University of Alberta

Effects of Home Literacy Environment, Parents' Beliefs, and Children's Achievement Strategies on Pre-Literacy Skills

By

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled EFFECTS OF HOME LITERACY EVVIRONMENT, PARENTS' BELIEFS, AND CHILDREN'S ACHIEVEMENT STRATEGIES ON PRE-LITERACY SKILLS submitted by Kathy Ann Stephenson in partial fulfillment of the requirements for the degree of MASTER OF EDUCATION in SPECIAL EDUCATION.

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Abstract

The present study examines how home literacy environment, parents' beliefs and expectations of their child's reading and academic ability, and children's achievement strategies uniquely predict kindergarten children's pre-literacy skills. Participants were 77 kindergarten children from six schools in a suburban community in Alberta. In the spring of kindergarten, children were administered six measures of pre-literacy skills (phonological sensitivity, naming speed, and letter knowledge), a measure of vocabulary, and a measure of nonverbal intelligence. Parents filled out a questionnaire about the home literacy environment and their beliefs and expectations. Teachers filled out a questionnaire about the children's achievement strategies (task-focusedness and helplessness). Results from regression analyses indicated that (a) parents' beliefs about their child's current reading ability uniquely predicted their child's phonological sensitivity, (b) vocabulary and nonverbal intelligence predicted naming speed, and (c) parents' reports of teaching their child literacy skills, but not their reports of reading to their child, predicted children's letter knowledge.

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Chapter 1

Introduction

The ability to read unfamiliar words is one of the most important academic challenges children must conquer during their elementary schooling. Over the past decade researchers have developed a better understanding of the pre-literacy skills that are known to predict reading achievement. Specifically, letter knowledge and phonological processing, such as phonological sensitivity and naming speed, have been shown to be good predictors of reading acquisition (e.g., Bishop, in press). Although we know that these three specific pre-literacy skills, phonological sensitivity, naming speed, and letter knowledge, are good predictors of later reading, Whitehurst and Lonigan (1998) point out that we know little about their origins and how they develop. Recent research has started to provide some of this information. For example, parent teaching of literacy skills has been shown to be associated with children's letter name and sound knowledge (Evans, Shaw, & Bell, 2000; Frijters, Barron, & Brunello, 2000), and with children's phonological sensitivity (Evans et al., 2000). Research has also shown that children's achievement strategies, motivational and behavioral patterns deployed in academic settings (Onatsu-Arvilommi & Nurmi, 2000), are associated with their phonological sensitivity (Salonen, Lepola & Niemi, 1998).

Current theories of reading acquisition (e.g., Bowers & Newby, 2002) are mostly limited to the cognitive pre-literacy skills. A better understanding of the relationships between noncognitive factors and pre-literacy skills is necessary for a comprehensive theory of reading acquisition to emerge. Therefore, the objective of the present study is to examine the relationship between the noncognitive factors – home literacy environment,

parents' beliefs and expectations, and children's achievement strategies – and the pre-literacy skills – phonological sensitivity, naming speed, and letter knowledge.

Since most of the research in the area of reading has focused on predicting reading achievement and not pre-literacy skills, the literature review will first establish that phonological sensitivity, naming speed, and letter knowledge are the best predictors of reading achievement. Second, a brief review of the literature will follow on the effects of noncognitive factors – home literacy environment, parents' beliefs and expectations, and children's achievement strategies – on reading acquisition.

Pre-Literacy Skills

In a review of the literature, Scarborough (1998) found the median correlation between letter name knowledge scores and subsequent reading achievement to be .53, with a mean of .52 (SD = .14). Scarborough suggests that kindergarten children's letter name knowledge appears to be as predictive of future reading as a more traditional comprehensive readiness battery. Phonological processing skills, the ability to use information about sound elements of language in processing written and oral language (Wagner & Torgesen, 1987), are also strong predictors of individual differences in word recognition performance one to five years later (Parrila, Kirby, & McQuarrie, in press; Wagner, Torgesen, & Rashotte, 1994; Wagner et al., 1997; for a review, see Adams, 1990). Different phonological processing skills have also been shown to have independent predictive relationships with reading development. For example, phonological processing skills measured in kindergarten, such as phonological sensitivity and naming speed, have both been shown to account for unique variance in grade one reading measures (de Jong & van der Leij, 1999; Parrila et al., in press; Wagner et al.,

1997) and beyond (Kirby, Parrila, & Pfeiffer, 2003). In sum, letter name knowledge, phonological sensitivity, and naming speed are important predictors of reading achievement. This is consistent with Bishop's (in press) recent finding that the best predictive model of grade one reading achievement included kindergarten children's letter knowledge, phonological sensitivity, and naming speed.

Home Literacy Environment

Research in the past has suggested that children's storybook exposure (parent-preschooler shared reading) has an effect on children's reading acquisition (for a review, see Adams, 1990). However, two meta-analytic reviews of research conducted between the 1960s and beginning of the 1990s suggested that there is only a modest relationship between reported frequency of shared book reading and a variety of language and literacy measures (median $r = .28$, accounting for approximately 8% of the variance) (Bus, van Ijzendoorn, & Pellegrini, 1995; Scarborough & Dobrich, 1994). The findings from these meta-analytic reviews suggest that children's storybook exposure prior to formal schooling may be of limited importance as a precursor of reading skills.

Lonigan (1994) and Dunning, Mason, and Stewart (1994) claim, however, that there is a reason to be more optimistic about the effects of reading to preschoolers. Lonigan argues that many of the studies on reading with preschoolers and the development of reading suffer from severe methodological or statistical problems, limiting the validity of the conclusions. Lonigan makes the case that preschool storybook exposure is likely to be related to some aspects of language, emergent literacy, and reading achievement, but not to others. Since studies examining this effect have typically evaluated the whole spectrum of literacy or language skills as a single entity, the specific effects of print exposure are

likely underestimated. Similarly, Dunning et al. (1994) argue that since we do not yet know or agree on the best emergent literacy outcome measures, attempts to connect shared book reading to literacy skills will show variability associated with the specific outcome measures selected rather than variability due to the predictor measures.

Whitehurst and Lonigan (1998), in turn, criticize previous research in the area of storybook exposure and reading achievement for including only a single measure of home literacy experience (e.g., frequency of storybook reading) and a single measure of emergent literacy outcome (e.g., preschool language use). Several recent studies, however, have included more than one home literacy factor and more than one emergent literacy skill. For example, Sénéchal, LeFevre, Thomas, and Daley (1998) examined two home literacy factors, children's storybook exposure and parent teaching their child to read and print words, and two emergent literacy skills, oral-language and written-language skills. Receptive vocabulary, listening comprehension, and phoneme awareness were combined to make an oral-language factor score. Concepts about book reading, alphabet knowledge, reading CVC words and invented spelling were combined to make a written-language factor score. Sénéchal et al. (1998) found that children's storybook exposure explained significant unique variance in kindergarten and grade one children's oral-language skills but not in their written-language skills. Frijters et al.'s (2000) and Evans et al.'s (2000) studies also included more than one measure of the home literacy environment and more than one emergent literacy skill. Similar to Sénéchal et al., Frijters et al. found that a home literacy factor score explained significant unique variance in children's receptive vocabulary scores, but not in children's letter knowledge after controlling for phonological awareness. Evans et al., in turn, found that storybook

exposure did not explain unique variance in phonological sensitivity, letter name, or letter sound knowledge.

