodology to directly compare the home literacy environments of students with disabilities and typically developing children. Participants in their study were families of three groups of children:

(a) preschoolers enrolled in Head Start, (b) preschoolers in special education programs, and (c) typically developing children enrolled in the special education programs as peer models. The authors described more than 80% of students in the special education program as having speech and language impairments. Because students were reported as having more than one category of disabilities, including low-incidence disabilities, such as visual, hearing, physical and mental disabilities and autism spectrum disorders, it is not possible to determine the proportion of children with low- or high-incidence disabilities in their sample. Parents in these three groups were employed in skilled and technical jobs and had at least a high school diploma.

The three groups of parents reported reading to their children with similar frequency and duration. Only about 40% read at least four times a week, the minimal frequency “threshold” associated with positive reading and cognitive outcomes for typically developing children found by Stevenson and Fredman (1990). In addition, Marvin and Miranda (1993) noted that parents of children with disabilities were found to differ in four ways from the other parents: (a) They placed a lower priority on literacy, (b) they provided fewer types of literacy experiences, (c) they expected less progress from their children, and (d) they expressed lower future expectations for their children.

Marvin (1994) surveyed families of preschool children who attended early childhood special education programs to compare the home literacy environments of children with single (high incidence; mostly speech-language impairments) versus multiple disabilities (low incidence; cognitive, orthopedic, visual, and/or hearing impairments). As she found in her earlier study with Miranda (Marvin & Miranda, 1993), fewer than half of the children in either group were read to on a daily basis. In addition, the more involved the child’s disabilities, the lower priority parents placed on literacy. Other researchers have also reported that children with more severe disabilities encounter even fewer home literacy experiences than children who are less involved (Light & Kelford-Smith, 1993).

There are a few studies that have used observational research to describe the home literacy environment of children with disabilities. More than a decade ago, Fitzgerald and her colleagues (Fitzgerald, Roberts, Pierce, & Schuele, 1995) observed the home literacy environment of three preschoolers with DS. Unlike participants in prior studies who were mostly from low- to middle-socioeconomic-status (SES) backgrounds, all the parents in the Fitzgerald study were professionals who had some college education; one had a master’s degree and another was training to be a doctor. Researchers visited homes twice and reported that homes were print rich and that

the mothers valued literacy. Disturbing, however, is that researchers observed that book reading occurred at an even more modest level than reported by Marvin (1994) or Marvin and Miranda (1993). Furthermore, in contrast to Teale's (1986) observation that families of typically developing children who had relatively more books tended to have and use a broader array of literacy materials, Fitzgerald et al. (1995) found that other types of literacy materials (reading newspapers, magazines, etc.) were used only rarely.

More recently, van Kleeck and Vander Woude (2003) reviewed the small handful of observational studies that have described parent-child shared book reading for preschool children with language delays who had no other disability. They also found that in contrast to language-matched typically developing preschoolers, children with language delays were read to less frequently (Mogford-Bevan & Summersall, 1997). Researchers mainly focused on children from low-SES backgrounds.

Thus, in summary, the extant literature we reviewed is relatively dated, and the nature, type, and severity of participating children's disabilities have not yet been clearly reported. Furthermore, research findings are mostly based on information about lower income families, which may have overstated the magnitude of differences in emergent literacy environments for students with disabilities.

### **Class Differences in Home Literacy Environments**

Research on book reading to young children has documented that children in low-SES homes are read to less frequently than in middle-class homes, leading to concern about lower levels of school reading readiness among children living in poverty (Ninio, 1980; Pellegrini, Galda, Jones, & Perlmutter, 1995; Sonnenschein, Brody, & Munsterman, 1996). For example, Adams (1990) estimated that when children from low-SES families begin school, they have had only 25 hr of book reading, whereas children from middle-SES families have had between 1,000 and 1,700 hr.

