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AUTHOR Phillips, Linda M.; And Others
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ABSTRACT

A study examined whether a beneficial effect on children's literacy development accrues from the use of the Little Books with kindergarten children, and identified differential effects on kindergarten achievement according to treatment type, community status, and school type. From a sample of 40 Newfoundland schools, schools were grouped into rural village (drawing students from one small community), rural collector (drawing students from several small communities), and urban, and four schools were randomly selected from each grouping. Schools were assigned randomly to one of the treatment groups (Little Books used in the home only, Little Books used in the home and school, Little Books used in the school only, and control). Complete pretest and posttest data were obtained for 309 children. Quantitative analyses showed the children entering kindergarten in this study to be at risk of school failure. On average, urban kindergartners scored higher on all measures, and village and collector students scored about the same. Differences in posttest means were not related clearly to treatment. However, the Metropolitan Reading Readiness Pretest x Treatment interaction, which showed that the lowest achieving students profited most from the Little Books when they were used at home only, and the highest achieving students profited most from the Little Books when they used them in school only, helps to support the hypothesis that the home has a crucial role to play in literacy development. (Three tables of data are included and 16 references are attached.) (Author/MG)

CENTER FOR THE STUDY OF READING

Technical Report No. 520

EFFECT OF EARLY LITERACY INTERVENTION ON KINDERGARTEN ACHIEVEMENT

Linda M. Phillips & Stephen P. Norris
Institute for Educational Research & Development
Memorial University of Newfoundland

Jana M. Mason & Bonnie M. Kerr
University of Illinois at Urbana-Champaign

December 1990

University of Illinois at Urbana-Champaign
51 Gerty Drive
Champaign, Illinois 61820

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Abstract

This study identified differential effects on kindergarten achievement according to treatment type, community status, and school type. From a sample of 40, schools were grouped into rural village (drawing students form only one small community), rural collector (drawing students form a number of small communities), and urban. From each of these groupings, four schools were randomly selected. From each group of four, schools were assigned randomly to one of the treatment groups (Little Books used in the home only, Little Books used in the home and school, Little Books used in the school only, and control). Eighteen classes of kindergarten children form 12 schools participated in the study. Complete pretest and posttest data were obtained for 309 children. Quantitative analyses showed the children entering kindergarten in this study to be at risk of school failure. On average, urban kindergartners scored higher on all measures, and village and collector students scored about the same. Differences in posttest means were not related clearly to treatment. However, the Metropolitan Reading Readiness Pretest x Treatment interaction, which showed that the lowest achieving students profited most from the Little Books when they were used at home only and the highest achieving students when they used in school only, helps to support the hypothesis that the home has a crucial role to play in literacy development.

EFFECT OF EARLY LITERACY INTERVENTION ON KINDERGARTEN ACHIEVEMENT

A substantial number of concepts about language are acquired prior to entering school (Clay, 1975). These concepts may seem trivial (what is right-side-up for a book, what on the page is print, that print carries meaning, etc.), but they are fundamental to learning to read and write (Ferreiro & Teberosky, 1982). The mere presence of print in the home, however, is not sufficient for children to acquire these concepts; they must also take part in interactive family experiences with print and print-related matters (Durkin, 1982). One of the most important of these interactions is book reading.

However, there tends to be a low incidence of book reading in low-income families (Heath, 1983; Teale, 1986). In contrast, middle-class children start school already familiar with letters and words and able to glean useful information from looking at books and listening to stories. Because most school-based programs are geared toward middle-class children, a mismatch between the literacy acquired at home and the literacy required to participate in school is virtually assured for low-income children. With the aim of lessening the risk of school failure for such children, we extended the preschool home intervention study of McCormick and Mason (1986) into a full-kindergarten-year Little Books program aimed at encouraging parent-child and teacher-child book reading.

