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Reliability and Validity of Self-Reported Home Literacy Measures

by

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To Minnie and my Family for
all their love and support.

Abstract

The reliability and validity of a home literacy questionnaire and print exposure measures was assessed. The Author Recognition Test (ART) and Children's Book Title Recognition Test-Revised (CBTRT-R) were administered to parents and the Book Exposure Recall Task-Revised (BERT-R) to grade 1 children. Preliteracy and literacy measures were used as a criterion. The Parent Questionnaire as a whole was moderately reliable (Cronbach's $\alpha = .64$), whereas the parent-child reading activity dimension of the questionnaire had a Cronbach's alpha of .81. The reliability of the print exposure measures varied from .92 (ART) to .59 (BERT-R). Parent-child reading activity and the BERT-R correlated significantly with most of the criterion tasks, but ART did not. The results indicate that after considering the distinct dimensions of the Parent Questionnaire, it is both a reliable and valid measure of home literacy.

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Chapter 1

Introduction

Accurate assessment tools are pivotal to the development of educational theory. The development of a sound theory depends on the accuracy and consistency of the measures used to collect the data needed to verify the theory. In the area of literacy education there is pressure for better literacy assessment from both educational professionals and parents, who demand that there be a stronger link between literacy assessment and accountability. This pressure results from present literacy assessment tools' failure to consistently and accurately reflect all possible factors influencing literacy development.

The factors that previous studies have identified as influencing literacy skills acquisition, and that literacy assessment tools should measure, include socio-economic status and home literacy. Socio-economic status refers to the parents social status based on economic measures and may affect a child's reading ability by indirectly influencing home literacy. Home literacy includes parents' reading activities with their child, the reading environment they provide, and the frequency of these reading activities in the home before and after the child enters school. Each factor influences the literacy skills a child needs to become a successful reader. The development of these literacy skills is commonly referred to as emergent literacy.

Most tools used to assess emergent literacy skills and socio-economic status have been found to be both reliable and valid. However, existing

research suggests that parent questionnaires, the most frequently used measure of home literacy, fail to assess all aspects of home literacy accurately and consistently. As a result, researchers have worked to develop new ways of assessing home literacy, such as print exposure tests (Cunnigham & Stanovich, 1990; Stanovich & West, 1989; Senechal, Lefevre, Hudson, & Lawson, 1996). These tests may be preferable to home literacy researchers because the socio-desirability bias and interpretation error that can compromise the reliability and validity of the questionnaire appear to have minimal effects on print exposure measures. However, very few studies have compared the reliability and validity of the questionnaire to those of print exposure measures.

Until home literacy can be accurately and consistently assessed its influence on emergent literacy and emergent literacy skills will remain undefined and possibly underestimated. To advance the present assessment tools used in home literacy research, the questionnaire and print exposure measures must be evaluated for their relative validity and reliability. To obtain accurate information about the different dimensions of home literacy these current measurement formats must be assessed with regards to their ability and suitability to measure home literacy dimensions. With better understanding of various tools, the relationship between home literacy and emergent literacy can be established and better integrated into educational theories.

Purpose

The purpose of this thesis is to investigate the reliability and criterion-related validity of a Parent Questionnaire (Senechal et al., 1996) and several different print exposure instruments frequently used to measure home literacy in reading research. The aim of the thesis is to identify the psychometric efficacy of each of these instruments in measuring different dimensions of home literacy. Such information will help the researchers and practitioners to choose the most appropriate measure of home literacy.

In this thesis I will investigate (a) the reliability of the traditional Parent Questionnaire considering its distinct dimensions; (b) the reliability of three different print exposure measures; and (c) the criterion-related validity of the questionnaire and print exposure measures. More specifically, I will examine the reliability and criterion-related validity of the Parent Questionnaire and three of its' dimensions: reading environment, reading frequency, and reading activity. I will also investigate three print exposure measures: The Children's Book Title Recognition Task-Revised (CBTRT-R; modified from Cunnigham & Stanovich, 1990), the Author Recognition Task (ART; modified from Stanovich & West, 1989), and the Book Exposure Recognition Task-Revised (BERT-R; modified from Senechal, Lefevre, Hudson, & Lawson, 1996). The criterion measures used to assess the validity of the questionnaire and print exposure measures will be children's pre-literacy (elision and letter recognition), word reading, and passage comprehension skills.The fact that previous studies have not acknowledged

that the questionnaire is measuring multiple dimensions could be why this measure has exhibited low reliability in past research. Consequently, considering two different dimensions may result in significant increases in the reliability of the Parent Questionnaire. The establishment of the Parent Questionnaires validity and reliability relative to print exposure measures is imperative due to the critical role each of these measures play in providing pertinent home literacy information. This information needs to be accurate because policy makers and researchers are using data from existing studies to draw conclusions and to enact changes within our education system. Thus, the information gained from this study will advance educational assessment by indicating the most accurate and reliable tool to assess home literacy and its' power to predict future reading success.

Definition of Terms

Emergent Literacy

Emergent literacy has been conceptualized in several different ways in the literature. Spira, Braken, and Fischel (2005) suggest that emergent literacy refers to the development of early skills that are considered important for a child's academic success. Lonigan, Burgess, and Anthony (2000) define emergent literacy more formally as the acquisition of literacy on a developmental continuum with its origins early in a child's life, rather than at the beginning of formal schooling. Senechal and Lefevre (2002) provides a parsimonious definition of emergent literacy by conceptualizing it as the acquisition of emergent literacy skills necessary to form the groundwork for

formal reading development early in life. Whitehurst and Lonigan (1998) provide a detailed definition of both emergent literacy and the emergent literacy skills that they feel are the developmental precursors to conventional forms of reading and writing. Whitehurst and Lonigan use emergent literacy to represent the idea that acquisition of literacy is best conceptualized as a developmental continuum, with its origins early in the life of the child. The emergent literacy skills are the precursors to conventional reading and include phonological processing, print awareness, and oral language skills. According to Whitehurst and Lonigan (1998), phonological processing involves four specific skills. Phonological awareness refers to the sensitivity to, and the ability to manipulate the sound structure of, words (see also Wagner, Torgesen, & Rashotte, 1994). The other three skills identified by Whitehurst and Lonigan are borrowed from Ehri (1998) and include phonological recoding (also known as decoding), which is the ability to give written symbols' sounds; phonological memory, which is the ability to remember symbol-sound combinations; and phonological naming, which is the recall of a series of names of objects, colors, letters, and numbers from memory. As most research (see e.g., Kirby, Parrila, & Pfeiffer, 2003) refers to phonological naming as naming speed, I will use this latter term throughout the thesis. Whitehurst and Lonigan conceptualize print awareness skills as the child's understanding of the relationship between written language and oral language, which include the child's knowledge of letters (e.g., Ehri, 1998) and the child's knowledge of the conventions and functions

of print (e.g., Purcell-Gates, 1996). The last skills that Whitehurst and Lonigan discuss are the oral language skills. Following the work of Wagner, Torgesen and Rashotte (1994), Whitehurst and Lonigan suggest that oral language skills enable the child to both understand and produce complex syntactic structures. They argue further that oral language skills can be measured by the child's vocabulary knowledge during initial stages of literacy acquisition. As Whitehurst and Lonigan's (1998) definition advances our understanding of not just emergent literacy but also of the specific emergent literacy skills, I will follow this definition in this thesis.

Home Literacy

For the purpose of this study, home literacy refers to the child's literacy related activities and opportunities outside of school, and the frequency with which they occur. Home literacy dimensions include reading environment, reading activities, and reading frequency, all of which may be influenced by socio-economic status. It has been suggested that home literacy and its dimensions can influence emergent literacy.

Reading Environment

Reading environment refers to the reading resources and opportunities available to the child outside of the school. A child's reading environment can be operationalized as the number and kinds of books in the home, the presence of other reading materials and educational toys in the home, access to educational television and computer programs in the home, parental reading habits, trips to the library or the bookstore, and even trips to the grocery store

where the child may be exposed to various forms of reading material (Payne, Whitehurst, & Angell, 1994).

Reading Activities

For the purpose of this study, reading activities refer to reading related interactions between the child and someone else (e.g., parent, other adults, or older children) that occur outside of the classroom. Reading activities may include the following things: storybook reading, reading instruction that may include using reading workbooks or computer programs to learn letter names and sounds, writing activities such as having the child write down their name or write a note to their grandmother, and oral reading activities such as having the child read road signs when driving in the car or read the grocery list when shopping with their parent. It has been suggested that the role of the parent as active or passive, and the subsequent role of the child as engaged or disengaged during the reading activity, may have an effect on whether or not the reading activity is successful in teaching the child to read (Whitehurst and Lonigan, 1998). The child's level of independence in carrying out these activities may also change as the child becomes increasingly proficient in reading. For this reason independent reading activities that may include such activities as the child completing a reading activity on the computer or in a workbook by themselves must also be considered.

Reading Frequency

Reading frequency refers to the frequency of the reading activities that occur within the reading environment. Reading frequency is often measured in

minutes or hours per day, and is used to measure reading activities like storybook reading, or working on reading programs or workbooks.

Socio-Economic Status

Socio-economic status (SES) refers to a persons social rank based on parental education and occupation. It is assumed that SES may indirectly influence reading environment and the frequency of the reading activities that occur within this environment.

Overview of Chapter Organization

In chapter two literature investigating the factors that influence emergent literacy is reviewed. The dimensions of home literacy are identified and their relationship to emergent literacy is discussed. The measures used to assess the dimensions of home literacy are reviewed and the problems with these measures are then considered. In chapter three the methods used to assess the home literacy measures' reliability and criterion-related validity are reviewed. An overview of the results is included in chapter four. Lastly, in chapter five I will discuss the results, as well as the limitations of the study, future directions, and conclusions.

Chapter 2

Literature Review

The following review of the literature related to home literacy and the self-report measures used in this area of reading research is organized in four sections. The first section reviews literature investigating emergent literacy. The second section reviews literature investigating the relative influence of home literacy on emergent literacy. The third section reviews dimensions that researchers have identified as components of home literacy. The final section reviews the literature that has focused on investigating the measures used in reading research to assess the dimensions of home literacy.

Learning to Read

Whitehurst and Lonigan (1998) suggested three basic prerequisites for learning to read: phonological processing skills, print awareness, and oral language skills. Phonological processing is made up of phonological awareness (the analysis and synthesis of the sound structures of language), phonological recoding (the ability to give written symbols' sounds), phonological memory, (the coding of information phonologically for temporary storage in short-term memory), and naming speed, (the recall of a series of names of colors, numbers, objects, or letters from memory) (Wagner & Torgesen, 1987). Print awareness is the ability to recognize the function and form of print and prints' relation to oral language. Oral language, according to Whitehurst and Lonigan (1998) refers to the oral language skills that enable

the child to both understand and produce complex syntactic structures. These skills are often measured by the child's vocabulary knowledge. The learning of phonological processing, print awareness, and oral language skills is described as emergent literacy, the development of precursors of formal reading early in life (Whitehurst & Lonigan, 2001).

The idea of emergent literacy, which does not refer to a particular time frame in a child's education, best delineates the specific skills that must be mastered if a person is going to be able to become a competent reader (Whitehurst and Lonigan, 2001). These emergent literacy skills can be conceptualized as the building blocks to emergent literacy. Once each emergent literacy skill is in place, then all these skills can be put together to form a strong groundwork for reading acquisition.