In contrast to storybook exposure, Sénéchal et al. (1998) found that parents' reported teaching of reading and printing words explained significant unique variance in children's kindergarten and grade one written-language factor scores but not in their oral-language factor scores. Similarly, Evans et al. (2000) found that home activities involving letters predicted unique variance in the child's letter name and letter sound knowledge but not in their phonological sensitivity.

One possible explanation for the variability in findings in the above studies is that different outcome and control variables were used. For example, in Sénéchal et al.'s (1998) research, the oral-language and written-language measures consisted of a combination of tasks. In Evans et al.'s (2000) study, phonological sensitivity, letter names, and letter sound knowledge were each examined independently, and in Frijters et al.'s (2000) study, letter name and letter sound knowledge were combined to make a single outcome variable. In terms of control variables, Sénéchal et al. controlled for children's age, parents' print exposure, intelligence, and either oral or written language skills, whereas Evans et al. controlled for children's age, parent education, and children's ability, which was a combination of children's intelligence and rapid naming speed.

Parents' Beliefs and Expectations

Research has suggested that parents' beliefs play an important role in children's school performance and in socializing children (Murphey, 1992; Sigel, 1985). For example, parents' positive beliefs about their child's cognitive ability have been shown to be associated with children's high achievement in reading (Crandall, Dewey, Katkovsky,

& Preston, 1964; Entwisle & Hayduk, 1988; Stevenson, Parker, Wilkinson, Hegion, & Fish, 1976). Entwisle and Hayduk (1988) have shown that parents' beliefs about their grade three child's ability to do school work predicted their child's later reading achievement. Galper, Wigfield, and Seefeldt (1997) have also found that a combination of parents' beliefs about their kindergarten child's alphabet knowledge, number knowledge, and reading ability predicted their kindergarten child's score on a reading measure that consisted of letter-word identification and passage comprehension.

Aunola et al. (2002), however, found that parents' beliefs about their grade one child's ability to read at the present and in the future and their beliefs about their child's academic ability at the present and in the future did not predict their child's reading performance after letter name knowledge and word identification were controlled. Similarly, Halle, Krutz-Costes and Mahoney (1997) found that once the child's previous reading was partialled out, children's reading achievement and parents' beliefs about their grade three and four children's schooling ability no longer correlated significantly. Children's reading achievement and parents' educational attainment expectations for their child, however, were still significantly correlated. In contrast, Gill and Reynolds (1999) reported that after previous reading was controlled, parent's educational attainment expectations for their child no longer predicted the child's grade six reading performance. Alexander and Entwisle (1988) have shown that parents' beliefs in their child's ability and their expectations for their child's reading marks predicted their child's actual reading marks at the end of the first quarter of grades one and two. However, parents' beliefs and expectations did not predict their child's marks at the end of grades one and two when third quarter reading marks were controlled.

One possible explanation for the difference in findings is the inconsistency in the age of the children when parents fill out questionnaires regarding their beliefs and expectations. Entwisle and Hayduk (1978) argue that after grades one and two, the impact of parental beliefs decreases because of the strong impact of the child's previous reading skills. Thus, the age of the child when the parent filled out the questionnaire could potentially make a difference in findings. Most of the studies have focused on older school-age children (e.g., Crandall et al., 1964; Entwisle & Hayduk, 1988; Halle et al., 1997; Stevenson et al., 1976) and only a few studies have considered children who are just beginning their formal education (e.g., Aunola et al., 2002)

As criticized by Aunola et al. (2002), a second limitation of the research on the role of parental beliefs is the substantial amount of variation in the dimensions of parental beliefs (i.e., specific versus general and current versus future) that have been investigated. For example, some studies have focused on parents' beliefs about their child's present reading ability (e.g., Galper et al., 1997). Other studies have focused on parents' beliefs about their child's present cognitive or general academic ability (Crandall et al., 1964; Stevenson et al., 1976) or future cognitive or general academic ability (Reynolds & Gills, 1999). Alexander and Entwisle (1988) and Halle et al. (1997) examined both parents' beliefs about their child's present reading and general academic ability. Halle et al. also examined parents' beliefs about their child's general academic ability in the future. Aunola et al. (2002), on the other hand, combined parents' beliefs about their child's present and future reading ability into a single variable, and combined parents' beliefs about their child's present and future general academic into a single variable.

Achievement Strategies

Achievement strategies are the motivational and behavioral styles children use in academic settings (Onatsu-Arvilommi, & Nurmi, 2000). Salonen et al. (1998) found that Finnish children entering grade one who were rated as task-oriented by their preschool teachers performed better in both a phonemic awareness task at the beginning of grade one and a word reading task at the end of grade one. After phonemic awareness was controlled, however, task-orientation did not significantly predict the word reading task at the end of grade one. Onatsu-Arvilommi and Nurmi (2000) and Aunola et al. (2002) found that seven-year-old students' pre-reading and pre-math skills influenced their achievement strategies, which in turn influenced later reading and math achievement.

For children between grades four and six, Mantzicopoulos (1990) found that students who used positive/action oriented strategies to cope with a failure experience in school had significantly higher means on a reading subtest than students who used defensive or self-blaming coping strategies. Other studies with older children have shown that self-handicapping, learned helplessness, and low persistence are associated with lower grades in English and math, and with lower overall academic achievement (Butkowsky & Willows, 1980; Galloway, Leo, Rogers, & Armstrong, 1995; Midgley, Arunkumar, & Urdan, 1996). Chapman (1988) found that compared to children without learning disabilities, children with learning disabilities showed signs of learned helplessness. Research has also found that children who have a learning disability (Jacobsen et al., 1986) and children who underachieve (Carr, Borkowski, & Maxwell, 1991) differentially attribute success, in comparison to typically achieving children.

One shortcoming of the research on achievement strategies is the lack of studies (with the exception of Salonen et al., 1998, who only focused on phonemic awareness) that have examined the effect of achievement strategies on the development of children's pre-literacy skills. For example, Aunola et al.'s (2002) study looks at the influence of pre-literacy skills and parental beliefs on achievement strategies but not vice versa. Salonen et al.'s (1998) study indicates, however, that achievement strategies might influence other pre-literacy skills such as letter knowledge, which is a socially valued learning task for children even before they receive formal education.

Overview of Present Study

The purpose of the present study is to simultaneously examine the influence of noncognitive factors, which have previously been shown to predict children's reading acquisition, on pre-literacy skills. The major question addressed is which noncognitive factors are uniquely associated with better pre-literacy skills in kindergarten children. The noncognitive measures include the home literacy environment (direct teaching of literacy skills, reading to child, and number of books in the home), parents' beliefs in and expectations of their child's reading and academic ability, and children's achievement strategies (task-focusedness and helplessness). The pre-literacy skills include phonological sensitivity, naming speed, and letter knowledge.

The present study is the first study to simultaneously examine the effects of children's home literacy environment, parents' beliefs and expectations, and children's achievement strategies on pre-literacy skills. By including these noncognitive variables in one study, the unique variance these variables explain in pre-literacy skills can be determined. Moreover, the present study takes a more in depth look at the effects parents' beliefs and

expectations have on pre-literacy skills by separately examining parents' beliefs about their child's present academic ability, future academic ability, present reading ability, and future reading ability.

Chapter 2

Methods

Participants

Children

Within one school board in a suburban community in Alberta, with mainly middle class residents, six schools agreed to participate in the study. Letters of information describing the study were sent to parents of all the 223 kindergarten children within these six schools. One hundred sixty-one children were given permission to participate in the study. Seventy-seven kindergarten students, 39 male and 38 female, of the 161 students were randomly selected to be part of the present study. Mean age of the selected students was 66.89 months (SD = 3.92). Due to mechanical difficulties one of the computer measures, Letter Sound Knowledge, was lost for one subject.