The Little Books (McCormick & Mason, 1990) are designed to capitalize upon what children know. Little Books (a) are thematic and contain familiar topics to increase the child's expectation that text should make sense; (b) are written using everyday high-frequency content words to facilitate links between spoken and written language; (c) have a strong fit between illustrations and text to make clear that both text and picture frame the meaning; (d) are written using phrases and simple sentences to promote comprehension at the minimal discourse level; (e) feature a story that ends with a culminating idea to create a sense of intrigue or amusement and provide text closure; and (f) have a guided-participation model (Rogoff, 1986) underlying the presentation and practice of the books in order to foster children's confidence.

The objectives of the present study were to determine whether a beneficial effect on children's literacy development accrues from the use of the Little Books with kindergarten children, and whether there are differential effects according to treatment type, community status, and school type.

Method

Sample

The study was conducted in Newfoundland, Canada. Access in principle to approximately 40 schools from three school boards was granted. We grouped the schools into rural village (drawing students from only one small community), rural collector (drawing students from a number of small communities in an area), and urban. The urban communities were not large by many standards. But they typically had either a hospital or a medical clinic that provided emergency or short-term care, a fire hall, at least one bank, a library, a shopping center, and other amenities associated with an urban center. The rural communities typically had one or two small grocery or general stores and a post office. From each of these groupings, four schools were randomly selected. From each group of four, schools were assigned randomly to one of the treatment groups (home, home and school, school, and control).

Of the 12 schools, six had one kindergarten class, and six (four of the urban schools and two of the rural collector schools) had two kindergarten classes but the same teacher. When a teacher had two classes, both received the same treatment. In the urban schools, class size averaged 17 children; in the rural collector schools, class size averaged 18; and in the rural village schools, class size averaged 20. The overall class size averaged 18 children. All children attended school for one-half day. In each school,

all kindergarten children participated in the project. In all, 18 classes from 12 schools and 325 kindergarten students participated. Complete pretest and posttest data were obtained for 309 children.

Instruments

Three tests were used: The Metropolitan Reading Readiness Test (MET) (Nurss & McGauvran, 1987), the Circus-Listen to the Story Test (Circus) (Educational Testing Service, 1976), and the Emergent Literacy Concepts Test (ELC). The MET and Circus are widely used group tests, and the ELC is an individual test designed for the study to acquire more detailed information on emergent literacy than provided by the group tests.

The MET measures auditory memory, letter recognition, and language and listening; the Circus assesses recall and interpretation of oral language; and the ELC determines whether children have acquired such basic concepts about print as identifying the front of a book, giving meanings for words (for example, bird), and classifying (What are some foods?). The group tests have two levels of difficulty: MET-1 and Circus-A were used as pretests; MET-2 and Circus-B as posttests. The ELC has two forms, the difference being that ELC-2 includes two sets of items not on the ELC-1: reading words from the Little Books in and out of context.

Procedures

Treatment. Twenty-four weeks of Little Books intervention, using one Little Book per week, complemented the provincially prescribed Language Development Program. There were four treatment levels.

In Treatment 1, a control group received no Little Books.

In Treatment 2 (use of Little Books at home only), a new book was given to each child at the start of each week for the child to take home and read with parents. Parents' cooperation was solicited beforehand and a demonstration, using a video of a parent and child working with several books, and an explanation of the materials was given. Also, a set of guidelines adapted from McCormick and Mason (1986) was prepared and given to parents. The guidelines provided the following information: overview of the project; description of Little Books packet; general pointers; suggestions for reading the Little Books (make a cozy arrangement, talk about the main idea, read book aloud, have child help you read, and encourage child to read often); suggestions for improving parent-child interaction; suggestions for use of the color, count, and opposites books; suggestions for use of the ABC books; and recommendations for making books with children (tell a simple story, give stories a snappy ending, choose words and phrases carefully, and organize the pages of the book).