A more recent report, *Inequality at the Starting Gate* (Lee & Burkam, 2002), suggests that the disparity in book reading between low- and high-SES households may be declining in the face of national educational goals to improve parent-child engagement in emergent literacy activities (e.g., National Reading Panel, 2000; Snow, Burns, & Griffin, 1998). However, reading scores for children whose families were in the highest quintile for SES remain higher (by 56%) than scores for children whose families were in the lowest fifth for SES. The report analyzed the data from a Department of Education survey

of more than 16,000 homes whose children have test scores in the Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K; West, Denton, & Germino-Hausken, 2000) database. The authors also reported that although parents in general are reading to their children more frequently now than historically, on average, important home literacy resource differences persist between the lowest and highest SES quintiles, as shown in Table 1.

### **Purpose of the Present Study**

The purpose of the present study was to provide a first step toward describing the home literacy environments of young children (birth to age 6) with DS. Although there is a small number of studies describing the home literacy environments of children with disabilities as being very limited, this research has mostly been conducted with low-income families. Because there is considerable research showing that typically developing children from low-income families come to school with relatively impoverished literacy skills, a potentially important confounding variable may have been introduced. The present study, therefore, extends the literature by exploring home literacy environments provided by educated middle- to upper-middle-class families raising children with DS. Given the limited information available to the field, such research is a much-needed precursor to causal intervention research.

The research questions guiding the study follow:

1. How many books and other reading-related materials do respondents report are available to children, and how frequently are they reportedly used?
2. At what age do respondents' children reach emergent literacy milestones (i.e., being read to, looking at books independently, or reading)?
3. What lifelong literacy goals do families describe for their children?

## **Method**

### **Participants**

*Recruitment.* Increasingly, self-administered Web-based surveys are gaining prominence in both education and business (Dillman, 2000). This format lends itself to collecting useful information from a sample that is generally computer savvy and well educated (Dillman, 2000). With this reasoning in mind, the National Down Syndrome Society (NDSS) was contacted and asked to post a link to the survey on its Web site under the heading of "research." NDSS is a national support group for

**Table 1**  
**Home Literacy Resource Differences by Socioeconomic Status Quintile**

Resource	Lowest Fifth	Highest Fifth
Number of children's books	Owned about 38 children books	Owned 108 books
Reads to child	63% read to child 3 or more times weekly	94% read 3 or more times weekly
Has a computer	20% had a computer	85% had a computer
Television viewing	Watched 18 hr/week of TV	Watched 11 hr/week of TV

families and individuals affected by DS, and it is the largest nongovernmental source of support for research on DS. The link to the survey, featured on the Research page of the NDSS Web site (<http://www.ndss.org>), provided some background information about the authors and the purpose of the study and invited parents of children younger than the age of 10 with DS to take the survey.

*Respondents.* A total of 159 families responded; however, 52 were dropped from this analysis because their children were older than age 7, which is beyond the traditionally accepted developmental time frame for emergent literacy. Table 2 provides information about the gender, education, and occupations of the remaining 107 respondents; 87% were mothers, and the largest percentage of these respondents reported that they were homemakers. Notably, more than 70% of respondents reported having attained a college degree, and nearly one quarter indicated they had also completed a graduate degree. Their spouses also appeared well educated. Nearly half of these mothers indicated that they had given up professional careers to stay at home to take care of their child with DS (e.g., "former attorney—now full time mom"; "CPA [certified public accountant] on leave due to daughter's health concerns"; "inactive nurse"; "retired military officer"); the occupations of the remaining respondents were classified as skilled workers, educators, or professionals.

Given the preponderance of homemakers in our sample who have advanced degrees and that we did not ask for occupational status of respondents' spouses, it was not appropriate to use a traditional index of SES, such as the Hollingshead, because it heavily weights employment. Nonetheless, these parents were well educated, and it is reasonable to assume that the sample was largely composed of middle- to high-SES families.