Emergent Literacy Skills

The influence of emergent literacy skills on reading acquisition have been investigated by reading researchers. Several studies have looked at phonological processing skills and their impact on the acquisition of reading skills (Adams, 1990; Bowey, 1994; Kirby, Parrila & Pfeiffer, 2003; Raz & Bryant, 1990; Wagner & Torgesen, 1987; Young & Bowers, 1995). Bowey (1994), for example, found that novice readers with phonological awareness were better readers then those with just letter knowledge, suggesting that a deeper knowledge of how letters and their sounds combine is needed for a strong reader to develop. A quantitative meta-analysis by Bus and Van Ijzendoorn (1999) supported phonological awareness as an essential skill for

early readers but emphasized that phonological awareness alone will not produce a successful reader. In this meta-analysis, 33 experimental studies were examined and an effect size for phonological awareness was established at d = .73. It was concluded from these studies that phonological awareness explains 12 percent of the variance in reading, and that young children benefit the most from the training of phonological awareness when it is taught with words and letters. Thus, phonological awareness is an essential skill, but it is not the only skill that needs to be mastered in order for the child to become a successful reader. Young and Bowers (1995) investigated the predictive power of both phonological awareness and naming speed. This study found that naming speed best predicted reading fluency for all kinds of texts but phonological awareness was needed once the text got harder. Kirby, Parrila, and Pfeiffer (2003) found that phonological awareness is essential during the first years of reading development with the effect of naming speed increasing with grade level. This study also showed that children who do not have strong phonological awareness and naming speed skills when they are in kindergarten are at risk for experiencing reading difficulties in grade five. These conclusions support the idea that these elements of phonological processing do contribute to emergent literacy and that their relative impact changes as a function of time.

Several studies have suggested that print awareness influences emergent literacy (Welsch, Sullivan, & Justice, 2003; Justice & Ezell, 2002; Tunmer, Herriman, & Nesdale, 1988) For instance, Justice and Ezell (2000)

investigated the role of print awareness on emergent literacy in a population of four year old children. Parents of the children were placed in an experimental condition, which had the parents teach their children print awareness during daily reading sessions over a four week period, or in a control group, where the parents continued their daily reading sessions over the four week period. A pre-post control group design was used. The children's emergent literacy skills were assessed before and after the four week period. Emergent literacy measures included word identification, alphabet knowledge, print recognition, word segmenting, and print concept tasks. The results suggested that the parents in the experimental group used significantly more print referencing behaviors during reading sessions, and that these behaviors significantly increased all emergent literacy skills except alphabet knowledge. Welsch, Sullivan, and Justice (2003) looked at print awareness and its connection to emergent writing by assessing preschool children's hand writing. Preschool children (N=3,546) from across Virginia were asked to write their name and draw a picture for the researcher. The child's writing was then assessed on a seven point scale. Based on their score the children were placed in one of four groups. For example, all the children in group four received a score of seven which indicated that they could write their name correctly. The children's print awareness was assessed with measures of alphabet knowledge, word concept knowledge and print concept knowledge. It was found that the child's understanding of the alphabetic principle, word concepts, and print knowledge accounted for 36 percent of the variance in the children's writing scores.

Welsch, Sullivan, and Justice (2003) also found that the children's level of print awareness could be used to accurately predict their writing level. Thus, print awareness also influences children's emergent writing and vice versa.

Print awareness has also been found to be predictive of later reading achievement (Tunmer, Herriman, & Nesdale, 1988; Scarborough, 1998). For example, Tunmer, Herriman, and Nesdale (1988) looked at five year old children's print awareness and whether it would predict their reading achievement in grade two. The children's print awareness was assessed by measuring their expressive and receptive vocabulary and their understanding of print concepts. Print awareness and reading achievement were assessed at the beginning of grade one and reassessed at the end of grade two. Reading achievement was measured by the children's performance on word decoding, pseudoword decoding, and reading comprehension tasks. Tunmer, Herriman, and Nesdale found that children who had strong expressive and receptive vocabulary and had a clear understanding of print concepts performed better on the word decoding and reading comprehension tasks in grade two. These results suggest that print awareness can predict reading achievement up to grade two. Thus, print awareness and emergent literacy have been found to be related and print awareness seems to be a valid predictor of emergent writing and future reading achievement.

Reading researchers have also investigated oral language skills' influence on emergent literacy. Several studies have found that emergent literacy and vocabulary knowledge are highly correlated (Stahl, 1999; Snow,

Burns & Griffin, 1998). Senechal et al. (1996) investigated expressive and receptive vocabularies' influence on children's emergent literacy in a study that involved 118 children ages 3 to 6 years old. It was found that children's expressive and receptive vocabulary influenced the development of emergent literacy. Specifically, the frequency of storybook reading in the home appeared to impact the children's vocabulary acquisition that then affected their emergent literacy development. This unique contribution of vocabulary to emergent literacy was significant even after children's intelligence, parents exposure to adult reading materials, and parent's education level were controlled. Interestingly, it has also been found that vocabulary levels in primary school can be used to predict reading achievement in high school (Biemiller, 2001). Thus, oral language skills, and specifically vocabulary, have been found to contribute to emergent literacy development and may also be valid predictors of future reading achievement.

According to this research, phonological processing, print awareness, and oral language skills have exhibited significant connections with emergent literacy. Consequently, these skills have been deemed the central emergent literacy skills that preschool children must acquire to ensure that formal reading acquisition occurs without problems.

Home Literacy and Emergent Literacy

A preschool child depends on the parent to create a home that will nurture and build the essential skills needed for emergent literacy. Home literacy, which may directly effect emergent literacy, refers to literacy-related

behaviours that occur outside of school and include reading activities, reading environment, and reading frequency.

Several studies support the association between emergent literacy and home literacy (Snow, 1983; Adams, 1990; Senechal & Lefevre, 2001; Whitehurst & Lonigan, 2001). These studies have found that emergent literacy skills such as phonological processing, oral language skills, and print awareness may be influenced by home literacy (Adams, 1990; Snow, 1983; Senechal & Lefevre, 2001; Tizard, Schifield & Hewison, 1982, Evans, Shaw, & Bell, 2000). To understand how home literacy is associated with emergent literacy the dimensions that make up home literacy must be investigated.

Home Literacy Dimensions

Reading Environment. The influence of the different elements of reading environment, including the number of books in the home, the educational toys and materials in the home, computer and television use, and library and bookstore visits, on emergent literacy skills has been investigated. Several studies have looked at the effect of reading material availability on emergent literacy (Griffin & Morrison, 1997; Cunningham & Stanovich, 1993; Debaryshe, 1993; Molfese, Modglin, & Molfese, 2003). Debaryshe (1993) found that reading material availability and emergent literacy skills acquisition in preschool children were highly correlated. Griffin and Morrison (1997) looked at the unique contribution of reading material availability, library visits, adult behaviour (personal reading habits and reading attitudes), and television viewing on emergent literacy skills. Griffin and Morrison (1997)

found that each of these elements explained unique variance in the emergent literacy skills of 295 kindergarten and second grade children. These findings suggest that reading material availability and use within the reading environment may be influencing emergent literacy skills acquisition.

The more modern elements of the reading environment such as television and computers and their influence on reading development have also received some attention from reading researchers. Christakis, Zimmerman, Giuseppe and McCarty (2004) looked at the impact of television on reading acquisition and found that watching television was associated with a decrease in attention-span in one to three year old children. Christakis et al. reported that these attention problems occurred as a result of the children watching 2.2 or more hours of television a day and persisted even when the child was seven years old. They suggested further that lack of attention skills could seriously hinder a child's ability to learn emergent literacy skills. Warren (2003) found a similar effect in preschool children in that hours of television watched correlated negatively with cognitive development. Warren suggested that such an effect on neurological development could be very detrimental to reading skill development. Koolstra and Van Der Voort (1996) looked at the effect of television viewing on leisure reading time for children in grades two and four. They found that book reading decreased significantly as a result of television viewing. Conversely, Patterson (2002) found that the frequency with which children watched educational shows like Sesame Street correlated positively with children's vocabulary size. The conclusions of this

study suggest that if parents use the television as an educational tool it may be a positive rather than negative addition to the reading environment.

Computers are another modern element that has been added to children's reading environment as there is presently a plethora of educational software available for kids. Lepper and Gutner (1989) found that preschool age children could use a computer successfully and gain knowledge from using this tool. Lonigan, Driscoll, Phillips, Cantor, Antony and Goldstein (2003) investigated the efficiency of a phonological awareness computer program used with preschoolers. They found it did increase the child's rhyming ability and elision scores significantly over the children in the control group. Troia and Whitney (2003) investigated a specific program, the Fast ForWord, with a sample of children from grade one to six who were selected based on academic performance. There were two groups; an experimental group received the computer program during the eight week intervention, and the second group acted as the control group. Expressive oral language was significantly higher for children in the experimental group compared to the children in the control group. However, phonological processing abilities, basic reading skills, and reading comprehension scores were not significantly higher for the experimental group compared to the control group. Torgesen and Barker (1995) looked at another specific program, DaisyQuest, to see if it would help preschool children. They found that this program significantly increased children's phonological awareness and word identification skills compared to a group of children who did not receive the program. Thus,

computers can be a valuable educational tool for preschool children as the conclusions in the research suggest that computer use can influence emergent literacy skills.

Reading Frequency. The frequency of reading sessions, or the amount of time a child is read to in the home may effect emergent literacy. Sonnenschein and Munsterman (2002) looked at the influence of home based reading interactions on five year olds' reading motivations and early literacy development. The study involved the observation of the parent reading both a familiar and an unfamiliar storybook to the child in the home. Parents' total comments and the quality of the reading sessions were recorded. Parents discussed the frequency of home reading sessions during an interview and reading frequency was coded on a four point scale with zero representing none and three representing daily reading sessions. The children's phonological awareness, orientation to print, and story comprehension were assessed. Reading frequency correlated significantly with orientation to print and phonological awareness but not with story comprehension. The results of this study suggest that reading frequency in addition to reading activities predict children's emergent literacy skills acquisition.

Cunningham and Stanovich (1993) also looked at reading frequency via print exposure and how it influenced emergent literacy skills (word identification, spelling, phonological processing and orthographic processing). The study included 26 children ages four through seven and established that

orthographic processing variance not explained by phonological ability was reliably linked to print exposure in the home. These results support a previous study by Payne, Whitehurst, and Angell (1994) which also highlighted the importance of reading frequency in predicting emergent literacy. In this study the influence of reading frequency on expressive and receptive vocabulary was investigated. It was found that reading frequency accounted for 12 to 18.5 percent of the variance on the children's expressive and receptive vocabulary. It is important to note that the conclusions of these studies suggest that reading frequency alone will not result in emergent literacy. There is an important link between reading frequency and reading activity in that quality reading activities need to occur on a regular basis if emergent literacy skills are to develop properly.

