THE DEVELOPMENT OF READING IN CHILDREN FROM DIVERSE LINGUISTIC BACKGROUNDS: A 5-YEAR LONGITUDINAL STUDY

by

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Abstract

The development of early reading and language was examined in native English speaking children (L1) and English as a second language (ESL) speaking children who were receiving instruction in English. Patterns of reading development from kindergarten to grade 4 were examined, which skills identify those children in kindergarten as at-risk for reading failure from all language backgrounds, and individual growth curve analysis was employed to examine the influence of kindergarten language background (L1 or ESL) and phonological processing skills on initial reading ability in grade 1 and on the development of reading from grades 1 through 4. The participants of the study were 860 grade 4 children who were part of a longitudinal study that began in their kindergarten year. Within the sample, there were 728 L1 speakers and 132 L2 speakers. In kindergarten, participants were administered standardized tasks of reading and memory as well as experimental tasks of phonological awareness, letter identification, rapid naming, and phonological memory. At the end of grade 4, children were administered various tasks of reading, spelling, language, arithmetic, and memory. All children received phonological awareness instruction in kindergarten and systematic phonics instruction in grade 1 in the context of a balanced early literacy program. By the end of grade 4, the L2 speakers had attained reading skills that were similar to the L1 speakers, and even performed at a superior level to the L1 speakers on tasks of word reading, spelling, arithmetic and rapid naming. However, there were differences on each of the measures between average and disabled readers in grade 4, regardless of native language. The results provide evidence that language background in kindergarten does not have a significant effect on initial status of grade 1 reading, nor on the underlying growth patterns of reading, and that ESL speakers reading comprehension develops in a similar manner to their L1 peers. The results also provide support for the universality of reading problems, the persistent nature of the phonological difficulties, and the need for effective early reading instruction for *all* children.

Table of Contents

List of Tables

List of Figures

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The majority of the research that has examined the development of reading in young children, as well as effective instruction for the prevention of reading difficulties, has concentrated largely on children who are native English (L1) speakers (for a review see Adams, 1990). However, an increasing number of children are entering kindergarten with little or no exposure to English (ESL speakers), and upon school entry they are immersed into mainstream English classrooms. It is critical to understand the development of reading in these children, as well as to determine whether the principles of reading instruction are as effective for ESL speakers as they are for L1 speakers. August and Hakuta (1997) identified the need to conduct research that examines which methods work best to give ESL-speaking children access to the academic and social opportunities that native English speakers have while they are learning English, and to determine whether effective teacher practices for students are generally sufficient to help language minority children succeed in school. Teaching a child to read in a language in which they are not yet proficient has been identified as an additional risk factor for reading problems (Snow, Burns & Griffin, 1998). The focus in the present study[1] is the reading development of ESL-speaking children who are immersed into mainstream English classrooms, within a school district committed to a balanced literacy approach that includes phonological awareness instruction in kindergarten.

Bilingualism can be viewed as an impediment or a facilitator of the development of reading skills in a second language (Cummins, 1991). Previous research has suggested those variables such as program type, method of instruction, characteristics of native language, and socioeconomic status of the bilingual learner may have an impact on L2 oral and literacy proficiency (Hakuta, 1999; August & Hakuta, 1997; Fitzgerald, 1995; Tabors & Snow, 2001). Specifically, it is unknown whether kindergarten phonological awareness instruction in the context of a balanced early literacy program is as effective for ESL

[1] This dissertation has been written in article format that conforms to the guidelines set by the Faculty of Graduate Studies, University of British Columbia.

speakers as it is for L1 speakers. Phonological processing, syntactic awareness, and working memory are the cognitive processes that are assumed to be significant to the development of reading skills in English (for a review see Siegel, 1993). Little is known about the development of these skills, and other important reading related skills, for children with ESL backgrounds.

Phonological awareness is a powerful predictor of the speed and efficiency of reading acquisition for native English speakers (Share, Jorm, Maclean & Matthews, 1984). There is a growing body of evidence that indicates that there is cross-language transfer of phonological processing from native language to L2 learning in English (e.g. Cisero & Royer, 1995; Durgunoglu, Nagy & Hancin-Bhatt, 1993, Gomez & Reason, 2002; Gottardo, Yan, Siegel & Wade-Woolley, 2001). These studies have been conducted with children who are native speakers of languages with varying orthographies such as Spanish, Malaysian, Punjabi, and Chinese. In studies examining native Spanish speaking children who were beginning readers in English, Cisero & Royer (1995) found that accuracy on phoneme detection in Spanish was a significant predictor of English performance on a similar task, and Durgunoglu, Nagy & Hancin-Bhatt (1993) found that Spanish word recognition and Spanish phonological awareness were better predictors of performance on English pseudoword and word reading tests than was English or Spanish oral proficiency or English word recognition. Gottardo et al. (2001) found evidence for cross-language transfer to English even when the children's native language was a non-alphabetic orthography. In a group of native Chinese speaking children learning to read in English, Gottardo et al. (2001) found phonological skill in both L1 and L2 contributed unique variance to L2 English reading. With a group of 7 and 8 year-old children learning to read English whose native language was Bahasa Malaysia (BM), Gomez and Reason (2000) found that phonological processing skills gained in BM enabled the children to decode the nonwords on an English test.