*Children.* Respondents were asked to indicate their child's gender, age, and grade level. Nearly 70% of children in our sample were female, which is surprising because more boys than girls are born with DS. Respondents indicated that children's ages ranged from 3 months to

**Table 2**  
**Respondent Information**

Variable	%
Respondent's relation to child	
Mother	86.6
Father	1.8
Other/Missing	11.7
Respondent's education	
Some high school	3.6
High school degree	4.5
Some college	21.4
College degree	46.4
Graduate degree	24.1
Spouse's education	
Some high school	6.3
High school degree	8.9
Some college	33.0
College degree	38.4
Graduate degree	13.4
Respondent's occupation	
Homemaker	37.4
Skilled/Technical worker	23.3
Skilled/Medical worker	9.4
Educator	25.2
Professional/Manager	4.7

Note:  $N = 107$ .

6 years of age, and only about 19% had started elementary school. Table 3 summarizes the children's demographic information.

## Survey

A 22-item online survey was created for this study (shown in the appendix). The items varied in response mode to include Likert-type scale items, rank-ordered items, and check-all-that-fit items (Babbie, 2001; Dillman, 2000; Mertens & McLaughlin, 1995). To facilitate comparison with the extremely limited research base, questions were adapted from the only prior survey studies of family members of children with disabilities (e.g., Marvin, 1994; Marvin & Miranda, 1993). Additional

**Table 3**  
**Children’s Demographics**

Variable	<i>n</i>	%
Gender <sup>a</sup>		
Male	33	30.8
Female	73	68.2
Age		
< 1	8	7.5
1	15	14.0
2	14	13.1
3	15	14.0
4	25	23.4
5	16	15.0
6	14	13.1
Grade		
Pre-K	87	81.3
Kindergarten	12	11.2
1	5	4.7
2	3	2.8

Note: *N* = 107.

a. One family did not report the gender of their child.

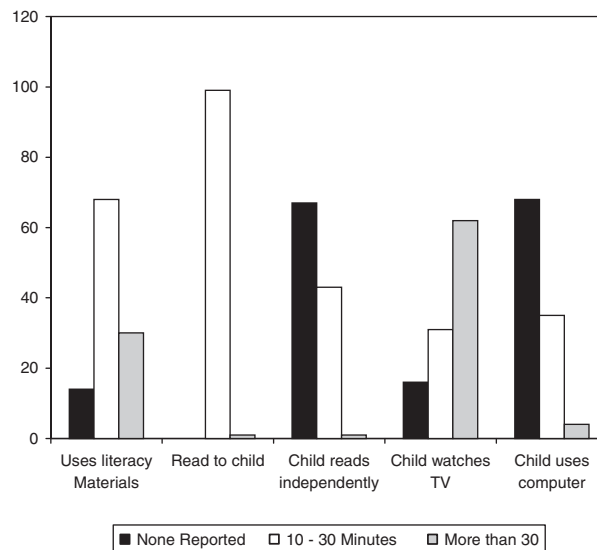
questions were developed that are based on the research questions of the current study.

The original draft of the survey instrument was piloted with a small number of respondents (*n* = 10) we knew professionally who were members of a local branch of the NDSS. Families provided feedback and shared their perspectives on the format and substance of questions. For example, parents suggested that we replace open-ended questions with categorical multichoice formats. With regard to substance, parents reported that we were initially too limited in the selection of instructional literacy artifacts or materials used in homes. They also encouraged us to examine the amount of television time, because they felt programs were very helpful in building their children’s listening comprehension. Although parents provided feedback on the final product, we did not ask them to retake the survey.

## Results

Survey data were entered into a database and screened. In keeping with the descriptive nature of the three research questions guiding the study, frequencies were calculated to address responses describing (a) the number of books and reading-related materials in respondents’ homes, (b) the age at which children reached emergent literacy milestones, and (c) lifelong literacy goals for children.