Reading Activities. Home reading activities can be anything from reading a storybook to teaching letter sounds or words with workbooks or computer programs. Adams (1990) concluded that the most important activity to do when a child is learning to read is to read aloud to them. Many studies have supported this idea (Senechal & Lefevre, 2001; Whitehurst & Lonigan, 2001; Snow, 1983; Stanovich, 1986). According to Senechal et al. (1996), storybook reading plays an important role in enhancing vocabulary, which is a component of emergent literacy. Whitehurst and Lonigan (2001) also found that storybook reading increased vocabulary and phonological awareness. A study by Tizard, Schofield, and Hewison (1982) looked at reading improvements of normally achieving kindergarten children who were provided

with additional reading sessions with either their parent or their teacher. The parents and teachers were both given the same materials to read to the child over the two year study. There were two experimental groups and one comparison group. In the parent reading experimental group the child received additional reading sessions in the home. In the teacher reading experimental group the children received extra reading sessions with their teacher. The children in the comparison group continued with their normal reading routines at home and at school. The reading scores of the children receiving extra reading hours at home were compared to the reading scores of the children receiving extra reading hours with their teacher, and the comparison group. It was found that there were significant improvements for children who received extra reading at home but not for the children who received extra reading with the teacher when compared with the control group.

In contrast, several studies investigating the benefits of shared reading on emergent literacy suggest that amount of shared reading may be only a weak predictor of emergent literacy development (Scarborough, Dobrich, & Hager, 1991; Scarborough & Dobrich, 1994; Bus, van Ijzendoorn, & Pellegrini, 1995; Lonigan, 1994). Scarborough and Dobrich (1994) also performed a meta-analysis of studies examining shared book reading and emergent literacy skill. They found that even when all the home literacy practices were combined, there was a very weak correlation between those and emergent literacy skills. Scarborough and Dobrich suggested further that this

low correlation may be from the presence of a covariate such as socio-economic status, or a third variable such as reading attitude.

To further investigate the effectiveness of storybook reading as an aid to emergent literacy skill development, Evans, Shaw, and Bell (2000) compared passive and active storybook reading. In passive reading the parent simply read the book to the child without stopping. Active reading is when the parent actively teaches the child emergent literacy skills by having the child identify letters and words, pointing out print conventions such as the importance of reading left to right, and having the child sound out a word during storybook reading. Evans, Shaw and Bell's (2000) results suggested that young children's emergent literacy skills, such as letter naming and letter sound identification, phonetic sensitivity, and receptive vocabulary, are enhanced by active reading but not by passive reading. These results suggest that the parent plays a unique role in their child's literacy education and that their success in this role varies as a result of the type of reading activity they provide. Whitehurst and Lonigan (1998) also looked at reading methods used in shared book reading sessions with four and five year olds. In this study the idea of the parent playing an active role was called Dialogic reading and involved the parent actively listening, asking questions about the text, and adding information about letters, words, and print conventions present within the text. This method of reading was compared to parents who took a passive non-interactive role during reading, and to a control group of parents who continued to read to their child as they had previous to the study. The results

supported the idea that active reading results in significantly higher degrees of emergent literacy skills acquisition for children. Kirby, Parrila, Curry, Sidhu, and Wade-Woolley (2003), in turn, found that parent's teaching the specific emergent literacy skills to children during storybook reading resulted in a unique effect on emergent literacy and subsequent reading acquisition in grade one even after the child's intelligence, oral language skills, and the parent's socio-economic status were accounted for in the analysis.

Thus, according to the existing research, whether parents and their children are taking an active or passive role during reading activities such as storybook reading can affect the degree to which emergent literacy skills are learned. The research also suggests that the style of active reading adopted by parents, for example dialogic reading, may also influence which emergent literacy skills are impacted and to what degree. Further research is needed to advance our understanding of active reading so that a consistent definition of this form of reading and how it will impact emergent literacy can be established.

Socio-economic status (SES). Socio-economic status as defined by parental education level and occupation, has been identified as influencing emergent literacy skills acquisition (Whitehurst & Lonigan, 2001; Purcell-Gates, 1996; Raz & Bryant, 1990). For instance, several studies have found a link between the frequency, quality and type of reading activities in the home and socioeconomic status suggesting SES dictates, to a certain degree, how often and how well emergent literacy skills are being taught in the home

(Adams, 1990; Raz & Bryant, 1990; Snow, 1983; Whitehurst, 1988). Whitehurst (1988) found that children from low-income families were at a higher risk for reading problems than children from higher-income homes due to these children's lack of emergent literacy skills training. Raz and Bryant (1990) also found that middle class children were more advanced with regards to their skills training than lower class children even after IQ was controlled.

Hewison and Elliott (1994) studied people of middle and working class, low SES, and people of Canadian Asian origin to see if families' differing socio-economic and cultural backgrounds affected reading activities. This study found that middle class families focused on content and meaning using rhyming and picture books during reading activities and that their children had higher reading scores than the working class children. The working class families and the Asian families had less reading materials in the home and treated reading with their child as an exercise emphasizing accuracy instead of comprehension. Hewison and Elliott found the working class and Asian children's reading scores were significantly lower, which suggests that SES may be indirectly affecting emergent literacy by influencing the reading materials available in the home, and how the reading activities occur in the reading environment.

Tracey and Young (2002) looked at high-school educated mothers in comparison with college-educated mothers and assessed home reading activities with their third grade children. Children of the high school-educated mothers were observed having reading sessions full of frustration and failure.

Tracy and Young found that high school educated mothers made significantly more error-corrections during reading sessions than college-educated mothers, who used high-level critical thinking questions instead. They also found that the two groups of mothers differed in how they taught during reading activity sessions and suggested that this may partly explain why discrepancies in reading scores occur in children.

McCormick (1986) looked specifically at material availability in two parent populations, public-aid parents and professional parents. They found that 47 percent of public-aid parents did not have a single alphabet book in the home while only three percent of professional parents did not own this kind of book. These findings further support the idea that SES may be limiting the resources available within a child's reading environment and, as a result, hinder the child's emergent literacy development.

SES has also been found to effect reading frequency in the home. On the basis of existing studies, Adams (1990, p. 85) estimated that upon entering grade one children from middle class families have received 1000 to 1700 hours of one on one reading time whereas children from lower class families have only received an average of 25 hours of shared reading time. Thus, the research suggests that the dimension of socio-economic status may indirectly affect emergent literacy by influencing the child's quality of reading activities, reading environment, and reading frequency.

A meta-analysis by White (1982) takes this research a step further by suggesting that later reading achievement may be effected by socio-economic

status as well. White reviewed 93 studies that looked at the average SES and average reading achievement of the children on a school to school basis and found that SES and reading achievement correlated .68. Interestingly, White (1982) then reviewed 174 studies that looked at SES and achievement scores on an individual basis and found that correlation between SES and reading achievement dropped to .23. These results suggest that the correlation between SES and reading achievement may not be as strong as previously indicated, and it may be related more to differences between the schools children attend and how they either maintain or teach emergent literacy skills, than to the SES of their families.

Measuring Home Literacy

To understand how emergent literacy skills and consequently emergent literacy may be affected by socio-economic status and home literacy, accurate and consistent measures of these factors and their dimensions must be available. Emergent literacy skills, socio-economic status, and home literacy are measured with a variety of assessment formats which vary in reliability and validity. The reliability and validity of most measures used to assess emergent literacy skills (for example, the Comprehensive Test of Phonological Processing; Wagner, Torgesen & Rashotte, 1999) and socio-economic status (for example, the Blishen Scale; Blishen, Carroll, & Moore, 1981) have been established, while the measures used to obtain information about home literacy have been, up to this point, plagued with validity and reliability problems. As a result, the home literacy-emergent literacy connection has

remained vague and easy to disregard. The Parent Questionnaire (Senechal et al., 1996) has been the primary assessment tool used to measure home literacy and its dimensions.

Questionnaires

In general, the questionnaire testing format has been acknowledged as both a reliable and valid measure of both academic and non-academic phenomenon. For example, Hodgins and Makarchuk (2003) tested their questionnaires' ability to reliably detect addictive gambling behaviour and found this measure to exhibit both high validity and test-retest reliability. Pinto-Gouvera, Cunha, and De Ceo Salvador (2003) examined their anxiety questionnaire and its ability to measure adults anxiety levels during social interactions. This questionnaire was also found to be both internally consistent and reliable. Angello, Volpe, DiPenna, Gureasko-Moore, Nebrig, and Ota (2003) investigated a questionnaire used in academic settings to diagnose ADHD children. The questionnaire assessed, ADHD-IV, is used by school psychologists and utilizes information given by teachers to assess a child's potential for ADHD. The results indicated that this questionnaire was internally consistent with high predictive validity. Gilger (1992) examined a questionnaire designed to assess past and present academic achievement. Questionnaire information from grade one to twelve and archival data were used and compared against school achievement history. The validity of the questionnaire was confirmed as it correlated highly and consistently with school achievement records over time. The findings of these studies suggest

the questionnaire format can be used to obtain reliable and valid non-academic and academic information from adults.

The validity and reliability of questionnaires that are filled out by children has also been investigated. For example, Danielson and Phelps (2003) assessed the Children's Social Skills Scale (CS4) to see if it had potential as a screening instrument. This scale was found to have test-retest reliability (.74) and internal consistency (.96). Thus, the questionnaire format has been found to be a reliable and valid way of obtaining important academic and non-academic information from both children and adults.

Despite these findings, the questionnaires' use within home literacy research has been highly criticized due to reported problems with reliability and validity. For example, Bus, Van Ijzendoorn, and Pellegrini (1995) completed a quantitative meta-analysis of 33 empirical studies related to the frequency of parent preschooler book reading and several outcome measures. Part of the investigative process involved a thorough evaluation of the measures used to obtain home literacy information. These included parents diaries, home visits, and parent questionnaires. In general, when compared to the other home literacy measures, the questionnaire format had the lowest reliability and validity. These findings were attributed to the questionnaires susceptibility to social desirability bias and measurement error. Allen, Cipielewski, and Stanovich (1992) also examined the relative validity and reliability of home literacy measures. Allen et al. investigated the ability of a questionnaire given to parents, a parent diary, and parent interviews, to

consistently and accurately measure reading frequency in the home. Allen et al. concluded that relative to the other measures, the validity and the reliability of the parent questionnaire was poor. They further suggested question ambiguity to be a possible cause for the validity problems. The findings of these studies suggest that relative to other home literacy measures, questionnaires filled out by the parents do not provide the most reliable or valid information about home literacy.

Senechal et al. (1996) assessed the parent questionnaire used in their studies to obtain information about home literacy. Consistent with the previous studies, Senechal et al. found this questionnaire to exhibit low reliability (.59). As at this point in time the parent questionnaire was one of the primary tools being used to assess home literacy, Senechal et al. (1996) proposed that the small reported correlations between home literacy and emergent literacy may be due to measurement error. However, additional analysis of Senechals' questionnaire suggested an alternative reason for this questionnaires poor reliability. Further analysis of Senechal's questionnaire brought about the possibility that this measure may be measuring up to four distinct constructs which include reading activity, reading environment, reading frequency, and socioeconomic status (Kirby et al., 2003). This particular feature of questionnaires that have been given to parents to measure home literacy has not been investigated in previous research.

