

The Alberta Journal of Educational Research

Vol. XLII, No. 1, March 1996, 49- 58

Parental Print Exposure and Young Children's Language and Literacy Skills

Sonya Symons

Acadia University

Tara Szuskiewicz

University of Windsor

Camille Bonnell

Dalhousie University

Sonya Symons **Tara Szuszkiewicz** and **Camille Bonnell**
Acadia University University of Windsor Dalhousie University

Parental Print Exposure and Young Children's Language and Literacy Skills

We examined the relations of parental print exposure, SES, and education to young children's language and literacy skills. Thirty-nine 5 and 6-year-old children in their first year school were given vocabulary, printing performance, and phonemic awareness tests. Parents completed Stanovich and West's (1989) checklist measures of print exposure. Phonemic awareness was correlated with the print exposure of both parents, as well as with mothers' and fathers' education and family SES. Vocabulary test scores correlated with mothers' print exposure and did not correlate with parental education or family SES. Printing performance was correlated with mothers' and fathers' print exposure and mothers' education. Stepwise multiple regression analyses suggested that parental education and print exposure are related to early language and literacy skills and that SES does not account for individual differences in these measures.

Nous avons examiné la relation entre le montant de texte écrit auxquels sont exposés les parents, le statut socio-économique, et l'éducation linguistique des jeunes enfants et leurs habiletés d'alphabétisation. Trente-neuf enfants âgés de cinq à six ans dans leur première année d'école ont subi des tests de vocabulaire, de performance écrite, et de perception phonémique. Pour leur part, les parents ont complété la liste de contrôle de Stanovich et West (1989) qui mesure le montant de lecture auquel ils et elles sont exposé(e)s. On a trouvé qu'il existait une corrélation entre le montant de texte écrit auquel était exposés les deux parents, leur connaissance phonémique, le niveau d'éducation des mères et des pères, et le statut socio-économique de la famille. On a également démontré qu'il y avait une corrélation entre les scores des tests de vocabulaire des enfants et le montant de texte écrit auquel les mères étaient exposées et que ces scores ne corrélaient pas avec l'éducation des parents ou le statut socio-économique de la famille. Il y avait aussi corrélation entre la performance écrite des enfants et le montant de texte écrit auquel étaient exposés les mères et les pères et l'éducation de la mère. Les analyses de régressions multiples en étapes suggèrent que l'éducation des parents et le montant de texte écrit auquel ils sont exposés sont reliés aux habiletés langagières hâtives et d'alphabétisation et que le statut socio-économique n'explique pas les différences individuelles dans ces domaines.

Sonya Symons is an associate professor in the Psychology Department. Her research interests include cognitive strategy instruction, the cognition of seeking information, and emergent literacy.

Tara Szuszkiewicz is a doctoral candidate in clinical psychology. Her research interests include attentional factors in learning, learning disabilities, and instructional psychology.

Camille Bonnell completed her honors degree in psychology at Acadia University and is currently enrolled in a physiotherapy program.

After reviewing the literature on the influence of the quantity and quality of reading to young children on later reading outcomes, Scarborough and Dobrich (1994) argued that the assumption that more is better may be overstated, that the amount of reading preschoolers are exposed to accounts for only 8% of the variance in later reading ability, and that factors such as socioeconomic status (SES) are more predictive of literacy acquisition (Baydar, Brooks-Gunn, & Furstenberg, 1993; Fotheringham & Creal, 1980). If we accept the view that SES is related to literacy acquisition, it is worth asking why there is such a link. One of the mediating influences between SES and early reading may be the amount of reading that parents engage in. The data on this relationship do not support the intuition that parents who read on their own model an interest in reading and portray reading as a valued activity (Scarborough & Dobrich, 1994). This may be due in part, however, to the way in which adult reading has been measured using questionnaires, interview, or activity diary techniques. In the use of such measures, social desirability may confound retrospective estimation of reading activities and long-term commitment on behalf of research participants may affect the validity and reliability of the measurement of parental reading. In order to reduce the impact of these variables on the measurement of adult literacy, our study used Stanovich and West's (1989) checklist-with-foils methodology in which people are asked to differentiate between titles of actual and foil magazine titles, authors, and cultural figures. The checklist methodology holds three advantages over previous methods: it is immune to social desirability effects, it requires minimal time on the part of the participant, and it makes a low cognitive demand.