**Figure 1**  
**Percentage of Respondents Reporting by Time Category and Child Activity**



Note: *N* = 107.

## Number of Books and Other Reading and Instructional Materials and Frequency of Usage

All of the respondents reported having children’s and adult books in their homes. Table 4 summarizes the types of reading materials and reading instructional materials respondents reported using at home with their children. Notably, more than three quarters of the families possessed more than 50 children’s books, and more than half reported having more than 100 books, making them similar to the upper quintile of the families in the ECLS-K database (Lee & Burkam, 2002).

Respondents were also asked to report how much time per day their child engages in the following activities: using instructional literacy materials, being read to, looking at books independently, watching television, and using the computer. Figure 1 summarizes these results. Virtually all of the children were read to daily for 10 to 30 min. Additionally, according to respondents, nearly half (43.74%) the children looked at books or read to themselves independently for between 10 and 30 min a day. All but about 15% of children watched educational or noneducational television for more than a half an hour daily. Computer usage was more limited, but this finding is not surprising, given the large percentage of young

**Table 4**  
**Reading and Reading Instruction–Related Materials Parents Reported Using at Home**

Material	Number Reporting Yes	Estimated Number of Books in the Home			
		0–50	50–100	100–200	> 200
<b>Reading materials</b>					
Children's books	107 (100.0%)	22 (20.5%)	28 (26.2%)	39 (36.4%)	18 (16.8%)
Adult books	107 (100.0%)	24 (22.4%)	25 (23.4%)	31 (29.0%)	27 (25.2%)
Newspapers	84 (78.5%)				
Children's magazine	71 (66.4%)				
Encyclopedia	38 (35.5%)				
Other	28 (26.2%)				
<b>Instructional materials</b>					
Flash cards	79 (73.8%)				
Workbooks	46 (43.0%)				
Books on tape	38 (35.5%)				
Magnetic letters	78 (72.9%)				
Educational videos and computer	90 (84.1%)				

Note:  $N = 107$ . Total exceeds 100% because respondents were asked to check all that apply.

children. When asked who generally reads to their child, more than 50% (52.3%) of respondents reported that the parent read to the child, about 20% (24.3%) reported an older sibling, and the remainder answered caregiver, grandparent, or other (23.3%).

### Age at Which Children Reached Emergent Literacy Milestones

Table 5 summarizes the age respondents reported that children acquired important emergent literacy milestones. Most respondents (81.3%) reported they began reading to their child by age 2. Similarly, 82.2% reported that their child began to be aware of family members' reading behaviors by age 2, and 66.4% had begun to independently look at books for pleasure by that age. Not surprisingly, only a small minority of respondents (16%) indicated that their children began to read by age 6 (we defined *reading* as sounding out words such as *cat*, recognizing sight words such as *the*, and/or using these skills to read short books). Given our definition, it was surprising that one mother reported that her child began reading by age 1. The majority of respondents (87%) indicated that their children had begun to independently look at books for pleasure, and more than 65% of respondents indicated children began this behavior very early, between the ages of 1 and 2.

### Parents' Literacy Goals for Their Children

Parents were asked to rank order their lifelong literacy goals for their children. The goal ranked consistently most important by parents was for their children to recognize

**Table 5**  
**Child's Age at Reading Milestones**

Age	First Read To <sup>a</sup>	Aware of Others Reading <sup>b</sup>	Started Reading <sup>c</sup>	Independently Look at Books <sup>d</sup>
Not reported	3 (2.8%)	2 (1.9%)	3 (2.8%)	2 (1.9%)
Not yet	12 (11.2%)	12 (11.2%)	87 (81.3%)	12 (11.2%)
< 1	57 (53.3%)	—	—	—
1–2	30 (28.0%)	88 (82.2%)	1 (0.9%)	71 (66.4%)
3–4	3 (2.8%)	3 (2.8%)	4 (3.7%)	21 (19.6%)
5–6	2 (1.9%)	2 (1.9%)	12 (11.2%)	1 (0.9%)

Note:  $N = 107$ .