Print Exposure Measures

In reaction to the above findings concerning home literacy questionnaires that are filled out by parents, alternative measures were designed to obtain the same information but with greater consistency and accuracy. The new measures are checklists, a form used originally by Chomsky (1972) to assess print exposure. Stanovich and West (1989) developed the Author Recognition Task (ART) to tap print exposure of the parent through a checklist format. This task involves the participant indicating authors they recognize from a list of authors and foils. Cunnigham and Stanovich (1990) developed two additional print exposure measures using the same format but instead of authors the participants had to check off book titles that they recognized (Title Recognition Task, TRT). Senechal et al. (1996) modified TRT to include an updated list of children's book titles. The resulting Children's Book Title Recognition Task (CBTRT) involves parents checking off the children's book titles that they recognize. ART, TRT, and CBTRT measures are all filled out by a parent. Consequently, Senechal et al. (1996) wanted to create a checklist that involved the participation of the child. Senechal et al. created a checklist called BERT (Book Exposure Recall Task). In this task the children are shown pictures from storybooks and are asked to name the title of the book or a character from the book. As BERT is completed by the child and TRT and CBTRT are filled out by the child's parent, BERT is the most direct print exposure measure of children's home literacy.

The reliability and validity of the print exposure measures have been investigated. With regards to the validity of ART and TRT, Cunnigham and Stanovich (1993) investigated the ability of TRT and ART to predict content knowledge levels in a sample of 268 college students. They found that after controlling for grade level, intelligence, reading and math ability the data obtained from these print exposure measures did predict differences in knowledge levels among college students. Allen, Cipielewski, and Stanovich (1992) reported a Spearman Brown split-half reliability of .86 for TRT and .86 for ART. Senechal et al. (1996) found similar reliability levels for these assessment tools reporting a reliability of .81 (Cronbach's alpha) for CBTRT. Senechal's own scale, BERT, however, showed poor reliability, with a Cronbach's alpha of .48.

Rationale and Purpose of the Current Study

The research suggests that learning to read begins early and consists of learning skills that have been collectively labelled emergent literacy. A factor that may influence emergent literacy is home literacy. Studies investigating home literacy have suggested that it consists of three inter-related dimensions of reading activities, reading environment, and reading frequency, and that all may be influenced in some way by socio-economic status. However, the exact relationship of all these dimensions of home literacy with emergent literacy is still unclear. A possible reason for this lack of understanding may be the primary tool used to obtain information about home literacy, the traditional Parent Questionnaire, as this tool has exhibited low reliability in existing

studies. It has been suggested that print exposure measures, due to their higher reliability, may better measure home literacy. However, the questionnaires' low reliability could be from something other than social desirability bias or question ambiguity. It could be from the failure of researchers to recognize the independent factors that most parent questionnaires assess.

The validity of the print exposure measures must also be carefully considered. Specifically, ART and TRT do not measure children's print exposure but rather parents' print exposure as all the books and titles on these measures are geared toward an adult population. The indirect nature of these assessments may create validity problems when these measures are used to infer a child's print exposure. These measures may simply be measuring reading frequency in the home and not specifically reading frequency with children. However, BERT and CBTRT, because they do use children's books and with BERT the child is the one completing the measure, should be more valid measures of children's print exposure. Another problem which may effect the validity of all print exposure measures is the superficial nature of this type of assessment. Although the print exposure format does help decrease the problems of question ambiguity, a lot of detail is lost in the process.

For these reasons, the reliability and validity of the Parent Questionnaire must be compared with those of different print exposure measures considering the distinct factors the questionnaire measures. By doing this, the reliability and validity of each instrument can be better established so that the specific strengths of each assessment tool can be identified. As a

result, all these measures can be used appropriately to gain the most valid and reliable information about the different dimensions of home literacy.

To determine the relative reliability and validity of different home literacy measures the following was examined: (a) the reliability of the Parent Questionnaire considering its' distinct dimensions, (b) the reliability of three different print exposure measures (ART, CBTRT-Revised, and BERT-Revised, see below for details), and (c) the criterion-related validity of the questionnaire and the print exposure measures.

Chapter 3

Method

Participants

In this study two samples were used. These samples consisted of a combined selected sample and a random sample. The combined selected sample was further divided into four diagnostic groups.

Combined selected sample

The children in this sample were selected from 547 kindergarten children from Kingston, Ontario and from two separate school boards in St. Albert, Alberta, using measures of phonological awareness (CTOPP Word Blending, Wagner, Torgesen & Rashotte, 1999) and naming speed (CTOPP Object Naming). The children's scores on the screening measures were used to choose a sample of 189 (Mean age = 67.31 months, SD = 3.84, Male = 98, Female = 91) children who fit in one of four groups: a double deficit group (DD, n = 51, Mean age = 67.02 months), a phonological awareness deficit group (PAD, n = 36, Mean age = 68.53 months), a naming speed deficit group (NSD, n = 40, Mean age = 66.67 months), and a double asset group (DA, n = 62, Mean age = 67.23 months). The groups were designed to be distinct but still maintain balanced skill levels; for example, the phonological awareness scores of the groups exhibiting normal phonological skills (DA and NSD) were equivalent as were the phonological awareness scores in the two low phonological awareness groups (DD and PAD). This was also the case with

naming speed for the normal (DA and PAD) and slow (DD and NSD) groups. Due to attrition the grade one sample fell to 187 (Male = 97, Female = 89) creating the following changes within the diagnostic groups: double deficit group (n = 49), phonological awareness deficit group (n = 36), naming speed deficit group (n = 40), and the double asset group (n = 62).

Random sample

*S*ix schools in St. Albert, a suburban community in Alberta made up of mainly middle class residents, were used to obtain a semi-random sample of children. Consent forms and letters of information were sent to the parents of all the 223 kindergarten children in the six schools. One hundred and sixty-one children were given permission to participate. Seventy-seven kindergarten children, 39 male and 38 female, of the 161 students were randomly selected to be part of the study. Mean age of the selected students was 66.89 months (*SD* = 3.92). Due to attrition the sample fell to 66 for grade one testing.

Materials

Home Literacy Measures

Parent Questionnaire. The Parent Questionnaire was given when the children were in kindergarten. Parental occupation and education (SES, questions 8-11), reading environment (questions 6-7), reading activity (questions 3-5), and reading frequency (question 2) were assessed. The questions can be found in Appendix A. Home literacy was assessed with five-point likert questions. Parent education was coded on an 8-point scale with one meaning some high school was completed, and eight meaning a graduate

or professional degree was completed. Parent occupation was coded using the Blishin Scale of socioeconomic status (Blishin, Carroll, & Moore,1981).

Author Recognition Test. The Author Recognition Test (ART) (Stanovich & West, 1989) was given when the children were in kindergarten. This measure assessed print exposure of the parents and required the parent to identify popular authors from a list which consisted of names of writers and foils. The test consisted of the names of 50 popular authors and 50 foils. The foils consisted of the names from the editorial board of volume 22 of the Reading Research Quarterly (1987). Stanovich and West (1989) reported a Cronbach's alpha of .84 for this measure.

Book Exposure Recognition Task-Revised (BERT-R). A modified version of BERT (Senechal et al., 1996) was given when the children were in grade one to assess the children's knowledge of popular children's books. The original measure consisted of 34 illustrations from popular storybooks that were selected based on the advice of librarians, bookstores, and parents of preschool children. The children were given two practice trials. For each illustration the children were asked if they recognized the picture. If they answered "yes" they were then asked three questions, "who is in the picture", "what can you tell me about the story", and "what is the title of the storybook that this picture is from?" Senechal et al.'s (1996) original task was modified to make it more appropriate for the children in this sample. In BERT-R, illustrations from storybooks that had become television series were replaced by pictures from books chosen with the help of book stores and librarians.

BERT-R consists of 30 items and the children were asked the following questions about the illustrations a) had they seen the book the picture was from before and if so, b) what was the name of the book. If they were unable to give the title of the book the children were asked to give details of the story. Each correct answer was given one point. A three point scale was used (0-2). Senechal et al. (1996) reported the reliability for each question of the BERT and found a Cronbach's alpha of .48 for the character question, a .81 Cronbach's alpha for the title question and a Cronbach's alpha of .84 for the story question.

Children's Book Title Recognition Test-Revised (CBTRT-R). The Children's Book Title Recognition Test-Revised (CBTRT-R; modified from Cunnigham & Stanovich, 1990) was given to the parents of the random sample when the children were in kindergarten. CBTRT-R assessed the parents' knowledge of children's storybook titles. The measure was modified to reflect the titles of the books used in BERT-R. The parent had to identify the titles of children's storybooks that they were familiar with from a list of book titles and foils. There were 39 items in total, 25 children's book titles, and 14 foils. Cunningham and Stanovich (1990) reported a Cronbach's alpha of .81 for their version of CBTRT.

Criterion Measures

Letter Recognition. Letter Recognition was measured in kindergarten and grade one. Letter recognition was assessed by giving the letter identification test (Clay, 1979). The children were asked to identify both upper

and lower case letters. Two lowercase letters, a and g, were represented in two different fonts, making the total possible score 54. The number of letters the child correctly identified was the child's score. Clay (1979) reports split-half reliability of .97 for six-year old children.

Word Reading Efficiency. Word Reading Efficiency was measured in grade one by giving the Test of Word Reading Efficiency (TOWRE; Torgesen, Wagner, & Rashotte, 1997). The Sight Word Efficiency subtest was used to test word reading accuracy and fluency. The children were asked to read as many of the 78 words as they could within 45 seconds. The number of words missed or read incorrectly was recorded. The score for this measure was comprised of the number of words read correctly by the child within the time limit. Torgesen, Wagner, and Rashotte (1997) reported a test-retest reliability of .97 for 6 to 9 year old children.

Word Identification. The Word Identification subtest from the Woodcock Reading Mastery Test-Revised (Woodcock, 1987) was administered by computer in kindergarten and grade one to assess word reading accuracy. This test consisted of 106 items and had the child read isolated words (e.g. "car") aloud. The score for this measure was how many words the child read correctly. Testing was discontinued if the child answered more then six items wrong in a row. Woodcock (1987) found a split-half reliability of .99 for grade one children.

Passage Comprehension. Passage Comprehension was assessed with a subtest from the Woodcock Reading Mastery Test-Revised (Woodcock,

1987). This test was administered in grade one. This test consisted of 68 items. The child was told to fill in the blanks in a sentence with the appropriate words according to the sentence context or the picture provided (e.g. "The cat is playing with _;" correct answer "a ball".) The child could make up to four consecutive errors after which testing was discontinued. The number of correct answers given by the child made up the child's score. Woodcock (1987) found this test to be reliable with a split-half reliability coefficient of .97 for grade one children.

Gray Oral Reading Tests-Fourth Edition. Gray Oral Reading Tests Fourth Edition (GORT-4; Wiederholt & Bryant, 2001) was used to test oral reading fluency. The test was administered in grade one. The full test was not administered. Testing consisted of the child reading only two of the short stories. The child read the two stories out loud. The time taken to read both stories was recorded, as were the number of errors, omissions, and the number of words given by the examiner. The time taken to read each passage by the child was the score for this measure. Wiederholt and Bryant (2001) found this measure to be reliable for grade one children with a split-half reliability of .93.

Elision. The Elision task was modified from the CTOPP (Wagner, Torgesen & Rashotte, 1999) by adding nine more test items. Items were recorded digitally with Canadian pronunciations onto a laptop computer and presented through separate Sony speakers. This task was administered in kindergarten and grade one. There were three practice items and 29 test 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. The participant's score was the number of correct items. Wagner, Torgesen and Rashotte (1999) reported a split-half reliability coefficient of .88 for grade one children.