Because avid readers differ from nonreaders in many respects, there are several reasons why parental print exposure may predict children's emergent literacy. First, variation in adult print exposure is a substantial predictor of variation in adult vocabulary. This may be because moderate- to low-frequency words are more common in print than in speech (Hayes, 1988). Increased exposure to print will both facilitate understanding and promote the use of relatively more moderate- to low-frequency words. Children learn written language through active language interactions with adults; therefore, children whose parents have high levels of print exposure may benefit from exposure to a rich vocabulary. Second, adult print exposure levels are highly predictive of declarative knowledge bases, including cultural and orthographic knowledge (West, Stanovich, & Mitchell, 1993). Children of parents who read more may benefit from these effects by acquiring knowledge primarily through incidental exposure rather than explicit teaching. Third, parental print exposure is a significant predictor of parental reading comprehension and verbal intelligence (McBride-Chang, Manis, Seidenberg, Custodio, & Doi, 1993). This may enhance the adult's ability to explain literacy-related concepts to the child. Furthermore, because adults with little print exposure may be infrequent readers, their children might receive relatively less exposure to literacy activities (both direct and indirect) than children whose parents are avid readers. As a result, these children's acquisition of literacy-related knowledge may be significantly impeded (Scarborough, Dobrich, & Hager, 1991). Finally, exposure to print may develop increased interest and persistence in reading challenging material. This may aid the child by contributing to the modelling process mentioned above.

To assess children's language and literacy skills, we included measures of phonemic awareness, vocabulary, and printing performance. Phonemic awareness is a skill that has been repeatedly linked with early literacy (Cunningham, 1990; Stuart-Hamilton, 1986; Warren-Luebecker & Carter, 1988). Phonemic awareness specifically refers to the ability to perceive spoken words as 4 series of sounds (Lewkowicz, 1980) and the ability to discriminate among phonemes. Bradley and Bryant (1983) administered a task of auditory discrimination to 285 5-year-old children and found correlations with reading and spelling measures more than three years later. Similar results have been obtained by Stanovich, Cunningham, and Feeman (1984) and by Wallach, Wallach, Dozier, and Kaplan (1977). As well, Wagner and Torgesen (1987) found this relationship to exist even after controlling for IQ.

Another predictor of emergent literacy is visual motor skill, particularly the ability to form letters and numbers. Training in printing has been found to improve scores on standardized emergent literacy tests (Adams, 1992). The exercise of printing encourages simultaneous integration of the visual, motor, and phonological images of a specific letter and refines skills that are critical to reading and writing. Simner (1982) found that when children were asked to reproduce a series of letters and numbers, those who made form errors (overall changes in the shape of a letter or number) were at risk for early failure or grade retention.

Vocabulary also plays an important role in emergent literacy. Vocabulary contributes to the comprehension of the ideas being communicated by a particular piece of writing (McBride-Chang et al., 1993). According to the environmental opportunity hypothesis, differential opportunities for word knowledge will result in differences in vocabulary level (Stanovich & Cunningham, 1993). Specifically, these differential opportunities include environmental factors such as level of exposure to written words and the amount of interest, attention, and communicative adult interaction (Horodezky & Labercane, 1983; McBride-Chang et al., 1993). Parental responses to children's vocal expressions are an essential component in children's early language development; parents not only provide a model for their children's vocabulary development but also determine in part the type of language their children may ultimately use. In a study of grade 4 children, Cunningham and Stanovich (1990) found that individual differences in vocabulary knowledge were predicted by exposure to print after controlling for phonological processing, memory, age, and nonverbal intelligence. Similar results have been obtained by Stanovich and Cunningham (1992, 1993) with undergraduate students.

It was expected that there would be a relationship between measures of parental print exposure and children's scores on tests of early language and literacy skills. Other research has used definitions of SES that also include parental education, school resources, and home atmosphere. When these variables are extracted from the definition of SES, correlations with school achievement are no longer significant (White, 1982). It was one of the goals of this research to examine parents' print exposure and education separate from SES. It was expected that parental education would correlate positively with parental print exposure, that parental print exposure and education would correlate positively with emergent literacy, and that once these factors had been accounted for, SES would not explain variability in performance on early reading measures. The relative contributions of SES, parental education, and parental print exposure to the variance in measures of children's language and literacy skills were examined using stepwise multiple regression analyses.

Method

Participants

Thirty-nine primary grade (kindergarten) children (20 boys, 19 girls; $M = 6.0$ years) from two rural schools and their parents/ guardians (27 men, 37 women; $M = 34.8$ years) participated in the study. Thirty-five of the 64 parents/guardians were employed at the time of the study: 11 families had dual-earner parents, nine families had employed fathers only, seven families had employed mothers only, and in three families neither parent was employed. Demographic characteristics of the sample are presented in Table 1.