- At what age did you start to read to your child?
- At what age did your child become aware of or see you or other family members reading for pleasure?
- At what age did your child begin to read (sound out words such as *cat*, read words such as *the*, and use these skills to read short books)?
- At what age did your child begin to independently look at books or read for pleasure?

the alphabet (75.86%). More than 30% of parents rated among their top three reading chapter books (60.69%), reading signs for safety (45.52%), reading for job literacy (35.17%), and reading for pleasure (31.72%). Rated less frequently as a top goal were reading the mail (23.45%), reading aloud in school (18.62%), and reading newspapers (6.90%).

### Discussion

The families of children with cognitive disabilities who responded to our online survey differed from prior

research in that they were better educated, they provided more print-rich home literacy environments for their children, and they read books and used a wider variety of other reading instructional materials with greater frequency. The majority (80%) had more than 50 children's books at home, and a substantial minority (17%) had more than 200. This finding is important because none of the previous research on children with disabilities has reported the number of books, reading materials, or reading instructional materials that families have in their homes. It also suggests that, like well-educated families of typically developing children, respondents created print-rich home environments.

Furthermore, it is encouraging that nearly all of the respondents reported reading to their children and using literacy instructional materials at least 10 to 30 min a day. This is more than double the percentage that was reported by Marvin and Miranda (1993), who found that only 40% of the preschool children with disabilities from homes of less-educated parents were read to even as often as four times a week, the critical threshold Stevenson and Fredman (1990) found to be reliably associated with higher reading achievement in a study of typically developing children. Additionally, Adams (1990) estimated that this frequency of book reading would result in children entering school having been read to for more than 1,000 hr, which is similar to middle-class families of typically developing children.

In addition to reading to their children more frequently than reported in prior research, nearly half of parents in the present study reported that their children regularly looked at books on their own for at least 10 min daily. More than 60% of respondents said their children used reading instructional materials such as flash cards or magnetic letters for 10 to 30 min daily, and about a third of the children used the computer daily. Perhaps not surprisingly, more than 60% of children watched television for more than 30 min a day. Thus, unlike the relatively less-educated respondents in Marvin and Miranda's (1993) study, the respondents in the present study appeared to provide a broad and relatively rich array of literacy materials and experiences for their children. These materials and experiences are consistent with researchers' and policy makers' recommendations for parents related to early home literacy (see, for example, *Put Reading First: Helping Your Child Learn to Read* at [http://www.nifl.gov/partnershipforreading/publications/Parent\\_br.pdf](http://www.nifl.gov/partnershipforreading/publications/Parent_br.pdf)).

On the basis of parents' reports, these children with DS appeared to reach many of the emergent-literacy milestones (i.e., being read to, looking at books independently, being aware of family members' reading) at ages that are

similar to typically developing children. One mother wrote, "I've read to my son from the day I found out I was pregnant. We're starting early. He's only 10 months old, but he is learning." Given converging findings demonstrating the importance of early exposure to books, the finding that the overwhelming majority (84.10%) of children in the present study had been read to by age 5 is very encouraging.

Given research showing that reading trajectories are established early (e.g., Stanovich, 1986), it is hopeful that parents reported that more than 40% of the 30 children ages 5 and 6 had started reading, defined as decoding simple words such as *cat* or recognizing simple sight words such as *the* and using these skills to read short books. It was surprising that five parents reported that their children had begun to read by age 4, and unfortunately, the nature of the Web-based survey that protected parents' confidentiality precluded our ability to contact them to confirm their answers. However, early reading is not totally unknown in the literature about individuals with DS. For example, Bishop (2006) reported in a case study that three children with DS successfully learned to read 50 sight words before their third birthday.