Procedure

Tests of Blending and Object naming were given in February or at the beginning of March when the children were in kindergarten. The parents filled out the questionnaire in February of their child's kindergarten year. The remaining home literacy measures were administered in April or May when the children were in kindergarten except for the BERT-R which was given in April of grade one. In kindergarten and grade one the following criterion measures were administered: Letter Recognition, Word Identification, and Elision. In grade one the following additional criterion measures were administered: Word Reading Efficiency, Passage Comprehension, and the Gray Oral Reading Test. All participants were tested individually in a quiet room in their school by a trained experimenter. Testing sessions were divided so they would last for a duration of approximately 20 to 30 minutes. Elision, Color Naming, and Letter Sound Knowledge were administered on a DELL laptop computer using Direct RT (Empirisoft Corporation, 2000) reaction time software.

Chapter 4

Results

Descriptive Statistics

The results were analyzed with the combined selected sample (N = 189) before and after it was divided into the four diagnostic groups. The random sample (N = 77) was then assessed. The means and standard deviations for the Parent Questionnaire for the selected sample before and after being divided into the four diagnostic groups can be found in Table 4-1. The means and standard deviations for the Parent Questionnaire for the random sample can be found in Table 4-2. The means and standard deviations for the criterion measures can be found in Appendix B.

A MANOVA was performed to examine whether the diagnostic groups differed significantly in the questionnaire responses. The socio-economic status questions were analyzed separately due to missing data. No significant differences were found between the diagnostic groups for the reading questions or the socio-economic status questions. Subsequent ANOVAs indicated, however, that questions three (teaching letter names), F (1,3) = 4.34, p = .006, four (teaching letter sounds), F (1,3) = 4.38, p = .005 and five (teaching words), F (1, 3) = 4.27, p = .006, showed significant differences between the diagnostic groups. The means in Table 4-1 indicate that the parents of the Double Asset group children reported teaching more letter names, letter sounds, and word reading skills than the parents in the other groups.

Table 4-1

Means and Standard Deviations of the Combined Selected Sample Before and After Group Division for the Parent Questionnaire

Measure	N	Mean	SD	Min.	Max
Parent Questionnaire	187	18.74	4.31	8	30
Question 2: Read to Child		3.84	.798	2	5
Question 3: Identify Letters		3.28	1.12	0	5
Question 4: Letter Sounds		2.84	1.36	0	5
Question 5: Read Words		2.12	1.45	0	5
Question 6: Number Books		2.73	1.15	0	5
Question 7: Children's Book		3.89	.910	1	5
Question 8: Father Education		4.04	2.01	1	8
Question 9: Father Occupation		44.40	19.86	1	74
Question 10: Mother Education		4.12	1.90	1	8
Question 11: Mother Occupation.		45.75	19.56	2	74
Double Deficit	49	17.84	4.56	8	28
Question 2: Read to Child		3.76	.860	2	5
Question 3: Identify Letters		3.05	1.16	0	5
Question 4: Letter Sounds		2.61	1.28	0	5
Question 5: Read Words		1.98	1.44	0	5
Question 6: Number Books		2.66	1.17	0	5
Question 7: Children's Book		3.88	.954	2	5
Question 8: Father Education		3.87	2.02	1	8
Question 9: Father Occupation		44.38	19.14	2	72
Question 10: Mother Education		4.03	2.03	1	8
Question 11: Mother Occupation.		43.86	18.66	2	68
Naming Speed Deficit	40	17.58	3.98	8	26
Question 2: Read to Child		3.76	.819	2	5
Question 3: Identify Letters		3.18	1.12	0	5
Question 4: Letter Sounds		2.41	1.28	0	5
Question 5: Read Words		1.65	1.43	0	5
Question 6: Number Books		2.68	1.19	0	5
Question 7: Children's Book		3.82	.936	1	5
Question 8: Father Education		3.94	1.98	1	8
Question 9: Father Occupation		43.34	23.07	1	72
Question 10: Mother Education		3.97	2.02	1	8
Question 11: Mother Occupation.		43.86	18.66	2	68
Phonological Awareness	36	18.25	4.46	8	30
Question 2: Read to Child		3.82	.846	2	5
Question 3: Identify Letters		3.06	1.02	0	5
Question 4: Letter Sounds		2.67	1.51	0	5
Question 5: Read Words		2.05	1.46	0	5
Question 6: Number Books		2.61	1.19	0	5
Question 7: Children's Book		3.79	.960	2	5
Question 8: Father Education		3.88	1.93	1	8
Question 9: Father Occupation		39.97	21.83	3	68
Question 10: Mother Education		4.00	1.82	1	8
Question 11: Mother Occupation.		41.03	18.66	2	74
Double Asset	62	20.46	4.07	11	28
Question 2: Read to Child		3.85	.718	2	5
Question 3: Identify Letters		3.75	.987	2	5
Question 4: Letter Sounds		3.37	1.29	0	5
Question 5: Read Words		2.68	1.36	0	5
Question 6: Number Books		2.84	960	1	5
Question 7: Children's Book		4.04	.823	2	5
Question 8: Father Education		4.28	2.06	1	8
Question 9: Father Occupation		48.41	16.23	2	74
Question 10: Mother Education		4.35	1.79	1	8
Question 11: Mother Occupation.		51.04	15.52	2	72

Table 4-2 indicates that for the random sample the parents reported more home literacy activities, with the exception of word reading, than the parents of the double asset group for the combined selected sample (see Table 4-1). The reported socio-economic status for the random sample was also higher than the socio-economic status reported for the double asset group indicating the random sample group represents an upper middle class population.

Table 4-2
Means and Standard Deviations of the Random Sample Before and After Group Division for the Parent Questionnaire

Measure	N	Mean	SD	Min.	Max
Parent Questionnaire	66	19.27	4.34	8	30
Question 2: Read to Child		4.06	.754	2	5
Question 3: Identify Letters		3.28	1.30	0	5
Question 4: Letter Sounds		2.92	1.57	0	5
Question 5: Read Words		1.89	1.47	0	5
Question 6: Number Books		3.19	1.06	1	5
Question 7: Children's Book		4.22	7.97	3	5
Question 8: Father Education		4.77	1.98	1	8
Question 9: Father Occupation		56.78	14.48	27	72
Question 10: Mother Education		4.29	1.72	1	8
Question 11: Mother Occupation.		53.15	12.22	25	74

The means and standard deviations for the print exposure measures for the selected sample can be found in Table 4-3. For the selected sample the double deficit group had the lowest mean for BERT-R. The naming speed deficit group had the lowest mean for ART.

An ANOVA was performed to examine whether the diagnostic groups differed significantly for ART and BERT-R responses. The ANOVA was used because missing data was different for ART and BERT-R. A significant difference was found between the diagnostic groups for both ART, $F(1,3) =$

3.01, $p = .032$ and BERT-R, $F(1,3) = 2.69$, $p = .049$. Post hoc pairwise comparisons (Bonferonni test of .05 significance level) showed that for BERT-R, the double deficit group was significantly different from the double asset group. No other differences were significant. For ART, the differences between the double deficit group and the phonological awareness deficit groups and between the double deficit group and the double asset groups both approached significance ($p = .083$ and .067, respectively).

Table 4-3
Means and Standard Deviations of the Combined Selected Sample: Print Exposure

Measure	N	Mean	Standard Deviation	Min	Max
BERT-R	184	11.67	6.13	0	29
Double Deficit	49	8.98	5.70	0	21
Naming Speed Deficit	37	12.07	5.95	5	26
Phonological Awareness	36	12.07	6.41	2	29
Double Asset	62	13.21	5.93	1	26
ART	189	18.77	9.15	0	41
Double Deficit	51	16.00	9.75	0	38
Naming Speed Deficit	40	12.17	6.22	3	33
Phonological Awareness	36	20.66	9.53	1	36
Double Asset	62	19.95	8.43	4	41

Note. BERT-R = Book Exposure Recognition Task-Revised; ART = Author Recognition Test.

The means and standard deviations for the print exposure measures for the random sample can be found in Table 4-4. The sample size for CBTRT-R is smaller due to poorer response rates for this task. The BERT-R mean is lower than that of the naming speed deficit, phonological awareness deficit, and double asset groups on the selected sample. The ART mean for the random sample is similar to that of phonological awareness and double asset ART means.

Table 4-4
Means and Standard Deviations of the Random Sample: Print Exposure Measures

Measure	N	Mean	Standard Deviation	Min	Max
BERT-R	66	10.98	5.89	1	26
ART	66	19.85	8.63	3	38
CBTRT-R	54	11.17	5.14	3	23

Note. BERT-R = Book Exposure Recognition Task-Revised. ART = Author Recognition Test. CBTRT-R = Children's Book Title Recognition Test-Revised.

Reliability

The reliability of all the self-report measures was assessed using the Cronbach's Alpha statistic. Cronbach's (1951) criterion for classifying the reliability of social science measures was used. According to this criterion, a Cronbach's alpha of .90 to 1.00 represents a highly reliable measure, a Cronbach's alpha of .70 to .89 represents a reliable measure, a Cronbach's alpha of .50 to .69 represents a moderately reliable measure, and a Cronbach's alpha of .10 to .49 represents a measure with low reliability (see also Ary, Jacobs, & Razavieh, 2002; Aron & Aron, 1999).

Factor Analysis of the Parent Questionnaire. A factor analysis on the Parent Questionnaire was performed with the combined selected sample (N =187). The scores of the 10 questions from the Parent Questionnaire were entered into a principal axis factor analysis. The principal axis analysis was used to reduce error, and an oblimin rotation was used so the factors could correlate and their independence could be assessed. Based on eigenvalues > 1.0 and the scree plot, three oblique factors were established and rotated to a direct oblimin criterion; these three factors accounted for 61.8 percent of the variance (see Table 4-5). The first factor was defined by the two parental

education questions and the two parental occupation questions, and was identified as Socioeconomic Status. The second factor, identified as Reading Activity, was defined by four items, three of which included items about teaching letters, sounds, and words, and a fourth item asking how often the child was read to in the home (Reading Frequency). This reading frequency question did not load on one particular factor but was relatively evenly distributed among the three factors found. This question did show slightly higher loadings on the reading environment factor as opposed to the reading activity factor. However, due to its nature this particular question was analyzed as a part of the reading activity factor. Thus, the ambiguity of this item will cause a reduction in the reliability of the reading activity portion of this questionnaire because of its' moderate correlations with all the other items that load on this factor. The third factor was defined by the two questions about books and children's books, and was labelled Reading Environment.

Table 4-5

Factor Analysis of Parent Questionnaire N= 187 (Pattern Matrix)

	Factor		
	1	*2*	*3*
Variable	Socioeconomic Status	Reading Activity	Reading Environment
Teaching letters	.038	.793	-.031
Teaching sounds	-.073	.878	.052
Teaching words	-.011	.721	-.041
Read to child	.236	.192	.244
Number of books in the Home	.104	-.053	.790
Number of children's books in the Home	-.111	.012	.863
Father's education	.694	-.012	.090
Father's occupation	.516	-.085	-.072
Mother's education	.575	-.003	.125
Mother's occupation	.393	.066	-.042
	Correlations Between Factors		
Socioeconomic Status	1.0		
Home Teaching	.142	1.0	
Book in the Home	.307	.284	1.0

Note: Principal Axis Factoring using direct Oblimin rotation with Kaiser Normalization

Reliability of the Parent Questionnaire

Table 4-6 reports the reliabilities of the Parent Questionnaire as a whole for the combined selected sample. Table 4-7 reports the reliabilities for the random sample. The Parent Questionnaire was found to be moderately reliable for the combined selected sample ($\alpha = .64$) and the random sample ($\alpha = .59$). These moderate reliabilities are similar to what has been reported in the literature. However, previous studies failed to consider the fact that this questionnaire measures distinct dimensions as indicated by the factor analysis results.