The results of the studies demonstrate that cross-language transfer of phonological awareness may take place, even if phonological skills are still under development, and even if the nature of the orthographies of L1 and L2 are different. Research has also suggested that certain metalinguistic and cognitive concepts emerge differently in bilingual children than they do in monolingual children (e.g. Baker, 1998; Bialystok, 1997; Bialystok & Hakuta, 1994; Bialystok & Ryan, 1985; Campbell & Sais 1995).

Campbell and Sais (1995) reported accelerated phonological awareness ability in a sample of bilingual kindergarten children who were exposed to a second language during their preschool years. It has also been reported that young bilingual children may have an advantage in their general understanding of the symbolic function of written language, as well as their understanding of the way in which writing systems encode the spoken word (Bialystok, 1997). This research supports the view that when a child has exposure to two languages, his or her bilingualism facilitates the acquisition of language-related skills such as reading.

Similar to phonological awareness, working memory may also be important for success in word reading and reading comprehension for ESL learners. Several studies with monolingual speakers have found that reading disabled individuals have difficulty with working memory as compared to normal readers throughout childhood, adolescence, and adulthood (e.g. Chiappe, Hasher & Siegel, 2000; McDougall, Hulme, Ellis & Monk, 1994; Siegel, 1994; Siegel & Ryan, 1989). Recent research has examined working memory and second language reading acquisition. Geva and Siegel (2000) reported that verbal memory was a significant predictor of basic reading skills in both English and Hebrew in a sample of English speakers receiving instruction in Hebrew. Consistent with the findings for normal and disabled English-speaking readers, Da Fontoura & Siegel (1995) reported that Portuguese-Canadian children classified as reading disabled in English showed significantly poorer performance than normal readers on tasks of working memory in both English and

Portuguese. The deficits in working memory suggest a generalized difficulty with working memory for those children with reading disabilities, regardless of language background. Similar research has been conducted to examine the role of syntactic awareness in the development of reading.

Syntactic awareness is a skill that has been identified as related to beginning reading achievement. Ehri and Wilce (1980) found that the ability to process syntax is an important component of word learning. Several studies have reported difficulties with syntactic awareness in individuals with a reading disability (Siegel & Ryan, 1988; Willows & Ryan, 1986). Unlike the areas of phonological processing and working memory, previous studies have shown a deficit in syntactic awareness skills for ESL speaking typical and disabled readers as compared to their native English speaking peers (e.g. Da Fontoura & Siegel, 1995, Geva, Yaghoub-Zadeh & Schuster, 2000). It is important to note that although a deficit in syntactic awareness has been found in ESL speaking children who are typical readers, oral language proficiency is often cited as the main cause of reading difficulties in ESL speakers, and educational difficulties are often perceived as part of the acculturation process (Limbos & Geva, 2001).

There is a tendency within schools to overlook or delay addressing the possibility that ESL speaking children are having difficulty due to problems with word decoding or language processing skills (Limbos & Geva, 2001). Lack of oral language proficiency in the language of instruction is also often the cause of underestimating a child's reading ability in the second language that the child is acquiring (e.g. Limbos & Geva, 2001; Moll & Diaz, 1985). It is important to continue to examine the role of phonological awareness as a predictor of reading development in ESL speaking children given that it may be a stronger, better predictor of reading performance than is oral language proficiency.

A few studies have examined those skills that are predictors of reading performance in ESL speakers, and the results have suggested that phonological awareness skills are

better predictors of reading performance than are oral proficiency skills (e.g. Durgunoglu, Nagy & Hancin-Bhatt, 1993; Geva, Yaghoub-Zadeh & Schuster, 2000; Muter & Diethelm, 2001). Durgunoglu, Nagy & Hancin-Bhatt (1993) found that for native Spanish speakers learning to read in English, Spanish word recognition and Spanish phonological awareness were better predictors of performance on English pseudoword and word reading tests than was English or Spanish oral proficiency or English word recognition. Although most studies have focused on a particular group of L2 learners, Muter & Diethelm (2001) found that in a sample of 55 children from diverse linguistic backgrounds learning to read in English, kindergarten phonological segmentation ability was a predictor of reading ability in grade 1. These findings are very pertinent to our understanding of word reading development of ESL speaking children. However, there is a dearth of research addressing the roles of oral language proficiency and phonological awareness in relation to reading comprehension skills.

The most substantial amount of variance in comprehension is accounted for by individual differences in the accuracy and speed of single word reading (Perfetti, 1985). If a child has difficulty at the single word reading level, this will have a negative impact on reading comprehension. In order to gain meaning from the text to the same extent as normally achieving peers, children need to be fluent in decoding at the word level (Kame'enui & Simmons, 2001). In a study of Hispanic children acquiring English, Carlisle, Beeman, Davis, and Spharim (1999) found that phonological awareness accounted for unique variance in a reading-comprehension task.