Parents

Along with the letters of information and consent forms, parents of all the kindergarten children also received a questionnaire. Questionnaires were filled out by the children's mother (37), father (6), or guardian (13). For 11 participants, the person who filled out the questionnaire was not stated. Of the 77 children selected to participate in the present study, 10 parents agreed for their child to participate but did not return the parent questionnaire, and seven parents did not fill out all of the questions on the questionnaire. Questions not filled out on the questionnaires were related to the parents' beliefs about their child's current reading ability. Several parents commented that their child was in kindergarten and therefore was not expected to read yet. There were data on mothers' education for 67 participants. The modal educational level for mothers was "completed

community college," the minimum was "some high school," and the maximum was "completed graduate school."

Teachers

All of the kindergarten teachers within the six schools gave written consent to participate in the present study. For all 77 children participating in the study, the children's kindergarten teacher filled out a questionnaire regarding the child's achievement strategies. No data was collected on the teachers themselves.

Measures

Phonological Sensitivity

Elision. The Elision task required the participant first to say a word, and then to say the word without saying part of the word. The Elision task was modified from the CTOPP (Wagner, Torgesen & Rashotte, 1999) by adding nine more test items; four were words in which one of the two syllables had to be deleted and five were words in which a phoneme had to be deleted. Three out of the five words in which a phoneme had to be deleted were the actual practice items from the CTOPP Elision task, which were included as test items rather than practice items. Items were recorded digitally with Canadian pronunciations onto the laptop and presented through the speakers rather than a cassette player. There were three practice items and 29 tests items: two test items were compound words and required the participant to say the word without saying one of the words, five test items were two syllable words and required the participant to say the word without saying one of the syllables, and the remaining twenty-two items required the participant to say a word without saying a designated sound in the word. Testing was discontinued after three consecutive errors were made and a participant's score was the number of

correct items. Wagner et al. (1999) reported test-retest reliability of 0.88 for the Elision task for children ages five to seven. Cronbach's (1951) alpha coefficient was used to determine the internal consistency reliability of the items on Elision. For ages five and six, Wagner et al. (1999) reported Cronbach's alpha coefficients of 0.90 and 0.92, respectively. Guttman's (1945) split-half reliability was used for the modified Elision task used in the present study because all test items were not administered to all participants. Guttman's split-half reliability for the modified Elision task was 0.92.

Blending. Blending was measured with the CTOPP Blending Words task (Wagner et al., 1999), which required the examinee to listen to a series of separate sounds and then put the separate sounds together to make a whole word. There were five practice items and 20 test items: three test items require the participant to put together two syllables to make a word, five test items require the participant to put an onset and a rime together to make a word, and the remaining 12 items require the participant to put individual sounds together to make a word. The examiner presented the stimuli orally to the children using Canadian pronunciations. Testing was discontinued after three consecutive errors were made and a participant's score was the number of correct items. Wagner et al. (1999) reported test-retest reliability of 0.88 for the Blending task for children ages five to seven. Cronbach's (1951) alpha coefficient was used to determine the internal consistency reliability of the items on the Blending task. For ages five and six, Wagner et al. (1999) reported Cronbach's alpha coefficients of 0.88 and 0.89, respectively. Guttman's (1945) split-half reliability was used for the present sample because all test items were not administered to all participants. Guttman's split-half reliability for the Blending task for the present sample was 0.89.

Naming Speed

Object Naming. The Object Naming task from the CTOPP (Wagner et al., 1999) was used as a measure of rapid serial naming. Participants were required to state as quickly as possible the names of six objects (pencil, boat, star, key, chair, fish). On two separate sheets, objects were arranged randomly in four rows with nine objects in each row. Prior to beginning the timed naming, each participant was asked to name the objects to ensure familiarity. The two pages were timed separately and the time in seconds to name all seventy-two targets was the score. Wagner et al. (1999) reported test-retest reliability of 0.77 for Object Naming for children ages five to seven. Wagner et al.'s (1999) reported alternative-form reliability for Object Naming was 0.82 and 0.81 for ages five and six, respectively. Parallel forms unbiased estimate of reliability for the present sample was 0.84.

Color Naming. Color Naming was used as a second measure of rapid serial naming. Color Naming required participants to state as quickly as possible the names of five colors (blue, black, green, red, and yellow). The colors were presented on a laptop computer screen and were arranged randomly in five rows with ten colors per row on two separate pages. Prior to beginning the timed naming, each participant was asked to name the colors to ensure familiarity. The two pages were timed separately and the time in seconds to name all one hundred targets was the score. Two of the subjects were not administered the second page of the Color Naming task. The correlation between the two pages was 0.78 and therefore these subjects' score on the first page was used as their score for the second page. Parallel forms unbiased estimate of reliability for the present sample was 0.86.

Letter Knowledge

Letter Name Knowledge. Letter Name Knowledge was assessed by administering the *Letter Identification* test (Clay, 1993). Participants were asked to identify each of the upper and lowercase letters. Two lowercase letters, a and g, were presented in two different fonts, so the total possible score was 54. On this task, Clay (1993) reports a split-half reliability of 0.97 for age six. Cronbach's (1951) alpha coefficient for the Letter Name Knowledge for the present sample was 0.96.

Letter Sound Knowledge. Letter Sound Knowledge was assessed by having participants give the sound of each uppercase letter presented in random order on a laptop screen. There were four practice letters, P, S, I, and O, to ensure that each participant understood the task, and then each of the 26 uppercase letters, including P, S, I, and O, were displayed in random order on the laptop screen. Participants were required to give the sound each letter makes. For vowel sounds either the long or short sound was acceptable; for consonants that make two sounds either correct sound was acceptable (e.g., /k/ or /s/ were accepted for c). Testing was discontinued after six consecutive items were incorrect. Participants' score was the total number correct. Guttman's (1945) split-half reliability was used for the present sample because all test items were not administered to all participants. Guttman's (1945) split-half reliability for Letter Sound Knowledge for the present sample was 0.94.

General Cognitive Ability

Vocabulary. Participants' vocabulary was assessed using the *Peabody Picture Vocabulary Test-Third Edition Form A (PVTT-IIIA)* (Dunn & Dunn 1997). In this task, participants were shown four pictures and the examiner said a word to describe one of the

four pictures. The participant was required to point to the correct picture for the word given by the examiner. Items were administered in sets of twelve. Testing was discontinued after eight or more errors within the highest set of items administered. Participants' score was the number of correct items. Using Spearman-Brown prophecy formula, Dunn and Dunn (1997) reported split-half reliabilities of 0.94 for age five, 0.94 for age five years, six months, 0.92 for age six, and 0.90 for age six years, six months. Guttman's (1945) split-half reliability was used for the present sample because all test items were not administered to all participants. Guttman's (1945) split-half reliability for the PPVT-III for the present sample was 0.95.

Nonverbal Cognitive Ability. Participants' nonverbal cognitive ability was assessed using *Progressive Matrices Sets A, Ab, and B* (Raven, 1956). Participants were shown a pattern with a piece missing and were required to decide which of the pieces below the pattern was the right one to complete the pattern. Each set, A, Ab, and B, contained 12 items and participants' score was the total items correct on all three sets. Cronbach's (1951) alpha coefficient for the present study was .74.