Table 4-6
Reliability Analysis for the Self Report Measures Combined Selected Sample

Measures	N	Cronbach Alpha Value
Parent Questionnaire	187	.64
Reading Activity	187	.81
Double Deficit	49	.85
Naming Speed Deficit	40	.76
Phonological Awareness Deficit	36	.68
Double Asset	62	.86
Reading Environment	187	.75
Double Deficit	49	.74
Naming Speed Deficit	40	.79
Phonological Awareness Deficit	36	.69
Double Asset	62	.76
ART	189	.92
Double Deficit	51	.93
Naming Speed Deficit	40	.93
Phonological Awareness Deficit	36	.86
Double Asset	62	.93
BERT-R	184	.58
Double Deficit	49	.57
Naming Speed Deficit	37	.50
Phonological Awareness Deficit	36	.59
Double Asset	62	.54
BERTA-R: Title Question	184	.59
Double Deficit	49	.56
Naming Speed Deficit	37	.51
Phonological Awareness Deficit	36	.61
Double Asset	62	.55

Note. BERT-R = Book Exposure Recognition Task-Revised; BERTA-R = Book Exposure Recognition Task-Revised-title question; ART =Author Recognition Test; CBTRT-R = Children's Book Title Recognition Test-Revised.

Table 4-7
Reliability Analysis for the Random Sample

Random Sample Measures	N	Cronbach Alpha Value
Parent Questionnaire	66	.59
Reading Activity	66	.78
Read Environment	66	.75
ART	66	.92
CBTRT-R	54	.81
BERT-R	66	.56
BERTA-R	66	.55

Note. ART = Author Recognition Test; CBTRT-R = Children's Book Title Recognition Test-Revised; BERT-R = Book Exposure Recognition Task-Revised; BERTA-R = Book Exposure Recognition Task-Revised-title question.

Reliability of Parent Questionnaires Distinct Dimensions. The reliability of the Reading Activity and Reading Environment dimensions of the questionnaire were assessed for the combined selected sample before and after it was separated into the diagnostic groups (see Table 4-6) and for the random sample (see Table 4-7). The Cronbach's alpha for the Reading Activity factor was .73 for the combined selected sample and .75 for the random sample. However, if the reading frequency question is eliminated, reliability of this factor increases to .81 and .78 , respectively, for the two samples. The Reading Activity factor of the questionnaire was found to be reliable (α = .85) for the double deficit group, the double asset group (α = .86) and the naming speed group (α = .76). This factor was found to be moderately reliable for the phonological awareness deficit group (α = .68) (see Table 4-6).

When the Reading Environment factor was assessed, a Cronbach's alpha of .75 was found for both samples suggesting this factor is reliable (see Table 4-6 and Table 4-7). When the Reading Environment factor was assessed according to the diagnostic groups it was found to be reliable for the naming

speed deficit group (α = .79), the double asset group (α = .76), and the double deficit group (α = .74). The Reading Environment factor for the phonological awareness deficit group (see Table 4-6) was found to be moderately reliable (α. = 69).

In sum, the questionnaire is a reliable measure for the selected, random, and diagnostic samples when the unique dimensions that it is composed of are considered. The previous findings of low reliability can therefore be attributed to their lack of consideration for the unique dimensions of the questionnaire. It is important to note that the reading frequency portion of this questionnaire, as it only consisted of one question, does require further development.

Reliability of Print Exposure Measures

The print exposure measures were found to be reliable. ART proved to be highly reliable with a Cronbach's alpha of .92 for both the combined selected sample (see Table 4-6) and the random sample (see Table 4-7). ART exhibited high reliability (α = .93) for all the diagnostic groups except for the phonological awareness deficit group. For the phonological awareness deficit group this measure was found to be reliable (α = .86) (see Table 4-6). CBTRT-R was found to be reliable with a Cronbach's alpha of .81 for the random sample (see Table 4-7).

BERT-R exhibited moderate reliability for all of the samples. A Cronbach's alpha of .58 (see Table 4-6) was found for the combined selected sample and a Cronbach's alpha of .56 was found for the random sample (see

Table 4-7). The double deficit and phonological awareness deficit groups had Cronbach's alpha's of .57 and .59, respectively, whereas the naming speed deficit group and the double asset group had Cronbach's alpha's of .50 and .54 (see Table 4-6). The specific question that asked the child to name the title of the book from which the illustration came from was also assessed. Individual assessment of this question resulted in a small increase in reliability for the combined selected sample ($\alpha = .59$) (see Table 4-6) and a slight decrease in reliability for the random sample ($\alpha = .55$) (see Table 4-7). The reliabilities found for the double deficit and phonological awareness deficit groups remained moderate with the double deficit groups Cronbach's alpha of .56 decreasing and the phonological awareness deficit groups' Cronbach's alpha of .61 increasing. The same was true for the naming speed deficit group ($\alpha = .51$), and the double asset group ($\alpha = .55$) (see Table 4-6). Thus, the assessment of the specific title question of BERT-R suggests that this question contributes to the reliability of the BERT-R scale for the combined selected sample and for the some of the diagnostic groups. Furthermore, this question increases reliability levels of BERT-R for some of these groups although only to a small degree.

In summary, ART is highly reliable for both the combined selected sample and the random sample. ART was also highly reliable for the double asset, double deficit and naming speed deficit groups. The Parent Questionnaire Reading Activity factor is reliable for both samples and for all the diagnostic groups except for the phonological awareness deficit group. For

this group the Reading Activity factor exhibited moderate reliability. The Reading Environment factor is reliable for the selected and random samples as well as for the naming speed deficit group, the double asset group and the double deficit group. This factor is moderately reliable for the phonological awareness deficit group. CBTRT-R is a reliable measure for the random sample. BERT-R exhibited moderate reliability coefficients for both samples and for all four diagnostic groups.

Criterion-Related Validity

Criterion-Related Validity for Parent Questionnaire

The criterion-related validity was assessed for the Parent Questionnaire as a whole and separately for its' distinct dimensions. The criterion measures used were the children's performance on Elision, Letter Recognition and Word Identification in kindergarten and grade one, and on GORT-IV, Passage Comprehension, and Word Reading Efficiency in grade one. Significance was assessed at the .05 level.

The results for the Parent Questionnaire as a whole for the combined selected sample suggest that this measure has criterion related validity (see Table 4-8). The questionnaire correlated significantly with all the pre-literacy criterion measures (Elision and Letter Recognition) except for Letter Recognition in grade one, and all the literacy criterion measures (all word and text reading tasks) for this sample. For the random sample the whole questionnaire correlated significantly with Letter Recognition in kindergarten

and grade one, and Word Identification in grade one (see Table 4-9) indicating this measure does have some criterion-related validity for this sample.

The reading activity dimension of the questionnaire correlated significantly with all the pre-literacy criterion measures except for Letter Recognition in grade one, and all literacy criterion measures for the combined selected sample (see Table 4-8). For the random sample the reading activity dimension also exhibited criterion-related validity correlating significantly with the following pre-literacy and literacy criterion measures: Letter Recognition in kindergarten and grade one, and with Word Identification, Passage Comprehension, and Word Reading Efficiency in grade one (see Table 4-9).

The reading environment portion of the questionnaire correlated significantly with a pre-literacy and a literacy criterion measure for the combined selected sample suggesting it has limited criterion-related validity for this sample. Reading environment correlated significantly with Elision in grade one and Word Identification in the spring of grade one for this sample (see Table 4-8). For the random sample, the reading environment dimension did not correlate with any of the pre-literacy or literacy criterion measures suggesting that it does not have criterion-related validity for this sample (see Table 4-9).

Table 4-8

Assessing the Parent Questionnaire and Print Exposure Measures Criterion-Related Validity: Combined Selected Sample

Measures	N	ET_K	ET_1	LR_K	LR_1	WID_K	WID_1	G1_1	G2_1	PC_1	TW_1
Combined Selected Sample											
PQ_TOT	187	.31*	.29*	.33*	.15	.33*	.37*	-.22*	-.23*	.34*	.38*
PQ_RA	187	.32*	.29*	.34*	.13	.38*	.37*	-.19*	-.24*	.35*	.38*
PQ_RE	187	.13	.17*	.12	.11	.04	.18*	-.15	-.07	.14	.15
ART	189	.10	.07	.02	.08	-.02	.04	.06	.09	.03	.04
BERT-R	184	.30*	.23*	.18*	.16*	.25*	.24*	-.13	-.08	.30*	.22*
BERTA-R	184	.28*	.21*	.27*	.19*	.21*	.24*	-.15*	-.07	.30*	.22*
Double Deficit Group											
PQ_TOT	49	.13	.20	.17	.11	.32*	.04	-.24	-.20	.02	.09
PQ_RA	49	.11	.08	.14	.14	.29*	.03	-.17	-.14	.03	.09
PQ_RE	49	.10	.31	.14	.01	.23	.04	-.24	-.20	-.01	.05
ART	51	.16	.21	-.18	-.04	-.21	.07	-.08	.03	.01	-.01
BERT-R	49	.26	.11	.20	.20	.09	.04	.05	-.03	.28	.19
BERTA-R	49	.34*	.23	.33	.30	.20	.16	-.02	-.02	.39*	.30
Naming Speed Deficit Group											
PQ_TOT	40	.51*	.38	.52*	.27	.51*	.68*	-.44	-.18	.71*	.67*
PQ_RA	40	.56*	.46*	.49*	.15	.60*	.55*	-.11	-.22	.63*	.53*
PQ_RE	40	.03	.03	.21	.31	-.03	.52*	-.65*	.02	.44*	.47*
ART	40	.00	.20	-.01	.19	-.27	.33	-.45*	-.13	.29	.33
BERT-R	40	.19	.11	.31	.18	.49*	.11	-.18	.11	.17	.00
BERTA-R	40	.09	.05	.14	.17	.18	.10	-.10	.28	.08	.02
Phonological Awareness Deficit Group											
PQ_TOT	36	.36	.33	.13	.12	.24	.35	.22	.22	.34	.39
PQ_RA	36	.37*	.37*	.14	.10	.30	.44*	-.29	-.29	.42*	.45*
PQ_RE	36	.18	.11	.03	.10	-.01	.01	.02	.01	.01	.10
ART	36	.11	.07	.36*	-.01	.24	.02	.34	.08	.05	.01
BERT-R	36	.43*	.38*	-.15	-.18	.27	.37*	-.01	-.10	.37*	.35
BERTA-R	36	.39	.31	.08	-.02	.21	.31	-.04	-.17	.36	.33
Double Asset Group											
PQ_TOT	62	.10	.17	.36*	-.12	.23	.33*	.02	-.16	.30*	.34*
PQ_RA	62	.10	.18	.43*	-.20	.30*	.31*	.01	-.17	.28*	.36*
PQ_RE	62	.05	.08	-.01	.11	-.05	.18	.05	-.05	.18	.08
ART	62	.10	.05	-.21	.11	-.07	.02	.17	.16	.05	-.04
BERT-R	62	.05	.11	.03	-.12	.19	.14	-.13	-.02	.23	.19
BERTA-R	62	.02	.08	.17	.11	.14	.10	-.04	.02	.18	.12

Note. Significance level of .05 indicated by one asterisk. PQ_RA = Parent Questionnaire Reading Activity dimension; PQ_RE = Parent Questionnaire Reading Environment dimension; PQ_TO = Parent Questionnaire Total; ART = Author Recognition Test; BERT-R = Book Exposure Recognition Task-Revised; BERTA-R = Book Exposure Recognition Task-Revised Title Question; ET_K = Elision Task Kindergarten, ET_1F = Elision Task Grade One Fall; LR_K = Letter Recognition Kindergarten; LR_1F = Letter Recognition Grade One Fall; WID_K = Word Identification Kindergarten; WID_1 = Word Identification Grade One Spring; G1_1= GORT Story One Grade One Spring; G2_1 = GORT Story Two Grade One Spring; PC = Passage Comprehension Grade One Spring; TW = TOWRE Grade One Spring.