More than three quarters of parents reported that their top literacy goal for their child was to recognize their alphabet. Yet reading for meaning, including reading for pleasure, reading chapter books, and reading for job purposes were also highly ranked. These goals suggest that our respondents gave literacy writ large a higher priority than previous researchers have reported (Fitzgerald et al., 1995; Light & Kelford-Smith, 1993; Marvin, 1994; Marvin & Miranda, 1993).

### Limitations and Implications for Research and Practice

As in any research, there are several important limitations to this study. There is no rate of response for a Web-based survey, and therefore, there is no way of examining whether there are potentially important differences between respondents and nonrespondents (Dillman, 2000). Families were purposefully sampled rather than randomly selected, so characteristics of families and children are not likely to be representative of all families of children with DS. As with all surveys, self-reported data may not be accurate. For example, although we defined child reading as "sounding out words and using these skills to read short books," when respondents described their young children as reading independently or reading for pleasure, it is unclear if they included pretend reading or looking at pictures rather





**Appendix (continued)**

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5. Prior to entering kindergarten, which of the following types of special education services or support did your family receive or access?
- Home visits by an early interventionist
  - Center- or school-based program only for children with the type of disability your child has
  - Center-or school-based program for children with other kinds of disabilities
  - Center-or school-based program for children with disabilities and children without disabilities (an inclusive program)
  - No program
6. To what extent did these services involve you or your family in your child's reading and writing development?
- No involvement
  - Little involvement
  - Occasional involvement
  - Extensive involvement
7. How much time does your child spend reading on his or her own per day?
- none
  - about 10 minutes
  - between 15 and 30 minutes
  - more than 30 minutes
8. Who generally reads to or with your child? How much time does your child spend being read to or reading with a family member per day? Please indicate the time (e.g., none, 10 minutes or less, 15-30 minutes, or more than 30 minutes).
- parent
  - grandparent
  - sibling
  - caregiver
  - other; please describe \_\_\_\_\_
9. How much time does your child spend watching TV per day?
- none
  - about 30 minutes
  - between 30 and 60 minutes
  - more than 60 minutes
10. How much time does your child spend on the computer per day?
- none
  - about 30 minutes
  - between 30 and 60 minutes
  - more than 60 minutes
11. At what age did you start to read to your child?
- not yet
  - before 1
  - between 1 and 2
  - between 3 and 4
  - between 5 and 6
  - between 7 and 8
  - between 9 and 10
12. At what age did your child become aware of or see you or other family members reading for pleasure?
- not yet
  - between 1 and 2
  - between 3 and 4
- 

*(continued)*

### Appendix (continued)

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- between 5 and 6
- between 7 and 8
- between 9 and 10
- don't read for pleasure

13. How often is your child aware of you or another family member reading?

- daily
- every other day
- weekly
- monthly
- almost never

14. At what age did your child begin to read (sound out words like "cat," read words like "the," and use these skills to read short books)

- not yet
- between 1 and 2
- between 3 and 4
- between 5 and 6
- between 7 and 8
- between 9 and 10

15. At what age did your child begin to independently look at books or read for pleasure?

- not yet
- between 1 and 2
- between 3 and 4
- between 5 and 6
- between 7 and 8
- between 9 and 10

17. Estimate the number of children's books in your home.

- none
- 0-50
- 50-100
- 100-200
- more than 200

18. Estimate the number of adult-level books in your home.

- none
- 0-50
- 50-100
- 100-200
- more than 200

19. Check the other literacy materials you have and use at home (check all that apply).

- newspapers
- children's magazines
- magazines
- encyclopedias
- other: please describe \_\_\_\_\_

20. Check the literacy instructional materials you have used with your child at home (check all that apply).

- flash cards
- workbooks
- books on tape

Appendix (continued)

- \_\_\_\_\_magnetic letters
- \_\_\_\_\_educational videos or computer games
- \_\_\_\_\_other: please describe \_\_\_\_\_