Beyond fluent decoding, effective reading comprehension requires vocabulary skills, and the use of background knowledge to understand, and make inferences about, the text being read. Some theories of comprehension (e.g. Perfetti, 1988, van Dijk & Kintsch, 1983) suggest that comprehension is an interactive process involving text, environmental context, and the listener's or reader's knowledge. Thus, one way that cultural background may

influence student performance on a reading comprehension test is by the affective interpretation given to text that is read or heard. Individuals with differing cultural experiences may create different interpretations of the same text. Studies that have examined the impact of cultural experience on text comprehension have found that cultural background can influence text interpretation, and that cultural expectations and traditions must be taken into account when trying to understand how children make sense of what they read (Cain & Oakhill, 1998).

In a study of Turkish speaking children learning to read in Dutch, Verhoeven (1990) found that after 20 months of literacy instruction, performance on a measure of word reading efficiency was not statistically different in the Turkish speakers as compared to native Dutch speakers (Verhoeven, 1990). However, the Turkish speakers remained significantly lower in reading comprehension than their Dutch peers (Verhoeven, 1990). Aarts and Verhoeven (1999) identified that Turkish children often come from low socioeconomic backgrounds, and have linked related variables such as home stimulation, parents' motivation, and the children's self-esteem to lower levels of literacy attainment in this group of language minority children. This research demonstrates the effects that variables beyond word reading have on children's reading comprehension performance. The present study involves a sample of L1 and ESL speakers with a wide range of socioeconomic backgrounds, and thus allows the examination of the development of academic skills without the confound of low socioeconomic status, at least in the majority of the cases.

Those few studies that have been conducted to examine the reading and spelling development of children who receive classroom instruction in a language other than the language they speak in the home suggest very similar reading developmental trajectories to native speakers across different languages. For example, Chiappe & Siegel (1999) examined the performance of Punjabi speaking (ESL) children and native English speaking (L1) children in grade 1. The authors reported that although measures of word recognition

and phonological processing successfully discriminated between the grade 1 average and disabled readers, word recognition skills and phonological processing skills were not significantly different across the two language groups. The ESL children had skills in phonological awareness and reading comparable to their native English speaking peers despite lower scores on a measure of oral language that tapped syntactic awareness skills. Geva, Yaghoub-Zadeh & Schuster (2000) found that in a large sample of ESL speaking children and native English speaking children, the ESL speakers performed significantly more poorly on a measure of oral proficiency, however the groups did not differ in word recognition skills. The profiles of not at-risk ESL speaking children were very similar to those of the not at-risk native English speakers. The same patterns were observed in the at-risk children; performance on measures of phonological processing and rapid naming was low in all children with word recognition difficulty. Previous research has also demonstrated that even if differences in the orthographic complexity of the child's first and second language exist, emergent spelling patterns in both languages of the child are similar, and that spelling performance is more highly correlated with reading skills than with first language (e.g. Geva, Wade-Woolley & Shany, 1993; Wade-Woolley & Siegel, 1997). The results of the recent studies suggest a link between phonological processing difficulties and reading difficulties, and also suggest that for ESL speakers, spelling ability is related to reading ability in the target language. As such, it is critical to examine the effectiveness of a model of early intervention that provides universal phonological awareness instruction for kindergarten children.

The proportion of children at-risk for developing reading problems can be as high as 17-20% (Lyon et al., 2001). Research has shown that without an early intervention programs, the majority of children identified as reading disabled in 3rd grade will remain reading disabled through high school (Fletcher et al., 1994). Research has also shown that special education and remedial classrooms in the middle elementary years stabilize the difficulties

of the child, but have not been shown to accelerate the student's performance to grade level (Torgesen, 2001). Although evidence has converged to support a model of early reading instruction that focuses on the prevention and intervention for kindergarten children at-risk for reading failure in the context of a balanced literacy program for native English speakers (Lyon et al., 2001), little is known about effective instruction for ESL children and the long-term consequences of that instruction. This is a group of children who are at increased risk for school and related difficulties; a higher incidence of school dropout has been identified in the ESL population (Gunderson & Clarke, 1998).

Explicit and intensive instruction are two elements of classroom instruction that have been identified as vital to a model of early reading designed to promote reading success for all children (Foorman & Torgesen, 2001). Explicit skills instruction and systematic student assessment have also been suggested as essential for classroom settings that include language minority children (August & Hakuta, 1997; Hakuta, 1999). In an intervention study that included a group of children who were ESL speakers, Stuart (1999) found that the acquisition of reading by L2 learners was improved by teaching phonological awareness and phonics. For a group of ESL children learning to read in English, a phoneme awareness and phonic training program had greater immediate and long-term benefits than did a program that emphasized letter- and word-learning. This suggests that findings around early intervention with phonological awareness training for monolingual speakers may extend to include ESL speakers.

The present study was conducted in a school district that is committed to kindergarten identification and intervention for *all* children at-risk for reading failure. Systematic student assessment of pre-reading skills and explicit instruction in phonological awareness are part of the kindergarten program. In grade 1, systematic phonics instruction is an integrated part of the early reading curriculum. As a result this study provides a unique opportunity to examine the development of reading and kindergarten predictors of

subsequent reading ability in the context of a district committed to a model of pre-reading and reading instruction that is consistent with the research on effective early reading programs for native English speaking children (e.g. Lyon et al., 2001).

The pattern of reading development of ESL speaking and native English speaking children from kindergarten to grade 4 who are receiving instruction in English will be examined. The longitudinal nature of the study allows for the opportunity to examine those reading-related skills in kindergarten that are predictors of later reading ability for children who are ESL speakers. This study also provides an exploration of the potential benefits of bilingualism for reading acquisition.