Table 4-9
Assessing the Parent Questionnaire and Print Exposure Measures Criterion-Related Validity: Random Sample

Measure	N	ET_K	ET_1	LR_K	LR_1	WID_K	WID_1	G1_1	G2_1	PC_1	TW_1
Random Sample											
PQ_TOT	66	.13	.13	.42*	.43*	.23	.36*	-.33	-.28	.27	.33
PQ_RA	66	.16	.14	.45*	.45*	.31	.42*	-.29	-.33	.35*	.38*
PQ_RE	66	.06	.07	.18	.22	-.03	.07	-.26	-.07	-.01	.07
ART	66	-.09	-.10	-.05	.07	.07	-.08	.16	.06	-.08	.05
CBTRT-R	54	.21	.31*	-.06	.03	.09	.37*	-.04	-.25	.35*	.19
BERT-R	66	.37*	.25	-.24	.25	-.17	.35*	-.32*	-.25*	.37*	.28*
BERTA-R	66	.31*	.15	.30*	.24	.23	.32*	-.30*	-.21	.35	.23

Note. Significance level of .05 indicated by one asterisk. PQ_RA = Parent Questionnaire Reading Activity dimension; PQ_RE = Parent Questionnaire Reading Environment dimension; PQ_TO = Parent Questionnaire Total; ART = Author Recognition Test; CBTRT-R = Children's Book Title Recognition Task-Revised; BERT-R = Book Exposure Recognition Task-Revised; BERTA-R = Book Exposure Recognition Task-Revised Title Question; ET = Elision Task Kindergarten, ET_1 = Elision Task Grade One Fall; LR = Letter Recognition Kindergarten; LR_1 = Letter Recognition Grade One Fall; WID = Word Identification Kindergarten; WID_1 = Word Identification Grade One Spring; G1 = GORT Story One Grade One Spring; G2 = GORT Story Two Grade One Spring; PC = Passage Comprehension Grade One Spring; TW = TOWRE Grade One Spring.

For the diagnostic groups the whole questionnaire exhibited the strongest criterion related-validity for the naming speed deficit group significantly correlating with most of the pre-literacy and literacy criterion measures. The questionnaire also exhibited criterion-related validity for the double asset group correlating with some pre-literacy and literacy criterion measures for this sample. The whole questionnaire exhibited poor criterion-related validity for the double deficit group correlating significantly with only one literacy criterion measure. The questionnaire exhibited the poorest criterion-related validity for the phonological awareness deficit group as it did not correlate with any of the pre-literacy or literacy criterion measures.

With regards to the specific dimensions of the Parent Questionnaire, the reading activity dimension exhibited the highest criterion-related validity

for the naming speed deficit group correlating with most pre-literacy and literacy criterion measures. The Reading Activity dimension also exhibited criterion-related validity for the double asset and phonological awareness deficit groups significantly correlating with several pre-literacy and literacy criterion measures for these groups. This dimension showed the poorest criterion-related validity for the double deficit group correlating significantly with only one literacy criterion measure (see Table 4-8). The reading environment dimension exhibited the strongest criterion-related validity for the naming speed deficit group. However, this validity is limited due to this dimension only correlating significantly with literacy criterion measures and not with pre-literacy criterion measures. This dimension did not exhibit criterion-related validity for the other diagnostic groups as it did not significantly correlate with any of the pre-literacy or literacy criterion measures for these groups (see tables 4-8).

Thus, the entire Parent Questionnaire exhibited criterion-related validity for the selected and random samples as did the reading activity dimension of this questionnaire. The reading environment dimension only exhibited criterion-related validity for the selected sample and not the random sample. With regards to the diagnostic groups, the questionnaire exhibited the strongest criterion-related validity for the naming speed deficit group and the poorest for the phonological awareness deficit group. The reading activity factor also showed the strongest criterion-related validity for the naming speed deficit group and the lowest for the double deficit group. The reading

environment dimension of the questionnaire showed criterion-related validity for only one of the diagnostic groups, the naming speed deficit group, correlating with literacy criterion measures for this group. It should be noted that the validity of this measure is limited to literacy tasks.

Criterion-Related Validity of the Print Exposure Measures

Author Recognition Task. ART did not correlate significantly with any of the pre-literacy or literacy criterion tasks for either the combined selected (see Table 4-8) or the random sample (see Table 4-9). With regards to the diagnostic groupings, ART correlated significantly with one literacy criterion measure for the naming speed deficit group and one pre-literacy criterion measure for the phonological awareness deficit group. This measure did not exhibit criterion-related validity for either the double asset or double deficit group as it did not correlate significantly with any of the pre-literacy or literacy criterion measures for these groups (see Table 4-8).

Children's Book Title and Recognition Test-Revised. CBTRT-R exhibited significant correlations with a pre-literacy criterion measure and literacy criterion measures for the random sample. These significant correlations suggest this measure does have some criterion-related validity (see Table 4-9).

Book Exposure Recognition Task-Revised. BERT-R correlated significantly with all pre-literacy and most literacy criterion measures for the combined selected sample (see Table 4-8) supporting its' criterion-related validity for this sample. For the random sample BERT-R correlated

significantly with one pre-literacy criterion measure and most literacy criterion measures supporting its' criterion related validity for this sample (see Table 4-9). For the diagnostic groups, BERT-R exhibited the strongest criterion-related validity for the phonological awareness deficit group significantly correlating with several pre-literacy and literacy criterion measures for this diagnostic group. BERT-R exhibited poorer criterion-related validity for the naming speed deficit group correlating significantly with only one literacy criterion measure. BERT-R did not correlate with any of the pre-literacy or literacy criterion measures for either the double deficit or double asset group indicating BERT-R does not have criterion-related validity for these groups (see Table 4-8).

The BERT-R title question was assessed to measure the criterion-related validity of this question. Similar patterns to BERT-R were found for both the combined (see Table 4-8) and random samples for this question (see Table 4-9). For the combined selected sample the title question significantly correlated with an additional literacy criterion measure suggesting this question does have criterion-related validity for this sample (see Table 4-8). For the random sample the title question correlated significantly with an additional pre-literacy criterion measure suggesting this question of BERT-R does have criterion-related validity for this sample (see Table 4-9). With regards to the four diagnostic groups, this question of BERT-R significantly correlated with pre-literacy and literacy criterion measures for only one of the

diagnostic groups, the double deficit group, suggesting that this question has some criterion-related validity for this diagnostic group only (see Table 4-8).

In summary, BERT-R exhibited the strongest criterion-related validity relative to CBTRT-R and ART for both the combined selected and random samples. BERT-R also exhibited the strongest criterion related validity for the phonological awareness deficit and the naming speed deficit diagnostic groups, with the criterion-related validity for the phonological awareness deficit group being stronger than for the naming speed deficit group. CBTRT-R exhibited poorer criterion-related validity than BERT-R for the random sample correlating significantly with only some of the pre-literacy and literacy criterion measures. ART exhibited the poorest criterion-related validity of the print exposure measures as it did not correlate with any of the pre-literacy or literacy criterion measures for either sample, and only correlated with one literacy criterion measure for the naming speed deficit group and one pre-literacy criterion measure for the phonological awareness deficit group.

Chapter 5

Discussion

The purpose of this study was to investigate the reliability and criterion-related validity of the reading activity and reading environment dimensions of a home literacy questionnaire and three print exposure measures: The Children's Book Title Recognition Task-Revised (CBTRT-R; modified from Cunnigham & Stanovich, 1990) and the Author Recognition Task (ART; Stanovich & West, 1989), given to adults, and the Book Exposure Recognition Task-Revised (BERT-Revised; modified from Senechal et al., 1996), given to children. These measures were assessed using pre-literacy and literacy criterion measures given both in kindergarten and grade one (Elision, Letter Recognition, Word Identification), and additional literacy criterion measures given in grade one (Word Reading Efficiency, Passage Comprehension, GORT-IV).

Reliability

The reliability results indicate that when assessed as a whole the Parent Questionnaire is moderately reliable for both the combined selected and random samples. The reliability of the Parent Questionnaires distinct dimensions was then assessed and it was found that the Reading Activity factor of the questionnaire is reliable for both samples and for all the diagnostic groups except for the phonological awareness deficit group. For this group the Reading Activity factor exhibited moderate reliability. The

Reading Environment factor is reliable for the selected and random samples as well as for the naming speed deficit group, the double asset group and the double deficit group. This factor is moderately reliable for the phonological awareness deficit group. With regards to the print exposure measures the reliability results indicate that ART is highly reliable for both the combined selected sample and the random sample. ART was also highly reliable for the double asset, double deficit and naming speed deficit groups, and reliable for the phonological awareness deficit group. For the random sample CBTRT-R was a reliable measure. BERT-R and the BERT-R title question exhibited moderate reliability coefficients for both samples and for all four diagnostic groups. Thus, of the print exposure measures ART showed the highest reliability. CBTRT-R and both dimensions of the Parent Questionnaire exhibited slightly lower reliability relative to ART, while BERT-R and the BERT-R title question exhibited the poorest reliability of these home literacy measures.

Criterion-Related Validity

The criterion-related validity results indicate that the Parent Questionnaire as a whole exhibits strong criterion-related validity as it significantly correlated with most of the pre-literacy and literacy criterion measures for both samples and for all the diagnostic groups except for the phonological awareness deficit group. It appears the dimension contributing the most to the questionnaires criterion-related validity for the combined selected and random samples is the reading activity dimension which

correlated significantly with most of the pre-literacy and literacy criterion measures. This dimension was also the only one to correlate significantly with both pre-literacy and literacy criterion measures for all four diagnostic groups suggesting much of the criterion-related validity found for the questionnaire for these groups could be attributed to this dimension. This is further supported by the reading environment dimension correlating with fewer of the pre-literacy and literacy criterion measures than the reading activity dimension for the combined selected sample, and it correlating with none of the criterion measures for the random sample. This dimension also only correlated with literacy criterion measures for just one of the diagnostic groups, the naming speed deficit group, further suggesting that this dimension contributes to the criterion-related validity of the Parent Questionnaire to a lesser degree than the reading activity dimension.

Of the print exposure measures, BERT-R exhibited the strongest criterion-related validity for the combined selected sample and the random sample correlating significantly with most of the pre-literacy and literacy criterion measures. With regards to the diagnostic groups, BERT-R showed the strongest criterion-related validity for the phonological awareness deficit group correlating significantly with pre-literacy and literacy criterion measures for this group. BERT-R showed poorer criterion-related validity for the naming speed deficit group only correlating significantly with one literacy criterion measure for this group. The BERT-R title question showed similar patterns for both samples significantly correlating with additional literacy

criterion measures for the combined selected sample and pre-literacy criterion measures for the random sample. With regards to the diagnostic groups, the title question correlated significantly with the pre-literacy and literacy criterion measures for the double deficit group only suggesting this question does have criterion-related validity for this group.