Home Literacy Environment (HLE)

Home Literacy Environment was assessed with six five-point Likert questions (see Appendix A). Parents were asked how many books are in the home, how many children books are in the home, and how often their child is: (a) read to at home; (b) taught to identify letters; (c) taught letter sounds; (d) and taught to read words.

Parents' Beliefs and Expectations

Parents' beliefs about their children's reading ability and school performance were assessed with 8 five-point Likert questions modified from questionnaires used by Aunola

et al. (2002), Parsons, Alder, and Kaczala (1982), and Frome and Eccles (1998) (see Appendix B). Four questions measured parents' beliefs about their child's reading ability. One of the four questions measured how parents believe their child is currently reading, two of the four questions measured how much effort parents believe their child needs to expend in order to read, and one question measured parents' beliefs about their child's ability to read in the future. The remaining four questions measured parents' beliefs about their child's general academic ability. One of the four questions measured how parents believe their child is currently doing at school, two of the four questions measured how much effort parents believe their child needs to expend to do well in school, and one question measured how parents believe their child will do in school in the future. Cronbach's (1951) alpha coefficient was used to determine the internal consistency reliability of the items on the parents' beliefs and expectations questionnaire. For the present sample, Cronbach's alpha coefficient was 0.92.

Achievement Strategies

Kindergarten teachers were asked to evaluate the behavior of each child using the *Behavioral Strategy Rating Scale- II (BSR-II)* (Aunola, Nurmi, Parrila, & Onatsu-Arvilommi, 2000) (see Appendix C). Teachers were asked to consider how the child typically behaved in classroom situations and then rate his or her behavior using seven statements assessed with a five-point Likert scale. Five questions assessed children's use of task-avoidant versus task-focused achievement strategies and two questions assessed children's helplessness. Cronbach's (1951) alpha coefficient was used to determine the internal consistency reliability of the task-focusedness items on the questionnaire. For the present sample, Cronbach's alpha coefficient was 0.96.

Procedure

Blending and Object Naming were administered in February or the beginning of March during the kindergarten year. All other tasks were administered in April or May. All participants were tested individually in their respective schools during school hours by trained experimenters (two graduate students). Testing was divided into two sessions lasting roughly 20 to 30 minutes. Elision, Color Naming, and Letter Sound Knowledge were presented on a laptop computer using Direct RT (Empirisoft Corporation, 2000) reaction time software. For Elision, items were presented to the children through the speakers. Parents filled out the questionnaire in February of their child's kindergarten year. Teachers filled out the BSR-II for each participating child in their class in May.

Chapter 3

Results

Descriptive Analyses

Table 3-1 reports the means and standard deviations for all of the measures. In terms of the general performance level of the current sample, results shown in Table 1 suggest that on the Elision task, on average, participants were able to say a two-syllable word without saying one of the syllables. On the Blending task, participants were able to blend together an onset and a rime to make a word (e.g., /s/ and /ô/ to make saw). Participants recognized approximately 40 of the 54 upper and lower case letters presented but only knew the sounds for approximately 16 uppercase letters.

PPVT-III, Raven's Matrices, Blending, and Object Naming were all presented to participants in the standardized format, and therefore the results from these tasks can be compared to the reported norms for these tasks. Compared to the PPVT-III norm sample, the present sample's mean standard score (M = 113.44, SD = 11.46) was slightly higher than expected. Compared to the Raven's Matrices' 1986 norms for the United States (Raven, Raven, & Court, 1998), the present sample's mean raw score on Raven's Matrices fell approximately at the seventy-fifth percentile. The present sample's mean standard score on Blending (M = 10.95, SD = 1.58) and Object Naming (M = 10.29, SD = 2.54) were very similar to the CTOPP norm sample (Wagner et al., 1999). In summary, the present sample appears to have relatively high General Cognitive Ability, but average phonological sensitivity and naming speed.

Table 3-1

Means and Standard Deviations for the Tasks

	N	Mean	SD	Minimum	Maximum
Pre-Literacy Skills					
Elision	77	6.92	4.81	0	18
Blending	77	6.17	2.74	0	13
Object Naming	77	106.51	26.58	54.92	189.62
Color Naming	77	148.24	37.36	87.23	253.74
Letter Name Knowledge	77	39.74	12.29	6	54
Letter Sound Knowledge	76	15.78	7.66	0	26
Control Variables					
Age (in months)	77	66.89	3.92	58	75
PPVT-III	77	93.40	15.14	56	130
Raven's Matrices	77	19.22	4.28	12	31
Home Literacy Environment					
Number of Children Books [a]	67	4.18	.76	3	5
Number of Books in Home [b]	67	3.21	1.01	1	5
Read to Child[c]	67	4.01	.77	2	5
Teach to Identify Letters[c]	67	3.21	1.20	0	5
Teach Letter Sounds[c]	67	2.68	1.34	0	5
Teach to Read Words[c]	66	1.98	1.30	0	5
Parents' Beliefs and Expectations					
How Well Read[d]	63	2.33	1.23	1	5
Finds Reading Hard/Easy[e]	60	2.67	1.21	1	5
How Hard Try in Reading[f]	62	2.56	1.13	1	5
How Well Read in Future[d]	66	4.41	.72	2	5
Current Academic Ability[d]	67	4.18	.89	1	5
Finds School Hard/Easy[e]	67	3.87	.98	1	5
How Hard Try in School[f]	67	3.61	.89	1	5
Academic Ability in Future[d]	67	4.33	.77	2	5
Achievement Strategies					
Task-Focusedness	77	16.81	6.69	5	25
Helplessness	77	6.19	1.21	3	10

Note. [a] 1 = less than 10; 2 = 10-24; 3 = 25-99; 4 = 100-199; 5 = more than 200. [b] 1 = less than 100; 2 = 100-299; 3 = 300-499; 4 = 500-1000; 5 = more than 1000. [c] 0 = never; 1 = less than once a month; 2 = a few times a month; 3 = a few times a week; 4 = about once a day; 5 = more than once a day. [d] 1 = not at all well; 5 = very well. [e] 1 = very hard; 5 = very easy. [f] 1 = very hard; 5 = not at all hard.

For the Home Literacy Environment (HLE), parents in the present study reported having, on average, between 100 and 199 children's books at home, which is higher than reported in previous Canadian studies (Frijters et al., 2000; Sénéchal et al., 1998). One reason for this may be that the scale used in this study allowed for parents to report more books. For example, the maximum number of books parents could report in the present study was more than 200, whereas the maximum number of books parents could report in Sénéchal et al.'s study was more than 80 and in Frijters et al.'s study only more than 50.

Frijters et al.'s (2000) finding that parents reported reading to their children between seven and nine times per week is similar to the present finding, which indicated that parents reported storybook reading occurred in the home about once a day. Similar to Sénéchal et al.'s (1998) findings that parents reported teaching their child to read words sometimes, parents in the present study reported that their child was taught to read words a few times a month.

On the parents' beliefs and expectations questionnaire, parents reported that, on average, their child was not currently reading very well but would read well in the future, and that their child was currently doing well in school and would do well in school in the future. Aunola et al. (2002) similarly found that mothers and fathers reported that their child was doing well in school and would do well in school in the future. Unlike the present findings, however, mothers and fathers in Aunola et al.'s study reported that their child was doing well in reading and would continue to do well in reading in the future. The discrepancy between the present findings and Aunola et al.'s findings may be the difference in the age of children when the parents filled out the questionnaires. In the present sample, parents filled out the questionnaire when their child was on average six

years, six months old and in kindergarten. In Aunola et al.'s sample, parents filled out the questionnaire when their child was on average seven years, three months old and in grade one. Many children in Finland are able to read at the beginning of grade one (Holopainen, Ahonen, Tolvanen, & Lyytinen, 2000; Poskiparta, Niemi, & Vauras, 1999).