The study is guided by five specific questions: (1) What is the overall achievement of ESL speakers compared to L1 speakers on measures of reading and related skills in the spring of grade 4? (2) Do similar patterns of success and difficulty exist in ESL and L1 speakers who are typical readers in the spring of grade 4? (3) Do similar patterns of success and difficulty exist in ESL and L1 speakers who are experiencing reading difficulties in the spring of grade 4? (4) Which skills at the beginning of kindergarten are the most effective predictors of subsequent reading failure and success in children from ESL and L1 backgrounds? (5) What is the influence of native language (ESL or L1) and kindergarten phonological processing skill on the individual development of word reading ability over time?

Method

Participants

The children are part of a longitudinal study that began in their kindergarten year. These children represent all of the children from all of the 30 schools in the school district. Within the sample in kindergarten there were 1041 L1 speakers and 197 ESL speakers. In grade 4, due to attrition, the sample included 728 L1 speakers, and 132 ESL speakers. Children were classified as ESL in kindergarten if they spoke a language other than English

at home to parents, siblings, and grandparents. This information was obtained through school records. Most of the ESL speakers were immigrants to Canada, although some had been born in Canada. In the elementary schools in this school district, children with ESL backgrounds receive the same early classroom instruction in English as their non-ESL peers. In the case of most ESL children who are born in Canada or who arrive from their native country as young children, they begin the same schooling in mainstream English classrooms at the same time as their non-ESL peers, despite very limited oral proficiency. Given that the sample includes the whole school district of a Canadian city, the sample represented a wide range of socioeconomic status (SES) backgrounds. The majority of the sample were native English speakers, and therefore represented a wide range of socioeconomic status. In order to examine the demographic distribution of the ESL children, an indicator of SES for each school region in the district was taken from a national database. This SES indicator is based on average income and other income-related measures (e.g. real estate value) for all people in each of the school regions (Statistics Canada, 1996). The relationship between SES and ESL was examined for each of the 30 schools. The correlation between ESL and the SES indicator was not significant, $r(30) < .03$. This lack of significant correlation reduces the possibility that the performance of the ESL children was confounded, as a group, by socioeconomic status. The ESL children came from a variety of linguistic backgrounds; the sample included 33 different languages. The predominant native languages were Cantonese, Mandarin, Korean, Spanish, Polish and Farsi.

Of the 1238 children in the kindergarten sample, there were 626 females and 612 males. The mean age of the sample in kindergarten was 64.39 months with a standard deviation of 3.45 months. Of the 860 children in the grade 4 sample, there were 424 females and 436 males. The mean age of the sample in grade 4 was 117.81 months with a standard deviation of 3.44 months.

Classification

All children were tested in the fall of kindergarten, and classified as at-risk for reading failure or not at-risk based on their performance on the reading subtest of the Wide Range Achievement Test-3 (WRAT3; Wilkinson, 1993). Children in kindergarten were classified as at-risk for reading failure if their performance on the WRAT reading subtest was at or below the 25th percentile, and not at-risk if their performance was at or above the 30th percentile. Two hundred and ninety-six children (236 L1 speakers and 60 ESL-speaking children) scored at or below the 25th percentile on the WRAT3 reading subtest and thus were classified as at-risk for reading failure. Eight hundred and sixty-six (766 L1 speakers and 100 ESL speakers) scored at or above the 30th percentile on the WRAT3 reading subtest and thus were classified as not at-risk for reading failure. Seventy-six children (39 L1 speakers and 39 ESL speakers) had WRAT3 scores within the 26th and 29th percentile and therefore were classified as borderline. These children were not included in the analyses.

Children were tested again in the spring of grade 4, and were classified as average readers or reading disabled based on their performance on the reading subtest of the Wide Range Achievement Test -3 (WRAT3; Wilkinson, 1993). Thirty-one children (26 L1 speakers and 5 ESL-speaking children) scored at or below the 25th percentile on the WRAT3 reading subtest and thus were classified as reading disabled. Eight-hundred and twelve children (689 L1 speakers and 123 ESL-speaking children) scored at or above the 30th percentile on the WRAT3 reading subtest and thus were classified as average readers. Seventeen children (13 L1 speakers and 4 ESL speakers) had WRAT3 scores within the 26th and 29th percentile and therefore were classified as borderline. These children were not included in the analyses.

Kindergarten Measures[2]

Literacy

Wide Range Achievement Test – 3 (blue form): Reading subtest *(Wilkinson, 1993).* Each child was asked to name capital letters and to read some simple words.

Letter Identification. Each child was asked to name lower-case letters from a page of twenty-six letters presented in a random order.

Phonological Processing

Sound Mimicry (Goldman, Fristoe, and Woodcock, 1974). In this task, children repeated pseudowords of increasing difficulty that had been read to them by the experimenter (*e.g. ab, dod, bafmotbem*).

Rhyme Detection Task from the *Phonological Awareness Test* (Muter, Hulme & Snowling, 1997). In this task, the children were shown four pictures. A picture of the target word appeared above three pictures. Children were asked which of the three words rhyme with the target word. An example from the task is: "What rhymes with cat? Fish, sun or hat?"