In Treatment 3 (use of Little Books both in school and at home), a different book was introduced by teachers each week. Prior to the first week, teachers attended a workshop on the project and were given a set of guidelines drawn from McCormick and Mason (1986) that included the following information: introduction to the early literacy intervention program; how to prepare for the lessons; procedures for using the Little Books (opening, modelling, tryouts, and closing); how to follow-up after the lesson; and general pointers. Teachers were asked to follow this routine: on Monday, introduce the Little Book for that week by reading it to the whole class like any other story during reading time; on Tuesday to Thursday, work with smaller groups of children one group at a time and assist each to read the book; on Friday, ask each child to read the Little Book, and send the Little Book for that week home with each child. Approximately 10-15 minutes each day was devoted to the materials. Parents were instructed as in Treatment 2.

In Treatment 4 (use of Little Books in school only), teachers proceeded as in Treatment 3, but did not send the books home.

Pretest data collection. Pretest data was collected from mid-September to early October, 1988. MET-1 was administered to each whole class over 7 sittings, each listing from 10 to 15 minutes. Circus-A was administered to groups of 5 or 6 children and took about 25 minutes. The ELC-1 was administered to as many randomly selected students from each class as time permitted. Testing time for ELC-1 was approximately 30 minutes per student.

Posttest data collection. MET-2, Circus-B, and ELC-2 tests were administered in late May to early June, 1989, following a testing schedule similar to the pretest schedule.

Results

Means, standard deviations, and sample sizes for MET and Circus pretests and posttests by treatment and site are presented in Table 1. We note four conclusions from these data. First, sample retention was ≥ 89% for all cells. Second, all means were ≥ 1 *SD* below the U.S. norm. Canadian norms are unavailable on these measures, but there is little reason to believe that they would be substantially different from those of the U.S. Thus, on average, these entering Newfoundland kindergartners seem at risk of school failure. Third, on average, urban kindergartners scored higher on all measures, and village and collector students scores about the same. Fourth, differences in posttest means are not related clearly to treatment.

[Insert Table 1 about here.]

A planned multivariate analysis of covariance on these data was not possible because there was a significant Treatment X MET-1 interaction in the two-way ANOVA with treatment and MET-1 as factors and MET-2 as the dependent variable. Instead, a multivariate linear regression was performed with MET-1, Circus-A, treatment, and site regressed on MET-2 and Circus-B. Results are presented in Table 2. The strongest predictor of MET-2 and Circus-B was MET-1. Moreover, both pretests were significant predictors of both posttests in the univariate and multivariate tests. Neither treatment nor site had significant effects on either posttest. However, there was a significant MET-1 X Treatment interaction in the univariate case with MET-2 as the dependent variable. The interaction occurred as follows: in the home and school and school only treatments, students scoring lowest on MET-1 performed worse on MET-2 than the control group, while students scoring highest on MET-1 performed better on MET-2 than the control group; for the home only treatment, students scoring lowest on MET-1 scored higher on MET-2 than students in the control group, while students scoring highest on MET-1 performed the same as students in the control group.

There was a significant MET-1 X Site interaction in the multivariate case. Urban students scored highest on all tests. The village students scored higher than the collector students on both pretests both lower on both posttests.

[Insert Table 2 about here.]

The MET is not overall an emergent literacy test, but a measure of ability to achieve in school. Thus, it could be argued that use of the Little Books should not affect MET scores. However, performance on some subtests, such as Beginning Consonants and Letter Recognition on MET-1, and Beginning Consonants and Sound-letter Correspondence on MET-2, ought to be improved by the Little Books since the books expose children to meaningful print. An ANOVA using treatment and the sum of the aforementioned MET-1 subtest scores as factors, and the sum of the aforementioned MET-2 subtests as the dependent variable, showed no treatment by MET-1 subtest interaction. A subsequent ANCOVA controlling for the MET-1 subtests showed significant treatment ($p < .001$) and MET-1 subtest effects ($p < .001$) on the MET-2 subtests. Post hoc comparisons using Tukey's honestly significant difference (HSD) test showed that adjusted posttest means for all three treatments (home only = 14.1; home and school = 16.2; school only = 14.6) were significantly higher than the adjusted posttest mean for the

control group (12.5), and the home and school adjusted posttest mean was significantly higher than the adjusted posttest means for the home only and the school only treatments.