Materials

Parental print exposure measures. Three tests were used to assess parental cultural literacy. These were the condensed versions of the Magazine Recognition Test (MRT), the Author Recognition Test (ART), and the Cultural Literacy Test (Stanovich & West, 1989). West et al. (1993) found high split-half reliability correlations for each of these measures (MRT=.77; ART=.82; CLT=.90) and correlations with vocabulary checklists (MRT=.48; ART=.62; CLT=.71).

Each of these tests consists of a list of targets (i.e., real magazines, authors, and famous persons respectively) intermixed with a number of foils (i.e., names that are not those of magazines, authors, or famous persons respectively). The adults' task is to respond *Yes* to those names on each list that they know to exist as either magazines, authors, or famous persons, and *No* to those that they do not recognize. These measures were scored by subtracting the proportion of foil items answered *Yes* from the proportion of real items answered *Yes*. Original instructions to participants were altered slightly as a result of telephone administration. For example, instructions for the Magazine Recognition Test were as follows:

I am about to read a list of 25 titles. Some of them are names of actual magazines and some are not. As I say each title, please respond with "yes" if you recognize it as a magazine, or "no" if you do not. Do not guess, but only respond "yes" to those titles you know to exist as magazines. Do you have any questions?

Children's emergent literacy measures. Three tests were used to measure children's emergent literacy. The Peabody Picture Vocabulary Test-Revised (PPVT-R), Form L (Dunn & Dunn, 1981) was administered under standard testing conditions to assess receptive vocabulary. Standardized scores were used as the dependent measure. The PPVT-R, Form L has been shown to be an effective and reliable means of assessing receptive vocabulary. The median correlation with vocabulary tests has been found to be .71, the correlation with the Stanford-Binet Intelligence Scale is .62, and the correlation with the Wechsler Intelligence Scale for Children-Revised (WISC-R) is .66. Split-half reliability correlations range from .79 to .84. Immediate test-retest reliability correlations range from .78 to .80, whereas delayed (one month) test-retest reliability correlations range from .67 to .69.

An abbreviated form of the Printing Performance School Readiness Test (APPSRT; Simner, 1989) was given to each child. The APPSRT is a tool that measures both motor skills and visual discrimination related to printing. It has been shown to be 70-78% effective in identifying those children who will later experience learning problems, particularly in reading and arithmetic. Simner (1989) has reported product-moment correlations of .42 and .58 between children's scores on the APPSRT in prekindergarten and their subsequent reading performance at the end of grade 1. The test consists of two tables, each containing a combination of nine letters that have been shown to be most predictive of later school difficulty. Below each letter or number is a space in which the child is required to replicate the item above it. Each letter/number reproduction is assigned a score of either zero (errors absent) or one (errors present) for a test score of the total number of errors.

A test of phonemic awareness, the Auditory Discrimination Test of Bradley and Bryant (1983), consisted of 30 trials in which three words, two of which share a common phoneme, were read aloud to the child. The child was asked to detect the odd word. Scores consisted of the percentage of correct responses.

Procedure

Parents were interviewed by telephone with the order of presentation of the literacy tests counterbalanced. Parents were also questioned about education, age, family reading habits, and employment. Education level for each parent was coded as one of the following categories: some high school; completed high school; some post secondary school; bachelor's degree; master's degree; or PhD. SES was measured using the 1981 Socioeconomic Index for Occupations in Canada (Blishen, Carroll, & Moore, 1987), in which occupations are coded hierarchically based on the median annual income, social status, and years of education to obtain the occupation for all paid labor force participants in each category. The score for the working parent was recorded in single income households, whereas in double income homes the average of the two scores was calculated. SES was not recorded if neither parent was employed. Scores for our sample ranged from 21.36 to 101.32, representing a range of occupations from farm worker to physician. After completing the telephone interviews, the children were individually tested in a private room at the school. The order of administration of all measures was counterbalanced.

Results

Means, ranges, and standard deviations for children's and parents' literacy measures are presented in Table 2. Compared with previous samples of children tested with these measures, children in our study performed slightly above the average range of functioning in terms of receptive vocabulary and printing performance (as measured by the PPVT-R and the APPSRT) but slightly below average on the phonemic awareness task. The means on the adult checklist measures are slightly higher than those reported by West et al. (1993) where the means were 51.5%, 34.9%, and 46.4% for the MRT, ART, and CLT respectively.

Correlations Between Parental Print Exposure and Emergent Literacy Measures,

A correlation matrix displaying the relations between measures of parental print exposure and measures of children's emergent literacy is presented in Table 3. Only those correlations with $p < .01$ will be interpreted as reliable. Mothers' scores on the Magazine Recognition Test were correlated with children's performance on the auditory discrimination and vocabulary measures. Relations between the different measures of parental print exposure for both mothers and fathers were also found. Mothers' education was correlated with children's auditory discrimination task scores. Fathers' education and family SES were not correlated with children's early reading measures.