Syllable Identification and Phoneme Identification tasks from the *Phonological Awareness Test* (Muter, Hulme & Snowling, 1997). For these tasks, children were required to complete words. In the syllable identification task, the examiner presented a picture (e.g. rabbit) to the child. The examiner said the first part of the word (i.e. "ra") and asked the child to finish the word (i.e. "bit"). In the phoneme identification task, the examiner presented a picture (e.g. watch). The examiner said the first part of the word (i.e. "wa") and asked the child to finish the word (i.e. "tch").

Phoneme Deletion Task from the *Phonological Awareness Test* (Muter, Hulme & Snowling, 1997). For this task, the examiner would present the child with a picture of the word and then ask him or her to delete a phoneme (initial or final) from the word. For example, when the child was asked to delete initial phonemes from the words, the examiner

[2] See appendix A for a copy of non-standardized tasks administered in kindergarten.

would say "Bus without /b/ says ____", and when the child was asked to delete final phonemes from the words, the examiner would say "Bag without /g/ says _____."

Lexical Access

Rapid Automatized Naming (RAN). Phonological recoding in lexical access, or word retrieval, was assessed using a variation of the Rapid Automatized Naming task (*RAN*; Denckla & Rudel, 1976). In this task, the child named 40 items on a page consisting of line drawings of 5 different items (tree, chair, bird, pear, car) repeated 8 times. To ensure that all children knew the target words, a practice page of the 5 items was presented immediately before the presentation of the 40 items. The score was the time taken (number of seconds) to complete the chart of 40 items.

Syntactic Awareness

Oral Cloze (Willows & Ryan, 1986; Siegel & Ryan, 1989). Syntactic awareness was assessed using an oral cloze task. In the task, 12 sentences were read to the child, and then the child attempted to provide the missing word in each sentence. An example of this task includes "*The moon shines bright in the* ____."

Memory

Stanford Binet Memory for Sentences Subtest (Thorndike, Hagen, & Sattler, 1986). In this task the child is asked to repeat sentences from simple two word sentences (*e.g. Drink milk*) to complex sentences (*e.g. Ruth fell in a puddle and got her clothes all muddy*).

Spelling

Simple Spelling. In order to examine children's spelling ability in kindergarten, the children were asked to print their names, and five simple words (*i.e. mom, no, I, cat, dad*).

Grade 4 Measures[3]

Reading

Wide Range Achievement Test – 3: Reading Subtest (blue form): (Wilkinson, 1993): This test involves a reading list of words of increasing difficulty. Each child was required to read as many words as possible from the list. The task administration was discontinued when ten consecutive words were read incorrectly. Sample words from the list include *in, cat, stretch, triumph.*

Woodcock Reading Mastery Test-Revised (Form G): Word Identification (Woodcock, 1987). This subtest is made up of a word-reading list of increasing difficulty. Each child was required to read as many words as possible from the list. The task administration was discontinued when all items in a given level were failed. Sample words from the list include: *is, find, mathematician.*

Woodcock Reading Mastery Test - Revised (Form G): Word Attack (Woodcock, 1987). In order to measure decoding skills, the subtest is made up of a list of pseudowords of increasing difficulty. The child is required to decode as many words as possible from the list. The task administration was discontinued when all items in a given level were failed. Sample words from the list include: *dee, ap, straced.*

Stanford Diagnostic Reading Test: Reading Comprehension (Karlsen & Gardner, 1994). This test was administered in groups in each of the grade 4 classrooms. Each child received a booklet and was required to read the short passages within the booklet and provide responses to multiple-choice questions in a prescribed time limit.

One Minute Word Reading. In this task the child was presented with a list of real words of increasing difficulty and asked to read as many words as possible within a one-minute time period. The WRAT3 (tan form) was used as a word list in order to obtain a fluency measure; the number of words read correctly determined the score for this task.

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[3] See Appendix B for a copy of non-standardized tasks administered in kindergarten.

Standardized norms are not available when the list is used as a timed task. Sample words include: *as, because.*

One Minute Pseudoword Reading. In this task the child was presented with a list of pseudowords and asked to read as many words as possible within a one-minute time period. The Word Attack (Form H) was used as a word list in order to obtain a fluency measure; the number of words read correctly determined the score for this task. Standardized norms are not available when the list is used as a timed task. Sample words include: *yee, dreek.*

Memory

Working Memory for Words (Siegel & Ryan, 1989). The child was presented orally with sets of sentences missing the final word. The child was required to provide the missing word of each sentence and then repeat all the missing words from each set of sentences. There were three trials within each set of sentences. The number of sentences in each set increased, beginning with 2 sentences and increasing by an additional sentence, up to a possible 5 sentences (2, 3, 4, 5). To minimize word-finding problems, the sentences were chosen so that the word was virtually predetermined. The children did not experience any difficulty in supplying the missing word. The task administration was discontinued when the child failed all the items in a given level. Examples of sentences: *Snow is white, grass is* _____.

Working Memory for Numbers (Siegel & Ryan, 1989). This task involved counting yellow dots within a field of blue and yellow dots arranged in a randomly determined irregular pattern on a 5 x 8 inch index card. For each set, the child was asked to recall the number of yellow dots on each card presented in the correct order. There were three trials within each set of cards. The number of cards in each set increased, beginning with 2 cards and increasing by an additional card, up to a possible 5 cards (2, 3, 4, 5). The task administration was discontinued when the child failed all the items of a given set.