Finally, on the Behavior Strategy Rating Scale (BSR-II), which was filled out by the teachers, children in the present study demonstrated slightly higher levels of task-focusedness compared to students in Aunola et al.'s (2002) study, who were in the beginning of grade one. This could reflect the fact that the current sample was approximately one and a half years younger than Aunola et al.'s sample and therefore teachers' expectations may have been lower in the present study.

Correlations between the measures on each scale were examined next and highly correlated measures were combined. The distributional properties of the measures were examined. For measures in which the distributions were not normal, transformations were then used to decrease the likelihood of violating the assumption of normality. Transformed scores were then used in all remaining analyses.

Of the pre-literacy skills, raw scores on Elision, Blending, and Letter Sound Knowledge showed a floor effect (10.4%, 1.3%, and 2.6% of the sample, respectively, scored 0). Letter Name Knowledge and Letter Sound Knowledge showed a small ceiling effect (3.9% and 2.6% of the sample, respectively, solved all items correctly). Elision and Blending were highly correlated ($r = 0.58$) and the standard scores were summed together to make a single variable, Phonological Sensitivity, which was used in all the remaining analyses. Object Naming and Color Naming were also highly correlated ($r = .62$) and the standard scores were summed to make a single variable, Naming Speed, which was used

in all the remaining analyses. Similarly, letter name knowledge and letter sound knowledge were also highly correlated ($r = .64$) and the standard scores were summed together to make a single variable, Letter Knowledge, which was used in all the remaining analyses. An examination of the distributional properties of the pre-literacy skills indicated a problem with the Letter Knowledge variable. Letter Knowledge scores were negatively skewed. Scores were reflected by subtracting the actual score from X, where X was equal to the largest score +1 (Tabachnick & Fidell, 1996). Log transformations were then performed on the reflected scores. Only the reflected log transformed scores were used in all correlational analyses. As Letter Knowledge scores used in all correlational analyses were reflected, results were corrected for direction to simplify their interpretation.

Of the Home Literacy Environment questions, parents' reports of their child being taught letter names, letter sounds, or to read words were highly correlated ($r = 0.76$ for teaching letter names and letter sounds; $r = 0.60$ for teaching letter sounds and to read words; $r = 0.35$ for teaching letter names and to read words). Thus the standard scores of the three teaching questions were summed together to make a single variable, Direct Teaching, which was used in all correlational analyses. Similarly, number of books in the home was highly correlated with number of children's books in the home ($r = 0.63$) and the standard scores were summed together to make a single variable, Books in Home, which was used in the correlational analyses.

Questions relating to parents' beliefs about their child's reading and general academic ability were analyzed separately. For parents' beliefs about their child's reading ability, a factor analysis using principal axis factoring indicated that a two-factor solution provided

a good fit for the data. Parents' beliefs about how well their child reads, how hard their child has to try in reading, and how easy their child finds reading loaded on one factor that explained 65.06% of the variance. The standardized scores for these three questions were summed together and used in subsequent analyses as the Parents' Beliefs About Their Child's Current Reading (PBCR) variable. Since three cases had missing data on one or two of the three questions that made up the PBCR variable, a factor score was not used. Missing data were replaced with the same value as the existing data.

Parents' beliefs about how well their child will read in the future loaded on a second factor that explained an additional 7.07% of the variance. Raw scores for Parents' Beliefs about their child's Future Reading (PBFR) were used in subsequent analyses.

For parents' beliefs about their child's general academic ability, factor analysis using principal axis factoring indicated that a single factor solution fit the data well and explained 58.17% of the variance. Thus, questions regarding children's current and future academic ability loaded on the same factor. The regression factor score from this analysis was then used in subsequent analyses as the Parent's Beliefs About Their Child's Academic Ability (PBAA) variable.

An examination of the distributional properties of the BSR-II scales indicated a problem with the Helplessness scale. It seemed that teachers were not able to differentiate between the students as more than half of the participants (55%) received a score of three on both helplessness questions, which represented the middle of the scale. Log transformations were performed on the Helplessness scale and only the log transformed scores were used in subsequent analyses. Task-Focusedness scale scores were negatively skewed and showed a ceiling effect (about 16% of sample scored 25). Scores were

reflected by subtracting the actual score from X, where X was equal to the largest score +1 (Tabachnick & Fidell, 1996). Log transformations were then performed on the reflected scores. Only the reflected log transformed scores were used in all correlational analyses. As Task-Focusedness scores used in all correlational analyses were reflected, results were corrected for direction to simplify their interpretation.

Inter-relationships Between Variables

Table 3-2 presents the correlations between the predictor variables and the outcome variables. Children's age correlated positively with PPVT-III and Task-Focusedness. The general cognitive ability measures were positively correlated with each other, Phonological Sensitivity, Letter Knowledge, PBAA, PBCR, Task-Focusedness, and negatively correlated with Naming Speed. PPVT-III also correlated positively with PBFR. The general cognitive ability measures did not correlate significantly with the HLE questions. Thus, in the present sample, older children had larger vocabularies and could better focus on tasks. Children with larger vocabularies and higher nonverbal intelligence had better phonological sensitivity, letter knowledge, and naming speed. The larger the child's vocabulary and the higher the child's nonverbal intelligence, the more parents reported their child was reading well, doing well in school, and believed that their child would do well in school in the future. Finally, the larger the child's vocabulary the more parents thought their child would read well in the future.

Table 3-2

Correlations Between Kindergarten Variables

	1.	2.	3.	4.	5.	6.	7.
Control Variables							
1.Age	1.00	.38**	.16	-.12	-.08	-.19	.02
2.PPVT-III		1.00	.36**	.16	.17	-.00	.35**
3.Raven's Matrices			1.00	.16	-.06	.07	.36**
Home Literacy							
4.Direct Teaching				1.00	.32**	.36**	.27*
5.Read to Child					1.00	.14	.11
6.Books at Home						1.00	.14
Parents' Beliefs							
7.PBAA							1.00
8.PBCR							
9.PBFR							
Achievement Strategies							
10.Task-Focusedness							
11.Helplessness							
Pre-Literacy Skills							
12.Phonological Sensitivity							
13.Naming Speed							
14.Letter Knowledge							

	8.	9.	10.	11.	12.	13.	14.
Control Variables							
1.Age	.13	.04	.27*	.06	.10	-.19	.17
2.PPVT-III	.40**	.32**	.46**	.09	.33**	-.35**	.39**
3.Raven's Matrices	.34**	.21	.30**	-.09	.33**	-.39**	.29*
Home Literacy							
4.Direct Teaching	.32*	.19	.28*	.21	.26*	-.23	.45**
5.Read to Child	.18	.20	.23*	.12	.17	.09	.35**
6.Books at Home	.08	.14	-.00	-.02	.14	-.00	.19
Parents' Beliefs							
7.PBAA	.60**	.60**	.54**	.08	.32**	-.31*	.33**
8.PBCR	1.00	.43**	.49**	.07	.48**	-.28*	.49**
9.PBFR		1.00	.36**	-.04	.21	-.15	.12
Achievement Strategies							
10.Task-Focusedness			1.00	.08	.38**	-.32**	.47**
11.Helplessness					.02	-.03	.16
Pre-Literacy Skills							
12.Phonological Sensitivity					1.00	-.28*	.73**
13.Rapid Naming						1.00	-.25*
14.Letter Knowledge							1.00

Note. *p < .05. **p < .01

The pre-literacy skills correlated significantly with each other and with some of the independent variables. Specifically, Phonological Sensitivity and Letter Knowledge correlated positively with Direct Teaching, PBAA, and Task-Focusedness. Letter Knowledge also correlated positively with Read to Child. Naming Speed correlated negatively with PBAA and Task-Focusedness. Children who had better phonological sensitivity, letter knowledge, and naming speed were reported to be better able to stay focused on tasks. Children who had better phonological sensitivity and letter knowledge were also more often taught by someone in the home to identify letter names, letter sounds, and to read words. The more parents believed their child was doing well in reading and in school, the better the child's phonological sensitivity, letter knowledge, and naming speed. Further, children who were read to prior to entering school had better letter knowledge.