Table 3 presents the means, standard deviations, and sample sizes for the ELC-1 and ELC-2 tests by treatment. Performances on ELC-1 are approximately equal. However, on ELC-2 the control group scored lower than all three treatment groups, which in turn scored approximately the same. ANOVA results showed no treatment by ELC-1 interaction. An ANCOVA controlling for ELC-1 showed significant treatment (p = .007) and ELC-1 effects (p < .001). Post hoc comparisons using Tukey's HSD test showed that the adjusted posttest means for all treatment groups (home only = 171.4; home and school = 162.9; school only = 166.6) were significantly higher than the adjusted posttest mean for the control group (137.5). No other comparisons were significant.

[Insert Table 3 about here.]

To test the hypothesis that the significant effect was an artifact of a posttest measure specifically designed to be responsive to the Little Books, the analysis was repeated with the items directly related to the Little Books removed from ELC-2. A less significant treatment effect (p = .079) was found.

Discussion

Overall Performance

On average, the Newfoundland kindergartners studied are at risk of school failure. They perform like some minority groups, about 1 *SD* below the norm, a result consistent with the results of the Southam News Survey (1987), in which Newfoundland was reported to have the highest rate of basic and functional illiteracy in Canada (approximately 44%), and achievement on the Canadian Test of Basic Skills (administered nationally at Grades 4, 8, and 12), on which Newfoundland children score consistently below the Canadian national norm (Department of Education Newfoundland and Labrador, 1989). School children in Newfoundland "experience persistent disproportionate school failure" (Ogbu & Matute-Bianchi, 1986, p. 73) in a manner similar to some ethnic minorities in the United States and Canada. However, given that Newfoundlanders do not belong to an ethnic minority in Canada, the explanations of their school failure force us to look beyond the visible features of ethnic and cultural minorities to the underlying beliefs, attitudes, and expectations that Newfoundlanders hold about literacy.

Only the briefest summary of some of the social, political, and economic factors that may influence contemporary literacy levels in Newfoundland are possible in this paper. Placing value on literacy is a recent phenomenon in Newfoundland, where compulsory schooling did not take effect until 1942. Most early settlers were unlettered fisher-folk from England and Irish immigrants from peasant stock. The ruling British fishing admirals were interested primarily in their own wealth and not the security and independence of the early settlers. Settlers were forced to exchange their yearly catch of fish for food and supplies, creating a subsistence form of living. Despite attempts by early missionaries to establish schools, it was not until the middle half of this century that the perceived need for literacy became widespread. Before that time, most employment was fishing, there was no established context for literacy because the early settlers did not need or perceive a need for it, there were too few schools, and access to education was limited because of a small population in a large number of isolated communities scattered along 5,000 miles of coastline. As a consequence, most of the parents of the children in this study belong to only the first or second generation of Newfoundlanders to experience compulsory schooling. Even so, many parents did not complete school, and defer to the schools in the job of literacy development. It is in such a context that the low literacy achievement in Newfoundland must be understood.

Treatment Effects

The lack of treatment effects on either the Met-2 or Circus-B were at first disappointing. Face validity judgments indicated that the tasks required by the tests were the sorts of things that beginning readers should be able to do, and thus that the Little Books should lead to higher performance on them. It seems, however, that the effect of the Little Books is more specific. The ELC-2, which was designed to measure directly the knowledge the Little Books were intended to foster was quite responsive to the treatment. Even when the items specifically related to the Little Books were removed, a significant though somewhat diminished effect was found, indicating that the result generalizes beyond the Little Books themselves. This led us to hypothesize that there would be an effect of treatment on those subtests of the MET that related to emergent literacy. The results confirm this hypothesis. However, the fact remains that the Little Books are intended in the final analysis to improve children's reading, taken as the construction of meaning, and reading in this sense was not measured by any of the instruments. Thus, comparisons between treatment levels at the end of subsequent grades, when measures of meaning construction can be used appropriately, are quite important.