Phonological Processing

Rosner's Auditory Analysis Test (Rosner & Simon, 1971). This task includes both syllable and phoneme deletion. The child was asked to say a word and then asked to say the word again without one of its sounds (e.g. "Say smell," "Now say smell without the /m/ sound)." Two practice items and 40 test items were administered. Participants were asked to delete syllables, single phonemes from both the initial and final positions in each word, and single phonemes from blends. The 40 items were arranged in order of difficulty and administration of the test items was discontinued after 5 consecutive error responses.

Lexical Access

Rapid Automatized Naming (RAN). This task was used to test the efficiency of lexical retrieval. In this task, children were required to name individual numbers (1-9) presented in a random order with 5 rows and 5 columns. Each child's performance was timed in seconds.

Syntactic Awareness

Oral Cloze (Willows & Ryan, 1986; Siegel & Ryan, 1989). Syntactic awareness was assessed using an oral cloze task. In the oral cloze task, 12 sentences were read to the child, and then the child attempted to provide the missing word in each sentence. An example of this task includes "*The moon shines bright in the* ____."

Spelling

Wide Range Achievement Test – 3: Spelling (blue form) (Wilkinson, 1993). This test is made up of orally presented words of increasing difficulty of which the child was required to generate the correct spelling. Sample items: *must, enter.*

Nonword spelling. A task of nonword spelling by dictation whereby the child had to generate a plausible letter representation of the word. Ten different nonwords were presented. Sample items: *ged, tave* (pronounced to rhyme with *wave*).

Arithmetic

Wide Range Achievement Test – 3 (blue form): Arithmetic (Wilkinson, 1993). This test is made up of a page of computational written mathematics problems that the child is required to solve to the best of his or her ability. Sample items: *2+7* =__, *33-17* = __.

District Wide Reading Program

The school district to which the children belong is one that has made a commitment to a balanced reading acquisition program that includes phonological awareness instruction (Bennett & Ottley, 2000). Following the kindergarten assessment, each school received feedback on the performance of the children who participated in the study. Specifically, those children who were classified as at-risk for reading failure were identified within the feedback. The phonological awareness training took the form of classroom-based, small group activities for all children in kindergarten. The small groups consisted of both ESL and L1 speakers matched on phonological awareness ability. The classroom teachers as well as the school resource teachers provided the intervention three to four times a week for 20 minutes. The kindergarten phonological awareness training for all children was in the context of a variety of literacy activities, which included a combination of activities with an explicit emphasis on the sound-symbol relationship as well as independent activities such as cooperative story writing and journal writing using invented spelling. Given the commitment of the district to early identification and intervention for children at-risk for reading failure, for some children in the study, the phonological awareness intervention continued into grade 1 and took the form of small-group and individually targeted intervention. The district itself has a published reading curriculum (*Reading 44, 1999*) for elementary grades, and since the implementation of the model of early identification and intervention for kindergarten children at-risk for reading failure has published a kindergarten early literacy curriculum (*Firm Foundations, 2001).*

Procedure

Trained graduate students conducted individual assessments in the schools. Each child was assessed individually in a quiet room. The spelling, reading comprehension and arithmetic tasks were administered in a group setting in the classrooms. Some children were not administered every task due to absence from the classroom on the day of testing.

Results

In order to make group comparison between ESL and L1 speakers, and between at-risk and not at-risk children, a series of 2x2 analysis of variance[4] (ANOVA) were conducted. The ANOVA's examined within-subjects factors (measures administered) and between-subjects factors (language status: ESL or L1; risk status: not at-risk or at-risk). Main effects for language and risk status, and interactions between language status and risk status on kindergarten and grade 4 performance on the measures administered were examined.

Language Groups (ESL vs. L1)

Table 1 summarizes the performance of the two language groups on the kindergarten tasks. The ANOVA did not reveal any significant differences between the ESL and L1 children on the WRAT3 reading subtest, $F(1, 1091) = 2.25$, *ns*, $\eta^2 = 0.01$, and on the Letter Identification task, $F(1, 1091) = 2.01$, *ns*, $\eta^2 = 0.00$. The ESL children performed significantly more poorly than the L1 children on Sound Mimicry, $F(1, 1091) = 7.34$, $p<.05$, $\eta^2 = 0.01$, Rhyme Detection, $F(1,1091) = 41.96$, $p<.001$, $\eta^2 = 0.03$, Oral Cloze, $F(1, 1091)=21.13$, $p<.001$, $\eta^2 = 0.01$, Memory for Sentences, $F(1, 1091) = 68.79$, $p<.001$, $\eta^2 = 0.04$, Rapid Naming, $F(1,1091) = 31.93$, $p<.001$, $\eta^2 = 0.03$, and Simple Spelling, $F(1, 1091)=8.97$, $p<.05$, $\eta^2 = 0.09$. There were no significant differences between the language groups on the measures of Syllable Identification, $F(1, 1091)= 1.98$, *ns*, $\eta^2 = 0.01$, Phoneme

[4] ANOVA's were conducted using percentile ranks from standardized tests. Percentile ranks were chosen as the scale of measurement for analyses given that the data are normally distributed and that using percentiles is a method of placing the data in rank order. In many situations, statistical power is gained by nonparametric methods (for a discussion see Zimmerman & Zumbo, 1993).