21. How much time does your child spend using these materials each day?

- \_\_\_\_\_none
- \_\_\_\_\_about 10 minutes
- \_\_\_\_\_between 15 and 30 minutes
- \_\_\_\_\_more than 30 minutes

22. Please rank order from 1 to 8 (in terms of immediacy and importance; 1 is the goal we are working on right now that is important) the following literacy goals you have for your child:

<u>Right now</u>		<u>Life-long goals</u>
_____	to recognize the alphabet	_____
_____	to read chapter books	_____
_____	to read signs for safety	_____
_____	to read for job literacy	_____
_____	to read for pleasure	_____
_____	to read newspapers	_____
_____	to read aloud in school	_____
_____	to read the mail	_____
_____	_____	_____
	<i>list other</i>	
_____	_____	_____
	<i>list other</i>	

Note: Item 5 was not analyzed in the present study.

References

Adams, M. J. (1990). *Learning to read: Thinking and learning about print*. Cambridge, MA: MIT Press.

Al Otaiba, S., & Hosp, M. (2004). Providing effective literacy instruction to students with Down syndrome. *Teaching Exceptional Children, 36*(4), 28–35.

Appleton, M. (2000). *Reading and its relationship to language development: A comparison of preschool children with Down's syndrome, hearing impairment or typical development*. Unpublished dissertation, University of Portsmouth, UK.

Arnold, D. H., Lonigan, C. J., Whitehurst, G. J., & Epstein, J. N. (1994). Accelerating language development through picture book reading: Replication and extension to a videotape training format. *Journal of Educational Psychology, 86*, 235–243.

Babbie, E. (2001). *The practice of social research* (9th ed.). Belmont, CA: Wadsworth/Thomson Learning.

Bishop, V. J. (August, 2006). *How to teach your toddler with Down syndrome to read*. Paper presented at the ninth World Down Syndrome Congress, Vancouver, Canada.

Bochner, S., Outhred, L., & Pieterse, M. (2001). A study of functional literacy skills in young adults with Down syndrome. *International Journal of Disability, Development and Education, 48*, 67–90.

Bus, A. G., van Ijendoorn, M. H., & Pellegrini, A. D. (1995). Joint book reading makes for success in learning to read: A meta-analysis on intergenerational transmission of literacy. *Review of Educational Research, 65*, 1–21.

Byrne, A., Buckley, S., MacDonald, J., & Bird, G. (1995). Investigating the literacy, language, and memory skills of children with Down's syndrome. *Down's Syndrome: Research and Practice, 3*, 53–58.

Carr, J. (1995). *Down's syndrome: Children growing up*. Cambridge, UK: Cambridge University Press.

Casey, W., Jones, D., Kugler, B., & Watkins, B. (1988). Integration of Down's syndrome children in the primary school: A longitudinal study of cognitive development and academic attainments. *British Journal of Educational Psychology, 58*, 279–286.

Cossu, G., Rossini, F., & Marshall, J. C. (1993). When reading is acquired but phonemic awareness is not: A study of literacy in Down's syndrome. *Cognition, 46*, 129–138.

Crain-Thoresen, C., & Dale, P. S. (1992). Do early talkers become early readers? Linguistic precocity, preschool language, and emergent literacy. *Developmental Psychology, 28*, 421–429.

Dillman, D. L. (2000). *Mail and Internet surveys: The tailored design method* (2nd ed). New York: Wiley.

Fitzgerald, J., Roberts, J., Pierce, P., & Schuele, M. (1995). Evaluation of home literacy environment: An illustration with preschool children with Down syndrome. *Reading and Writing Quarterly, 11*, 311–334.

Griffin, E. A., & Morrison, F. J. (1997). The unique contribution of home literacy environment to differences in early literacy skills. *Early Child and Development Care, 127/128*, 233–243.

Kay-Raining Bird, E., Cleave, P. L., & McConnell, L. (2000). Reading and phonological awareness in children with Down syndrome: A longitudinal study. *American Journal of Speech-Language Pathology, 9*, 319–330.