Interaction Effects

The MET-1 X Treatment interaction, showing that the lowest achieving students profited most from the Little Books when they were used at home only and the highest achieving students when used in school only, helps support the hypothesis that the home has a crucial role to play in literacy development. It can be assumed that the students achieving the highest upon entering school already have had a rich home literacy experience. This experience typically promotes knowledge of a metalanguage about literacy (words such as "title," "story," "word," "printed) that forms the basis of the language of instruction that teachers presuppose children know (Templeton, 1986). So, those children from homes that encourage such a metalanguage are at an immediate advantage, because they can understand teachers' talk. Children who come from backgrounds that do not promote this metalanguage are highly likely to be at a disadvantage, given that the schools will assume they have it. However, those low achieving children using the Little Books in their homes, where knowledge of a metalanguage of instruction would likely not be assumed, probably had for the first time an opportunity to learn this metalanguage and consequently were able to profit more from school instruction. Without this home intervention, the schools might have continued to presuppose a knowledge of language the children did not possess. This metalanguage hypothesis also would explain why higher achieving students were able to profit more than lower achieving students from the Little Books used in school only.

While differences between urban and rural students come as no surprise, it is a challenge to understand the MET-1 X Site interaction, showing that students from collector schools scored higher than students from village schools on MET-2 having scored lower on MET-1. Some research suggests that a school presence in a community is instrumental in supporting and transmitting the significance of education (Spindler, 1987). Some children in the collector schools are from communities that have no school. This fact may be reflected in their pretest scores being lower than children from village schools. On the other hand, once in school, children in village schools are not exposed to as many teachers and students from other communities as children in collector schools. Maybe the diversity of the during-school experiences of the collector group had a beneficial influence upon end-of-year performance.

In the final analysis, the value of the Little Books must rest on long-term effects on reading. Will there be differential reading effects at the end of Grades 1, 2, and 3 favoring the Little Books treatment? We hope to be able to report on Grade 1 effects in the near future.

References

Clay, M. (1975). *What did I write?* Auckland, New Zealand: Heinemann Educational Books.

Department of Education Newfoundland and Labrador (1989). *Education statistics.* St. John's: Government of Newfoundland and Labrador, Division of Evaluation and Research.

Durkin, D. (1982). *A study of poor black children who are successful readers* (Reading Education Report No. 33). Urbana-Champaign: University of Illinois, Center for the Study of Reading.

Educational Testing Service (1976). *Circus listen to the story.* Monterey, CA: CTB/McGraw Hill.

Ferreiro, E., & Teberosky, A. (1982). *Literacy before schooling.* London: Heinemann.

Heath, S. B. (1983). *Ways with words: Language, life and work in communities and classrooms.* New York: Cambridge University Press.

King, E. M. (Ed.) (1981). *Canadian test of basic skills.* Don Mills, Ontario: Thomas Nelson.

McCormick, C., & Mason, J. (1986). Intervention procedures for increasing preschool children's interest in and knowledge about reading. In W. Teale & E. Sulzby (Eds.), *Emergent literacy: Writing and reading* (pp. 90-115). Norwood, NJ: Ablex.

McCormick, C., & Mason, J. (1990). *Little books.* Glenview, IL: Scott, Foresman.

Nurss, J. R., & McGauvran, M. E. (1987). *Metropolitan readiness test.* San Antonio: The Psychological Corporation, Harcourt Brace Jovanovich.

Ogbu, J. U., & Matute-Bianchi, M. E. (1986). *Understanding socio-cultural factors: Knowledge, identity, and school adjustment.* Los Angeles: California State University, Evaluation, Dissemination and Assessment Center.

Rogoff, B. (1986). Adult assistance of children's learning. In T. E. Raphael (Ed.), *The contexts of school-based literacy* (pp. 27-40). New York: Longman.

Southam Newspaper Group. (1987). *Literacy in Canada--A research report.* Ottawa.

Spindler, G. D. (1987). *Education and cultural process.* Prospect Heights, IL: Waveland Press.