Identification, $F(1, 1091)=0.07$, *ns*, $\eta^2 = 0.00$, and Phoneme Deletion, $F(1,1091)= 2.32$, *ns*, $\eta^2 = 0.01$. There were no significant interactions of language by reader group on each of the kindergarten tasks.

Insert Table 1 about here

Table 2 summarizes the overall performance of the language groups on the grade 4 tasks. The ANOVA results revealed no significant differences between the ESL and L1 children on the WRAT3 reading subtest, $F(1, 839) = 2.02$, *ns*, $\eta^2 = 0.01$, Word Identification $F(1, 839) = 1.91$, *ns*, $\eta^2 = 0.01$, Word Attack, $F(1, 839) = 0.67$, *ns*, $\eta^2 = 0.01$, SDRT Reading Comprehension, $F(1, 839) = 0.346$, *ns*, $\eta^2 = 0.01$, the one-minute word reading task, $F(1, 839) = 0.40$, *ns*, $\eta^2 = 0.01$, the minute pseudoword reading task, $F(1, 839) = 0.54$, *ns*, $\eta^2 = 0.01$, Rosner AAT $F(1, 839) = 1.28$, *ns*, $\eta^2 = 0.02$, as well as on and Working Memory for Numbers, $F(1, 839) = 1.23$, *ns*, $\eta^2 = 0.01$. As a group, the ESL children performed significantly better than the L1 children on speeded number naming $F(1, 839) = 5.90$, $p<.05$, $\eta^2 = 0.01$, WRAT Arithmetic $F(1, 839) = 20.57$, $p<.001$, $\eta^2 = 0.02$, and WRAT Spelling $F(1, 839) = 9.50$, $p<.01$, $\eta^2 = 0.01$. The L1 children performed significantly better than the ESL children on Oral Cloze, $F(1, 839) = 8.35$, $p<.05$, $\eta^2 = 0.01$, Working Memory for Words, $F(1, 839) = 7.34$, $p<.01$, $\eta^2 = 0.01$, and pseudoword spelling $F(1,839) = 6.58$, $p<.05$, $\eta^2 = 0.01$.

Insert Table 2 about here

Kindergarten Results

A series of 2x2 analysis of variance (ANOVA) were conducted with language status and classification in kindergarten as fixed factors and all kindergarten tasks as dependent measures. A significant main effect ($p<.001$) for language group on kindergarten performance on the battery of kindergarten tasks was detected (effect sizes across measures ranging from .000 to .059). A significant main effect for classification in kindergarten ($p<.001$) was detected (effect sizes across measures ranging from .008 to

.577). Language status and classification did not interact to create a significant effect for kindergarten performance (effect sizes across measures ranging from .000 to .007).

Insert Table 3 about here

Literacy Measures. Table 3 summarizes the children's performance on the early literacy measures in kindergarten. The ESL not at-risk group's performance on the WRAT3 reading subtest was significantly higher than the L1 not at-risk group, $F(1, 870) = 4.69$, $p<0.05$, $\eta^2 = 0.06$. In contrast, the ESL not at-risk group performed significantly more poorly than the L1 not at-risk group on the Letter Identification task, $F(1, 867) = 7.73$, $p<.01$, $\eta^2 = 0.01$. There were no significant differences between the ESL and L1 not at-risk groups on the Simple Spelling measure, $F(1, 839) = 2.81$, *ns,* $\eta^2 = 0.01$. The pattern of results for the at-risk readers on WRAT3 reading was different from the not at-risk results; the L1 at-risk performance was significantly higher than the ESL speakers, $F(1, 293) = 5.11$, $p<0.05$, $\eta^2 = 0.01$. Similar to the pattern of results within the not at-risk group, the ESL at-risk group performed significantly more poorly than the L1 at-risk group on the Letter Identification task, $F(1, 293) = 5.23$, $p<.05$, $\eta^2 = 0.02$, and there were no significant differences between the ESL and L1 not at-risk groups on the Simple Spelling measure, $F(1, 288) = 2.37$, *ns*, $\eta^2 = 0.01$.

The pattern of results on literacy measures for ESL and L1 speakers was similar. Within the two language groups, there were significant differences between the at-risk and not at-risk groups on all literacy measures. By definition, the ESL and L1 at-risk groups performed significantly more poorly than the ESL and L1 not at-risk groups, respectively, on the WRAT3 reading subtest [ESL, $F(1, 140) = 486.82$, $p<.001$, $\eta^2 = 0.78$; L1, $F(1, 929)=2012.69$, $p<.001$, $\eta^2 = 0.68$]. The ESL and L1 not at-risk groups had higher scores than the not at-risk groups on Letter Identification [ESL, $F(1, 140)=239.63$, $p<.001$, $\eta^2 = 0.64$; L1, $F(1, 929)=856.32$, $p<.001$ $\eta^2 = 0.48$], and Simple Spelling [ESL, $F(1, 140) = 42.436$, $p<.001$, $\eta^2 = 0.21$, L1 $F(1, 929) = 225.56$, $p<.001$, $\eta^2 = 0.19$].