Predicting Pre-Literacy Skills

Fixed-order regression analyses were used to examine the additional contribution of each independent variable in predicting the dependent variables. The independent variables included the home literacy environment measures, parents' beliefs and expectation measures, and the achievement strategy measures. The dependent variables were Phonological Sensitivity, Naming Speed, and Letter Knowledge. In all regression analyses Age, PPVT-III, and Raven's Matrices were entered first to control for children's age and general cognitive ability. The regression analyses for the dependent variables were performed in two steps. In step 1, the control variables were entered first and then the independent variables separately for each construct (HLE, parents' beliefs and expectations, and achievement strategies) were entered second. In step 2, the significant

variables from step 1 analyses were entered into regression analysis with the control variables to determine the unique contribution of each variable.

Phonological Sensitivity

Table 3-3 presents the results from fixed-order regression analyses with Phonological Sensitivity as the dependent variable. Standardized beta coefficients and significance levels are reported. The amount of variance accounted for by the control variables varied depending on the number of participants that had data available for each analysis.

Table 3-3

Regression Results Predicting Kindergarten Phonological Sensitivity After Controlling for Age and General Cognitive Ability (entered in Step 1)

	Phonological Sensitivity			
Predictor Variables	Step 1a N=67	Step 1b N=63	Step 1c N=77	Step 2 N=63
Control Variables				
Age	.08	.03	-.07	-.01
PPVT-III	.21	.16	.17	.12
Raven's Matrices	.26*	.19	.20	.18
R Square Change	*.20***	*.20***	*.16***	*.20***
Home Literacy				
Direct Teaching	.14			
Read to Child	.10			
Number Books	.08			
R Square Change	*.05*			
Parents' Beliefs				
PBAA		.03		
PBCR		.35*		.29*
PBFR		-.05		
R Square Change		*.10*		
Achievement Strategies				
Task-focusedness			.26*	.17
Helplessness			.00	
R Square Change			*.05*	
R Square Change				*.12**

Note. * $p < .05$

Together the control variables accounted for 16 to 20 percent of the variance in Phonological Sensitivity. Of the control variables, Raven's Matrices seemed to be the most important predictor variable. Age was not a significant predictor of Phonological Sensitivity.

After entering the control variables into the regression analysis, the HLE variables did not account for significant additional variance in Phonological Sensitivity. Parents' beliefs and expectations variables, however, approached significance and accounted for 10% additional variance in Phonological Sensitivity. Of the parents' beliefs and expectations variables only PBCR was a significant predictor of Phonological Sensitivity. After entering the control variables, the achievement strategies variables accounted for 5% additional variance in Phonological Sensitivity. Task-focusedness but not Helplessness was a significant predictor of Phonological Sensitivity.

In step 2, the two significant variables from step 1 analyses accounted for an additional 12% of the variance in Phonological Sensitivity. PBCR remained a significant predictor of Phonological Sensitivity but Task-focusedness did not. Therefore in the present sample, parents' beliefs about their child's current reading ability was the best predictor of children's phonological sensitivity.

Naming Speed

Table 3-4 presents the results from fixed-order regression analyses with Naming Speed as the dependent variable. Standardized beta coefficients and significance levels are reported. As above, the amount of variance accounted for by the control variables varied depending on the number of participants that had data available.

Table 3-4

Regression Results Predicting Kindergarten Naming Speed After Controlling for Age and General Cognitive Ability (entered in Step 1)

	Naming Speed		
Predictor Variables	Step 1a N=67	Step 1b N=62	Step 1c N=77
Control Variables			
Age	.02	-.05	-.04
PPVT-III	-.33*	-.32*	-.17
Raven's Matrices	-.24*	-.22	-.28*
R Square Change	*.26***	*.28***	*.21***
Home Literacy			
Direct Teaching	-.22		
Read to Child	.20		
Number Books	.06		
R Square Change	*.06*		
Parental Beliefs			
PBAA		-.23	
PBCR		.00	
PBFR		.11	
R Square Change		*.03*	
Achievement Strategies			
Task-focusedness			-.14
Helplessness			-.03
R Square Change			*.02*

Note. * $p < .05$

The control variables accounted for 21 to 28 percent of the variance in Naming Speed. PPVT-III and Raven's Matrices both seemed to be important predictor variables. Age was not a significant predictor of Naming Speed. Once the control variables were accounted for, the HLE variables, parents' beliefs and expectation variables, and the achievement strategy variables were no longer significant predictors of Naming Speed. Direct Teaching and Read to Child did, however, approach significance. The results suggest that in the present sample the child's general cognitive ability as measured by PPVT-III and Raven's Matrices was the best predictor of the child's naming speed.

Letter Knowledge

Table 3-5 presents the results from fixed-order regression analyses with Letter Knowledge as the dependent variable. Standardized beta coefficients and significance levels are reported. Again, the amount of variance accounted for by the control variables varied depending on the number of participants that had data available.

Table 3-5

Regression Results Predicting Kindergarten Letter Knowledge After Controlling for Age and General Cognitive Ability (entered in Step 1)

	Letter Knowledge			
Predictor Variables	Step 1a N=66	Step 1b N=61	Step 1c N=76	Step 2 N=62
Control Variables				
Age	.14	.02	-.02	.08
PPVT-III	.27*	.32*	.19	.17
Raven's Matrices	.12	.05	.13	.06
R Square Change	*.22***	*.23***	*.18***	*.24***
Home Literacy				
Direct Teaching	.31**			.25*
Read to Child	.22*			.16
Number Books	.08			
R Square Change	*.20***			
Parents' Beliefs				
PBAA		.13		
PBCR		.36*		.19
PBFR		-.22		
R Square Change		*.13**		
Achievement Strategies				
Task-focusedness			.34**	.22
Helplessness			.13	
R Square Change			*.11***	
R Square Change				*.26****

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

The control variables accounted for 18 to 24 percent of the variance in Letter Knowledge. Of the control variables, PPVT-III seemed to be the most important predictor of Letter Knowledge. Raven's Matrices and Age did not predict Letter Knowledge

significantly. In step 2, once all the significant variables were entered into the analysis, PPVT-III was no longer a significant predictor of Letter Knowledge.

After accounting for the control variables, the HLE variables, parents' beliefs and expectation variables, and the achievement strategies variables accounted for significant additional variance, 20%, 13%, and 11%, respectively, in children's letter knowledge. Of the HLE variables, Direct Teaching and Read to Child were both significant predictors of Letter Knowledge. Of the parents' beliefs and expectation variables, only PBCR was a significant predictor, and of the achievement strategies variables, only Task-focusedness was a significant predictor of Letter Knowledge.