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.

Templeton, S. (1986). Literacy, readiness, and basals. *Reading Teacher, 39,* 403-409.

Table 1

Means, Standard Deviations, and Sample Sizes for MET and Circus Pretests and Posttests by Treatment and Site on Entire Sample

		Pretests		Posttests	
Treatment	Site	Met-1	Circus	Met-2	Circus
Control	Collector	41.9	13.5	37.2	22.6
		14.2	4.6	8.2	7.8
		18	18	18	17
	Village	45.0	12.6	34.5	20.9
		14.5	5.3	11.2	6.7
		20	21	22	20
	Urban	43.5	15.0	40.0	24.5
		15.8	4.1	13.9	7.3
		44	44	42	42
Home	Collector	35.7	12.2	37.2	21.4
		18.2	5.7	12.5	6.0
		36	36	38	38
	Village	35.6	14.7	30.3	19.9
		13.9	14.7	11.9	7.1
		15	16	15	16
	Urban	45.8	15.0	42.6	23.9
		14.5	2.9	13.1	6.0
		31	31	30	30
Home/School	Collector	47.8	13.9	42.0	22.5
		14.9	4.3	15.3	7.1
		31	31	30	30
	Village	38.5	12.1	36.8	19.1
		14.1	3.4	14.2	6.8
		17	17	17	16
	Urban	43.1	14.8	46.4	26.1
		13.9	5.7	13.6	7.0
		28	28	27	27
School	Collector	36.3	12.8	34.2	22.9
		14.5	4.9	14.9	8.3
		22	22	22	20
	Village	42.2	14.5	41.5	21.6
		12.9	3.8	11.3	8.0
		22	22	22	22
	Urban	38.5	12.8	37.2	21.4
		18.2	4.7	15.8	7.8
		35	35	31	31

Table 2

Summary Regression of MET-1, Circus-A, Treatment, and Site on MET-2 and Circus-B

Independent Variables		Dependent Variables: Met-2 B	Met-2 Beta	Circus-B B	Circus-B Beta
Met-1[abc]		0.623	0.712	0.276	0.588
Circus-A[abc]		0.396	0.133	0.398	0.249
Treatment					
	(Home)	1.950	0.104	0.349	0.035
	(Home/School)	-0.613	-0.032	1.606	0.156
	(School)	-2.227	-0.116	-2.760	-0.267
Site					
	(Village)	-3.404	-0.199	-2.731	-0.297
	(Collector)	3.416	0.219	0.836	0.100
Met-1 by Treatment[a]					
	(by Home)	-0.154	-0.367	-0.053	-0.235
	(by Home/School)	0.113	0.274	0.015	0.066
	(by School)	0.093	0.217	0.029	0.128
Met-1 by Site[ac]					
	(by Village)	0.110	0.289	0.074	0.362
	(by Collector)	-0.162	-0.472	-0.053	-0.286
Circus by Treatment					
	(by Home)	0.308	0.241	0.129	0.187
	(by Home/School)	-0.129	-0.100	-0.161	-0.230
	(by School)	-0.096	-0.073	0.114	0.161
Circus by Site					
	(by Village)	-0.221	-0.190	-0.135	-0.117
	(by Collector)	0.258	0.244	0.130	0.229
		7.247		5.266	
Constant[abc]		7.247		5.266	
R^2		0.674		0.611	

a = $p < .05$ for Met-2
b = $p < .05$ for Circus
c = $p < .05$ for multivariate test

Table 3

Means, Standard Deviations, and Sample Sizes for ELC-1 and ELC-2 by Treatment

	ELC-1			ELC-2		
Treatment	$\bar{X}$	*SD*	*n*	$\bar{X}$	*SD*	*n*
Control	80.0	23.9	18	128.1	34.8	18
Home	85.7	25.4	19	168.7	43.0	18
Home/School	93.2	30.5	25	172.6	48.6	24
School	87.3	27.2	7	164.3	64.6	6