- Lee, V. E., & Burkam, D. T. (2002). *Inequality at the starting gate: Social background differences in achievement as children begin school*. Washington, DC: Economic Policy Institute.
- Light, J., & Kelford-Smith, A. (1993). The home literacy experiences of preschoolers who use augmentative communication systems and of their nondisabled peers. *Augmentative and Alternative Communication, 9*, 10–25.
- Lorenz, S., Sloper, T., & Cunningham, C. C. (1985). Reading and Down's syndrome. *British Journal of Special Education, 12*, 65–67.
- Marvin, C. (1994). Home literacy experiences of preschool children with single and multiple disabilities. *Topics in Early Childhood Special Education, 14*, 436–454.
- Marvin, C., & Miranda, P. (1993). Home literacy experiences of preschoolers enrolled in Head Start and special education programs. *Journal of Early Intervention, 17*, 351–367.
- Mertens, D. M., & McLaughlin, J. A. (1995). *Research methods in special education* (Vol. 37). Thousand Oaks, CA: Sage.
- Mogford-Bevan, K. P., & Summersall, J. (1997). Emerging literacy in children with delayed speech and language development: Assessment and intervention. *Child Language Teaching and Therapy, 13*, 143–159.
- National Reading Panel (2000). Teaching children to read: an evidence-based assessment of the scientific research literature on reading and its implications for reading instruction (NIH Pub. No. 00-4769). Washington, D.C.
- Ninio, A. (1980). Picture-book reading in mother-infant dyads belonging to two subgroups in Israel. *Child Development, 51*, 587–590.
- Ninio, A., & Bruner, J. (1978). The achievement and antecedents of labeling. *Journal of Child Language, 5*, 1–15.
- Pellegrini, A. D., Galda, L., Jones, I., & Perlmutter, J. (1995). Joint reading between mothers and their Head Start children: Vocabulary development in two text formats. *Discourse Processes, 19*(3), 441–463.
- Senechal, M., LeFevre, J., Thomas, E. M., & Daley, K. E. (1998). Differential effects of home literacy experiences on the development of oral and written language. *Reading Research Quarterly, 33*, 96–116.
- Snow, C. E., Burns, M. S., & Griffin, P. (Eds.). (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- Sonnenschein, S., Brody, G., & Munsterman, K. (1996). The influence of family beliefs and practices on children's early reading development. In L. Baker, P. Afferbach, & D. Reinking (Eds.), *Developing engaged readers in school and home communities* (pp. 3–20). Mahwah, NJ: Lawrence Erlbaum.
- Stanovich, K. E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly, 21*, 360–407.
- Stevenson, J., & Fredman, G. (1990). The social environment correlates of reading ability. *Journal of Child Psychology and Psychiatry, 31*, 681–698.
- Sulzby, E. (1985). Children's emergent reading of favorite story-books: A developmental study. *Reading Research Quarterly, 20*, 458–481.
- Teale, W. (1986). Home background and young children's literacy development. In W. Teale & E. Sulzby (Eds.), *Emergent literacy: Writing and reading* (pp. 173–206). Norwood, NJ: Ablex.
- van Kleeck, A., & Vander Woude, J. V. (2003). Book sharing with preschoolers with language delays. In A. van Kleeck, S. A. Stahl, & E. Bauer (Eds.), *On reading books to children: Parents and teachers* (pp. 58–92). Mahwah, NJ: Lawrence Erlbaum.
- West, J., Denton, K., & Germino-Hausken, E. (2000). *America's kindergartners: Findings from the Early Childhood Longitudinal Study, Kindergarten Class of 1998-99: Fall 1998* (NCES 2000-070, revised). Washington, DC: U.S. Department of Education.
- Whitehurst, G., & Lonigan, C. J. (1998). Child development and emergent literacy. *Child Development, 69*(3), 848–872.

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