In step 2, the four significant variables from step 1 analyses accounted for an additional 26% of the variance in Letter Knowledge. Of these variables, Task-focusedness approached significance and Direct Teaching was a significant predictor of Letter Knowledge. Therefore in the present sample, parents' reports of their child being taught letter names, sounds, and to read words was the most important predictor of children's letter knowledge.

Chapter 4

Discussion

The present study simultaneously examined the effects of multiple noncognitive factors on kindergarten children's pre-literacy skills. Lonigan (1994) argued that the child's home literacy environment might influence some aspects of emergent literacy and not others. In the present study, three pre-literacy skills – phonological sensitivity, naming speed, and letter knowledge – were used as dependent variables. The independent variables included three measures of the home literacy environment, three measures of parents' beliefs and expectations, and two measures of children's achievement strategies. By examining the three pre-literacy skills, this study is better able to determine which noncognitive variables influence different aspects of emergent literacy.

Pre-Literacy Skills

The pre-literacy skills of interest in the present study were phonological sensitivity, naming speed, and letter knowledge. These three pre-literacy skills have been shown to be good predictors of reading acquisition (e.g., Bishop, in press). Not surprisingly, the two measures of each of the three pre-literacy skills were highly correlated. In addition, Phonological Sensitivity, Letter Knowledge, and Naming Speed were highly correlated with one another. This finding is in agreement with existing studies (e.g., Bishop, in press; Evans et al., 2000; Parrila et al., in press; Sénéchal et al., 1998).

Home Literacy Environment

Home Literacy Environment was operationalized by three variables: The number of books in the home, parents' reports of their child being taught letter names, sounds, and to read words, and parents' reports of their child being read to. The number of adult and

children books that parents' reported were in the home correlated significantly with parents' reports of their child being taught letter names, sounds, and to read words but not with the pre-literacy skills. Similar to the present study, Frijters et al. (2000) found that the number of children's books in the home correlated significantly with the other home literacy environment questions but not with phonological sensitivity or letter knowledge.

Parents' reports of their child being taught letter names, sounds, and to read words correlated significantly with Phonological Sensitivity and Letter Knowledge. In predicting Phonological Sensitivity, however, parents' reports of their child being taught letter names, sounds, and to read words shared some predictive variance with the control variables. Evans et al. (2000) similarly found that parents' reports of letter activities was not a robust predictor of phonological sensitivity after controlling for parent education and a combination of children's intelligence and rapid naming speed. Sénéchal and LeFevre (2002) also found that parent teaching of literacy skills was not a significant predictor of phonological awareness after children's intelligence, receptive vocabulary, and written-language skills were controlled.

Parents' reports of their child being taught letter names, sounds, and to read words was a robust predictor of Letter Knowledge. These results are in agreement with Sénéchal et al.'s (1998) findings, which indicated that parent teaching of literacy skills predicted significant variance in a written-language skills factor even after controlling for an oral-language skills factor. Similarly, Evans et al. (2000) found that parents' reports of letter activities predicted significant variance in their child's letter knowledge after controlling for the child's age, parent education, and a combination of children's intelligence and rapid naming speed.

Based on the results from meta-analyses, Bus et al. (1995) and Scarborough and Dobrich (1994) suggested that storybook exposure might have limited importance as a precursor of reading skills. Lonigan (1994) and Dunning et al. (1994) argued, however, that the studies used in the meta-analyses were methodologically flawed because they looked at the general effects of storybook exposure rather than more specific effects. The present study addressed Lonigan's and Dunning et al.'s critiques by examining the most influential pre-literacy skills.

The present study found that parents' reports of their child being read to only correlated significantly with letter knowledge and not with phonological sensitivity or naming speed. In addition, the predictive relationship between parents' reports of their child being read to and Letter Knowledge was not robust. Parents' reports of their child being read to shared its predictive variance with parents' reports of their child being taught letter names, sounds, and to read words. Thus, the influence that parents' reading to their children has on letter name knowledge appears to be captured by measuring teaching activities in the home. Although parents' reports of their child being taught literacy skills was found to be a better predictor of Letter Knowledge then children's print exposure, 90% of parents who reported their child was frequently taught literacy skills also reported that their child was read to at least once a day. Therefore, reading to children may be necessary but not sufficient to influence children's pre-literacy skills.

The present results are in agreement with Evans et al.'s (2000) and Frijters et al.'s (2000) findings that children's storybook exposure was not a robust predictor of letter knowledge. Sénéchal and LeFevre (2002) similarly found that children's storybook exposure was not a robust predictor of phonological awareness or a written-skills factor.

Even after taking into consideration Lonigan's (1994) and Dunning et al.'s (1994) critiques, the present results support Bus et al.'s (1995) and Scarborough and Dobrich's (1994) conclusions that children's storybook exposure may have limited importance as a precursor of reading skills. Although Sénéchal and LeFevre (2002) and Frijters et al.'s (2000) studies suggest that storybook exposure may influence children's receptive vocabulary, the present findings suggest that measuring teaching activities in the home captures the influence reading to children has on letter knowledge.

Parents' Beliefs and Expectations

The present study overcomes the shortcomings of the existing literature on parents' beliefs and expectations by examining parents' beliefs and expectations before children received formal instruction in reading and by examining all four dimensions of parents' beliefs and expectations. Specifically, parents' beliefs and expectations were operationalized by four variables: parents' beliefs about their child's ability to read in the future, parents' beliefs about their child's current reading ability, parents' beliefs about their child's current academic ability, and parents' beliefs about their child's future academic ability. The assumption was that the four variables would be independent, however, the present data did not show a difference between parents' beliefs about their child's current academic ability and parents' beliefs about their child's future academic ability. Therefore, parents' beliefs about their child's current academic ability and future academic ability were combined.

The present study found that parents' beliefs about their child's ability to read in the future did not correlate with any of the dependent measures. In contrast, parents' beliefs about their child's current reading ability correlated significantly with Phonological

Sensitivity, Naming Speed, and Letter Knowledge. Once the control variables were accounted for, however, parents' beliefs about their child's current reading ability did not account for additional significant variance in Naming Speed. For Letter Knowledge, parents' beliefs about their child's current reading ability shared its predictive variance with the other noncognitive and cognitive measures. Parents' beliefs about their child's current reading ability did, however, predict unique variance in Phonological Sensitivity even after controlling for other noncognitive and cognitive measures. Parents' beliefs about their child's academic ability also correlated significantly with Phonological Sensitivity, Naming Speed, and Letter Knowledge but did not significantly predict these pre-literacy skills after accounting for the control variables.

Similar to the present findings, Aunola et al. (2002) found that parents' beliefs about their child's ability to read in the future did not correlate significantly with children's pre-literacy skills but parents' beliefs about their child's current reading and current academic ability did correlate significantly with children's pre-literacy skills. Aunola et al. found, however, that once pre-literacy skills were controlled, a combination measure of parents' beliefs about their child's current and future reading ability did not predict the child's reading performance and a combination measure of parents' beliefs about their child's current and future academic ability only indirectly predicted reading performance through the types of achievement strategies the child used at school.