CBTRT-R correlated significantly with a pre-literacy criterion measure and literacy criterion measures for the random sample suggesting it has some criterion-related validity for this sample. ART did not correlate with any of the pre-literacy or literacy criterion measures for the combined selected and random samples suggesting this measure does not have criterion-related validity for these groups. ART did correlate significantly with one of the literacy criterion measures for the naming speed deficit group and with one pre-literacy criterion measure for the phonological awareness deficit group. Thus, of the print exposure measures BERT-R exhibited the strongest criterion-related validity for both samples and the diagnostic groups, while ART exhibited the poorest criterion-related validity for both samples and the diagnostic groups.

Interestingly, the parents score on the CBTRT-R and the children's score on the same material in the BERT-R did not correlate significantly(.16) suggesting that parent's book knowledge does not translate into children's book knowledge. These results suggest that the print exposure measures should be used with caution when parent's are the only resource and the child's future reading ability is being predicted.

Parent Questionnaire

The results for the Parent Questionnaire contradict what has been suggested in previous research. The reliability values obtained in this study suggest that this measure is reliable when its' distinct dimensions are considered. These findings contradict Senechal et al.'s conclusions (1996) that the questionnaire is an unreliable measure. These results also contradict Senechal et al.'s assumption that the questionnaire format is unreliable because of social desirability bias and question ambiguity as this study's results indicated that the questionnaires' low reliability is likely a product of assessing the questionnaire without considering its distinct dimensions. This study's findings also challenge Allen, Cipeilewski, and Stanovich's (1992) finding that the parent questionnaire did not exhibit construct validity. Once again, their findings could be attributed to a lack of consideration for the distinct dimensions of the questionnaire. Thus, it can be suggested that the reliability and validity of the Parent Questionnaire found in this study contradicts previous study findings because the multifaceted nature of this questionnaire was not considered before.

With regards to the questionnaires distinct dimensions, this study's findings that the reading activity dimension has greater criterion-related validity as a predictor of emergent literacy than the reading environment dimension contradicts several studies that identify the reading environment dimension as a major influencing factor on emergent literacy (Griffin & Morrison, 1997; Cunningham & Stanovich, 1993; Debaryshe, 1993). For

instance, these findings contradict those of Griffin and Morrison (1997) who suggest that for children in kindergarten and grade two the reading environment, comprised of such elements as the number of books in the home, computer use, and library use, has a major influence on emergent literacy. The differences in these studies findings may, however, be a result of the reading environment measure in this study being comprised of just two reading environment questions instead of several that include newer aspects of the home literacy environment such as computer use and the viewing of educational television, as was the case in the Griffin and Morrison study.

This study's findings do support the results of several studies that identify the reading activity dimension as the major influencing factor on emergent literacy (Whitehurst & Lonigan, 2001; Evans, Shaw, & Bell, 2000). This studies results support those of Evans, Shaw, and Bell (2000) who found that when children are read a storybook by their parent and that parent teaches emergent literacy skills during these reading sessions, children's letter recognition skills, phonetic sensitivity, and receptive vocabulary increase.

Print Exposure Measures

The results for the print exposure measures support reliability findings but contradict criterion-related validity findings in previous research. The reliabilities found for the print exposure measures were similar to those found previously by Allen, Cipielewski, and Stanovich (1992). The reliability found for the BERT-R was also very similar to the reliability found by Senechal et al. (1996). Assessment of the BERT-R title question resulted in a reliability

that was lower than the reliability found by Senechal et al (1996). The criterion-related validity of the CBTRT-R was found to be consistent with the findings of Stanovich and West (1989). However, the findings of this study are not consistent with those of Cunnigham and Stanovich(1993) who investigated the ability of TRT and ART to predict content knowledge levels in a sample of 268 college students. They found that after controlling for grade level, intelligence, reading and math ability the data obtained from these print exposure measures did predict differences in knowledge levels among college students. However, the differences between the Cunnigham and Stanovich (1993) findings and this studies findings may have been a result of age differences and not the predictive power of these measures.

Summary

According to the results of this study the Parent Questionnaire as a home literacy measure is reliable and appears to be a valid measure for children with and without reading deficits. The reading activity dimension of the Parent Questionnaire contributes more to the questionnaires reliability and criterion-related validity relative to the reading environment dimension. The reading environment dimension appears to contribute to a lesser degree to the psychometric properties of the questionnaire as it was found to be reliable and to have criterion-related validity for just one diagnostic group, the naming speed deficit group. This may be a product of this dimension being comprised of only two questions. With regards to the print exposure measures, despite the moderate reliabilities found for the BERT-R this measure appears to have

strong criterion-related validity for children within the random sample and in the double deficit group. This may be due to the interactive nature of this task which allows the researcher to assess the child's book knowledge directly. ART was found to have the poorest criterion-related validity for these groups relative to the other home literacy measures. This may be a result of the indirect nature of this measure. Thus, these results suggest that the best measures for assessing home literacy and predicting a child's future reading skills may be those that directly assess the child's knowledge such as the Parent Questionnaire and the BERT-R rather than those that indirectly measure the child's knowledge such as the CBTRT-R and the ART. As these results suggest that the Parent Questionnaire can be a reliable measure if its' distinct dimensions are considered, and that the Parent Questionnaire does exhibit strong criterion-related validity for the combined selected sample and the diagnostic groups relative to the other measures, of the home literacy measures assessed the questionnaire appears to be the optimal tool for assessing home literacy.

Limitations

Limitations of this study should be noted before generalizing the findings to the larger population. The first limitation of this study is that the validation of the Children's Book Title Recognition Test-Revised was based on a small sample. As using a small sample to assess CBTRT-R may effect the magnitude of the correlations for this measure the results should be interpreted with caution. The second limitation of this study concerns the reading

frequency dimension of the Parent Questionnaire. The reading frequency dimension of the questionnaire only had one question and for this reason the reliability and criterion-related validity of this dimension could not be assessed. As reading frequency has been identified as a factor that influences the development of emergent literacy, it is important to assess whether these types of questions do in fact reliably predict emergent literacy. The third limitation of this study also involves the Parent Questionnaire and specifically the reading environment dimension as the validity and reliability of this dimension was established based on just two questions. The limited number of questions for this measure may have contributed to the poorer reliability and criterion-related validity found for this dimension and for this reason these findings should also be interpreted with caution. The fourth and final limitation of this study also involves the reading environment dimension and the fact that the questions representing this dimension did not address the newer aspects of the home literacy environment, such as educational computer activities and television programs. Thus, the reliability and validity found for this dimension in this study cannot be easily generalized to current populations.

Future Directions

Future studies should investigate the ability of print exposure measures to obtain accurate and predictive information from parent's and how this information can be used to predict children's future reading performance. Other self-report measures used to assess reading should also be assessed

against parent questionnaire style formats and print exposure formats of assessment to see if similar patterns appear. Finally, a more detailed version of the questionnaire should be developed to investigate whether the reliability and validity of this measure can be increased. Specifically, a more comprehensive questionnaire needs to be developed by expanding the three specific dimensions identified in this study. A more comprehensive parent questionnaire needs to have a reading frequency and reading environment section that is comparable in length and detail to the reading activity dimension. This questionnaire also needs to include questions about newer aspects of the home literacy environment such as computer use and educational television program viewing so that the results can be generalized better.

Conclusions

This study suggests that previous research has been unable to accurately assess the reliability and validity of the Parent Questionnaire due to this questionnaires measurement of not just one but three separate factors. When these factors are accounted for the reliability and criterion-related validity of this assessment tool is greatly increased. As a result, the predictive ability of the questionnaire surpasses the print exposure measures originally designed to be the better alternative to this questionnaire. Thus, these results enable a valuable resource, the parent, to be used in reading research as they are in other areas of research.

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Appendix

Appendix A

Parent/Guardian Questionnaire

Name of parent or guardian (please print): _____

Name of child: _____

Please answer the following questions about your child who is now in Kindergarten.

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	
5	4	3	2	1	0

3. Before your child began Kindergarten (when he or she was age 2-3), 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	
5	4	3	2	1	0

4. Before your child began Kindergarten (when he or she was age 2-3), 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	
5	4	3	2	1	0

5. Before your child began Kindergarten (when he or she was age 2-3), 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	
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 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	10
5	4	3	2	1

Please answer the following demographic questions.

8. Place an X beside the highest level of education attained by the child's father.

___ Some high school studies
___ Completed high school
___ Some community college studies
___ Completed community college
___ Some university studies
___ Completed university degree
___ Some graduate or professional studies
___ Completed graduate or professional degree

9. Father's occupation: _____

10. Place an X beside the highest level of education attained by the child's mother.

___ Some high school studies
___ Completed high school
___ Some community college studies
___ Completed community college
___ Some university studies
___ Completed university degree
___ Some graduate or professional studies
___ Completed graduate or professional degree

11. Mother's occupation: _____

Appendix B

Means and Standard Deviations for the Criterion Measures for the Different Samples and Diagnostic Groups

Measure		Combine Selected Sample	Random Sample	Double Deficit	Naming Speed Deficit	Phonological Awareness Deficit	Double Asset
EL_K	M	6.88	7.16	4.79	7.03	4.94	9.43
	SD	4.78	4.95	4.18	4.65	3.50	4.65
EL_1	M	10.34	11.01	8.54	9.79	9.25	12.03
	SD	5.39	6.00	5.33	5.43	4.51	5.09
LR_K	M	38.07	40.69	30.67	36.51	35.00	47.10
	SD	15.33	11.60	16.53	15.39	13.33	7.35
LR_1	M	48.57	51.55	45.97	47.30	49.92	51.91
	SD	10.38	7.05	12.03	12.09	5.25	5.01
WID_K	M	5.29	4.50	2.17	5.29	2.06	8.67
	SD	10.63	7.74	6.19	10.18	5.26	12.69
WID_1	M	34.18	37.80	28.00	28.29	27.74	41.59
	SD	17.88	18.36	17.38	16.70	16.38	15.69
G1_1	M	27.22	24.62	35.69	34.14	34.64	17.65
	SD	23.03	22.33	30.89	21.62	25.42	15.23
G2_1	M	93.70	83.15	123.83	105.57	123.21	64.09
	SD	74.16	71.73	100.66	56.42	86.05	51.49
PC_1	M	16.50	18.77	13.53	13.54	13.74	20.24
	SD	9.88	9.29	10.33	9.09	9.81	8.93
TW_1	M	30.59	33.42	25.38	26.17	26.70	37.80
	SD	16.59	16.85	14.95	15.78	15.26	15.26

Note. ET_K = Elision Task Kindergarten, ET_1F = Elision Task Grade One Fall; LR_K = Letter Recognition Kindergarten; LR_1F = Letter Recognition Grade One Fall; WID_K = Word Identification Kindergarten; WID_1 = Word Identification Grade One Spring; G1_1= GORT Story One Grade One Spring; G2_1 = GORT Story Two Grade One Spring; PC_1 = Passage Comprehension Grade One Spring; TW_1 = TOWRE Grade One Spring.