Table 3
Correlations Between SES, Parents' Education, and Emergent Literacy Measures

	<i>APPSRT</i>	<i>Auditory Discrimination</i>	<i>PPVT-R</i>
<i>Mothers</i>			
MRT	-.28	.45**	.47**
ART	-.20	.33*	.36*
CLT	-.36*	.29	.33*
Education	-.40*	.43**	.28
<i>Fathers</i>			
MRT	-.35	.45*	.30
ART	-.47*	.39*	.31
CLT	-.33	.38*	.22
Education	-.26	.47*	.25
Family SES	-.33	.38*	.14

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

Correlations Between Parental Variables and Print Exposure Measures

The correlations between parents' education and their scores on the print exposure measures are reported in Table 4. Mothers' education was correlated with their scores on each of the checklists in a range from .56 to .64. Significant correlations were also found between fathers' education and fathers' print exposure measures, ranging from .60 to .70. SES was found to be significantly correlated with measures of fathers' print exposure, whereas none of the measures of mothers' print exposure was reliably correlated with SES.

Table 4
Correlations of Parental Education and SES with Print Exposure Measures

	<i>Education</i>	<i>SES</i>
<i>Mother</i>		
MRT	.64***	.35*
ART	.63***	.44*
CLT	.56***	.30
Total Print Exposure	.65***	.40*
<i>Father</i>		
MRT	.64***	.63**
ART	.70***	.76***
CLT	.60**	.72***
Total Print Exposure	.70***	.75***

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

Stepwise Regression Analyses

Multiple regression analyses were conducted using a stepwise entry process to examine the relative contributions of SES, parental education, and total parental print exposure to variance in children's emergent literacy measures. Total print exposure represents the sum of all three of the checklist measures. For each dependent measure, only one variable was entered. Mothers' education accounted for 25% of the variance in children's printing performance ($F[1,231] = 8.58$, $p < .01$), whereas mothers' total print exposure accounted for 21% of the variance in vocabulary scores. Fathers' education accounted for 18% of the variance in auditory discrimination ($F[1,231] = 4.78$, $p < .05$).

Discussion

These data provide support for the hypothesis that parental print exposure influences children's literacy development. There were significant relations between measures of mothers' print exposure and children's vocabulary and phonemic awareness. Measures of fathers' print exposure were correlated with phonemic awareness, although statistically less reliable due to a smaller number of fathers than mothers. For each parent there was a relation between only one measure of print exposure and children's printing performance. These relations may have been difficult to detect due to the limited variability in the number of printing errors made by the children. In the multiple regression analyses, maternal print exposure accounted for a substantial proportion of the variance in vocabulary scores.

Both parents' education appears to play an important role in phonemic awareness, and mothers' educational attainment was related to children's printing performance. SES was not correlated with either vocabulary or printing performance, but did correlate with phonemic awareness. Regression analysis revealed that SES did not contribute unique variance to phonemic awareness discrimination scores once fathers' education was accounted for. This pattern of results suggests that job status has less impact on literacy outcomes for children than does parental education and that print exposure is more highly associated with children's vocabulary than either education or SES. Print exposure may increase the likelihood that children are exposed to more low-frequency words, and thus there may be some direct benefits for children's vocabulary. These results are encouraging; they indicate that factors under parents' control such as reading and to a lesser extent education may have a significant impact on their children's development. This is consistent with the results of a meta-analysis conducted by Bus, van Ijzendoorn, and Pelligrini (1995) on the effects of reading to preschoolers. They found that joint book reading accounted for 8% of the variance in later reading outcome measures and that the size of the effect was independent of SES.

The participants in our study represented people from varied socioeconomic backgrounds, with occupational title status as measured by the Blishen et al. (1987) index ranging from 25.36 (farm worker) to 101.32 (physician). Children's reading measures also indicated that the sample was representative of a variety of skill levels, (e.g., standard scores on the PPVT-R ranged from 74 to 135). There was limited variability in scores for the APPSRT, with relatively high performance on this measure. Simner (1989) reported that 33% of a sample of 166 children produced 16 or more errors; in our study the highest number of form errors recorded was five. The data were collected in this study after the children had completed four months of kindergarten, so maturational and educational differences may have affected printing performance. By contrast, the mean auditory discrimination score was 50% as compared with Bradley and Bryant's (1983) mean of 69% with similarly aged children. There may have been little emphasis on phonemic segmentation in the reading curriculum of the children in our study, although the variability in performance on the phonemic awareness measure suggests that the results are generalizable to a broader population.