Although Aunola et al. (2002) found that a combination of parents' beliefs about their child's current and future reading skills did not predict reading skills after controlling for pre-literacy skills, our study suggests that parents' beliefs about their child's current reading ability was an important predictor of children's Phonological Sensitivity. Based

on the present study, however, the direction of the relationship between parents' beliefs about their child's current reading and phonological sensitivity cannot be determined. It is possible that children who are able to do many language related games (e.g., rhyming) were rated by parents as being better able to read.

Achievement Strategies

The present study examined the effects of achievement strategies on three pre-literacy skills. Two types of achievement strategies, helplessness and task-focusedness, were measured in the present study. For the helplessness scale, it seemed that teachers were not able to differentiate between the students. It is possible that helplessness scale used in the present study was not sensitive enough for kindergarten children. Research has shown, however, that for children who are on average seven years of age, teachers have been able to differentiate between students on the helplessness scale (Onatsu-Arvilommi & Nurmi, 2000).

Teachers' reports of children's task-focused achievement strategies correlated significantly with the three pre-literacy skills. Once the control variables were accounted for, task-focused achievement strategies no longer accounted for significant variance in Naming Speed. For Phonological Sensitivity, task-focused achievement strategies shared its predictive variance with the other noncognitive variables. For Letter Knowledge, task-focused achievement strategies approached significance but was not significant after accounting for parents' reports of their child being taught letter names, sounds, and to read words.

Salonen et al. (1998) found that task-focused children performed significantly better in phonemic awareness, however, unlike the present study, general cognitive processing

was not controlled. Similar to the present study, Onatsu-Arvilommi and Nurmi (2000) and Aunola et al. (2002) found that task-focused achievement strategies correlated with pre-literacy skills, but whether task-focused achievement strategies predicted pre-literacy skills was not examined. Rather, these studies found that pre-literacy skills predicted task-focused achievement strategies, which then formed a bi-directional relationship with reading performance. The preliminary findings that task-focused achievement strategies and reading performance form a cumulative developmental cycle suggests that a longitudinal design is needed in order to determine the relationship between achievement strategies, pre-literacy skills, and reading performance.

Limitations

There are a few limitations that should be considered when generalizing the findings of this study. First, the study was carried out in a community with mainly middle class residents and therefore similar results may not be found for other socioeconomic populations. Second, the present study was a correlational study. A longitudinal design is better suited for examining the mediating roles and unique contribution each cognitive and noncognitive factor has on reading acquisition. It is possible that some of the noncognitive variables exert their influence later rather than early in the acquisition of reading skills. For example, previous research has shown that some home literacy experiences make a direct contribution to children's decoding skills (Leseman & de Jong, 1998). Third, the present study used parents' reports of how often their child is read to. Sénéchal, LeFevre, Hudson, and Lawson (1996) argue, however, that storybook reading is a highly valued activity, and thus parents' responses to a question about the frequency

of that activity could be biased. More objective measures of children's print exposure could have produced different results.

Future Directions

Children from the present study should be followed during grades one, two, and three. Children's achievement strategies should be assessed again as well as their word reading, decoding skills, and passage comprehension in order to determine the relationship between the noncognitive and cognitive factors measured in kindergarten and different aspects of reading performance. The role children's interest in literacy plays in the acquisition of reading skills should also be considered as preliminary research has suggested that children's interest in literacy is associated with better reading outcomes (Scarborough, Dobrich, & Hager, 1991).

Research should also be conducted to examine the relationship between teacher's instructional methods and pedagogical goals, children's cognitive characteristics, achievement strategies and interest, parents' beliefs and expectations, home literacy practices, and the acquisition of reading skills. Adding classroom context into the colloquial could help us to better understand why some children succeed in reading despite limited initial skills and home literacy practices.

Conclusions

The present study found that the pre-literacy skills were highly inter-correlated. In terms of noncognitive factors, parents' beliefs about their child's current reading and parents' reports of their child being taught literacy skills were more important predictors of pre-literacy skills than children's print exposure and achievement strategies. Unlike the other pre-literacy skills, naming speed appears to be more of a measure of some basic

cognitive ability, which was not influenced by the noncognitive variables included in the present study.

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Appendix A

Parent/Guardian Home Literacy Environment Questionnaire

PLEASE ANSWER THE FOLLOWING QUESTIONS ABOUT YOUR CHILD WHO IS NOW IN KINDERGARTEN. PLEASE READ EACH QUESTION CAREFULLY AND THEN CIRCLE THE BEST ANSWER.

1. Did your child attend Junior Kindergarten? Yes No

2. How often do you (or other people) read to your child at home?

More than once a day	About once a day	A few times a week	A few times a month	Less than once a month	Never
5	4	3	2	1	0

3. Before your child began Kindergarten (when he or she was age 2-4), how often did you (or someone else) teach him or her to identify letters?

More than once a day	About once a day	A few times a week	A few times a month	Less than once a month	Never
5	4	3	2	1	0

4. Before your child began Kindergarten (when he or she was age 2-4), how often did you (or someone else) teach him or her the sounds that letters make?

More than once a day	About once a day	A few times a week	A few times a month	Less than once a month	Never
5	4	3	2	1	0

5. Before your child began Kindergarten (when he or she was age 2-4), how often did you (or someone else) teach him or her to read words?

More than once a day	About once a day	A few times a week	A few times a month	Less than once a month	Never
5	4	3	2	1	0

6. About how many books do you have in your home?

More than 1000	500-1000	300-499	100-299	Less than 100
5	4	3	2	1

7. About how many *children's* books do you have in your home?

More than 200	100-199	25-99	10-24	Less than 10
5	4	3	2	1

Appendix B

Parent/Guardian Beliefs and Expectations Questionnaire

1. In general, how well do you believe your child reads?

Very well				Not at all well
5	4	3	2	1

2. Your child finds reading…

Very easy				Very hard
5	4	3	2	1

3. To do well in reading your child has to try…

Not at all hard				Very hard
5	4	3	2	1

4. In general, how well do you think your child will do in reading later on in school?

Very well				Not at all well
5	4	3	2	1

5. In general, how well does your child do at school?

Very well				Not at all well
5	4	3	2	1

6. Your child finds school…

Very easy				Very hard
5	4	3	2	1

7. To do well in school your child has to try…

Not at all hard				Very hard
5	4	3	2	1

8. In general, how well do you think your child will do at school in the future?

Very well				Not at all well
5	4	3	2	1

Appendix C

Behavioral Strategy Rating Scale-II

The purpose of this informal assessment is to obtain information on how the child behaves and works in a classroom environment. Please assess the student's behaviour and work habits by using a scale from 1 to 5 to answer each of the questions below. It is important that you make the assessment based on your perception of the child. Please consider the values on the scale only as approximate estimates of the situation. Thus, the selection between two adjacent values (e.g., 1 or 2; 4 or 5) should not be a lengthy task.You also should not avoid using the extreme values of the scale. Some of the questions are deliberately similar.

Please read the following questions carefully and circle the number (one number per question) that best describes the student.

	Very much/ easily				Not at all
1. Does the student have a tendency to find something else to do instead of focusing on the task at hand?	1	2	3	4	5
2. Does the student actively attempt to solve even difficult situations and tasks?	1	2	3	4	5
3. Does the student give up easily?	1	2	3	4	5
4. Does the student demonstrate initiative and persistence in his/her activities and tasks?	1	2	3	4	5
5. Does the student blame him/herself readily when he/she fails?	1	2	3	4	5
6. If the activity or task is not going well, does the student lose his/her focus?	1	2	3	4	5
7. Does the student readily come up with explanations for his/her failures and difficulties?	1	2	3	4	5