Insert Table 4 about here

Phonological Processing Measures. Table 4 summarizes the results of the kindergarten measures of phonological processing. Within the not at-risk group, the ESL children performed significantly more poorly than the L1 speakers on Sound Mimicry, $F(1, 863) = 9.36$, $p<0.01$, $\eta^2 = 0.01$, and on the Rhyme Detection task, $F(1, 869) = 26.81$, $p<.001$, $\eta^2 = 0.03$, whereas there were no significant differences between the ESL not at-risk and L1 not at-risk children on the tasks of Syllable Identification, $F(1, 867) = 1.54$, *ns*, $\eta^2 = 0.01$, Phoneme Identification, $F(1, 867) = .79$, *ns*, $\eta^2 = 0.01$, and Phoneme Deletion, $F(1, 862) = 0.82$, *ns,* $\eta^2 = 0.01$. There were no significant differences between the ESL at-risk children and L1 at-risk children on Sound Mimicry, $F(1, 293) = 1.13$, *ns*, $\eta^2 = 0.01$, Syllable Identification, $F(1, 293) = 1.32$, *ns*, $\eta^2 = 0.01$, Phoneme Identification, $F(1, 293) = .01$, *ns*, $\eta^2 = 0.01$, and Phoneme Deletion, $F(1, 293) = 1.04$, *ns,* $\eta^2 = 0.01$. On Rhyme Detection, the L1 at-risk group performance was significantly higher than the ESL at-risk group, $F(1, 293) = 12.26$, $p<.001$, $\eta^2 = 0.05$.

The ESL and L1 not at-risk groups had higher scores than the ESL and L1 at-risk groups, respectively, on phonological processing measures including Rhyme Detection [ESL, $F(1, 140)= 7.68$, $p<.001$, $\eta^2 = 0.05$; L1, $F(1, 929)=37.51$, $p<.001$, $\eta^2 = 0.04$], Syllable Identification [ESL, $F(1, 140)=13.97$, $p<.01$, $\eta^2 = 0.09$; L1 $F(1, 929)=49.38$, $p<.001$, $\eta^2 = 0.05$], Phoneme Identification, [ESL, $F(1, 140)=17.88$, $p<.001$, $\eta^2 = 0.12$; L1, $F(1, 929)=59.26$, $p<.001$, $\eta^2 = 0.06$], and Phoneme Deletion [ESL, $F(1, 140)=6.59$, $p<.001$, $\eta^2 = 0.05$; L1, $F(1,929)=29.56$, $p<.001$, $\eta^2 = 0.03$]. There were no significant differences between ESL at-risk and ESL not at-risk children on Sound Mimicry, $F(1, 140) = .720$, *ns*, $\eta^2 = 0.01$, whereas within the L1 children, the not at-risk group scored significantly higher than the at-risk group on Sound Mimicry, $F(1, 929)=27.56$, $p<.001$, $\eta^2 = 0.03$.

Insert Table 5 about here

Table 5 summarizes the results on kindergarten measures of oral language, memory, and rapid naming.

Language. On the Oral Cloze task, ESL children in the not at-risk and at-risk groups performed significantly more poorly than the L1 at-risk and not at-risk groups, respectively, [not at-risk, $F(1, 859) = 10.35$, $p<.001$, $\eta^2 = 0.01$; at-risk, $F(1, 292) = 11.31$, $p<.001$, $\eta^2 = 0.03$]. The ESL and L1 not at-risk scores were significantly higher than the ESL and L1 at-risk group scores, respectively, [ESL, $F(1, 140) = 7.69$, $p<.001$, $\eta^2 = 0.05$; L1, $F(1, 929) = 29.17$, $p<.001$, $\eta^2 = 0.03$].

Memory. ESL children in the at-risk and not at-risk groups performed significantly more poorly than the L1 at-risk and not at-risk groups, respectively, on Memory for Sentences [not at-risk, $F(1, 862) = 60.54$, $p<.001$, $\eta^2 = 0.06$; at-risk, $F(1, 294) = 11.49$, $p<.001$, $\eta^2 = 0.05$]. There were no differences between the ESL not at-risk group and the ESL at-risk group on Memory for Sentences, $F(1, 140) = 1.44$, *ns*, $\eta^2 = 0.01$, whereas the L1 not at-risk group scores were significantly higher than the L1 at-risk group on the Memory for Sentences task, $F(1, 929) = 47.91$, $p<.001$, $\eta^2 = 0.05$.

Rapid Naming. ESL children in the at-risk and not at-risk groups performed significantly more poorly than the L1 at-risk and not at-risk groups, respectively, on Rapid Naming [not at-risk, $F(1, 852) = 10.59$, $p<.001$, $\eta^2 = 0.01$; at-risk, $F(1, 288) = 12.57$, $p<.001$, $\eta^2 = 0.05$]. The ESL not at-risk group scores were significantly higher than the ESL at-risk group scores, $F(1, 140)=15.07$, $p<.001$, $\eta^2 = 0.07$. Similarly, the L1 not-at risk group scores were significantly higher than the at-risk group scores, $F(1, 929)=12.57$, $p<.001$, $\eta^2 = 0.04$.

Summary. In kindergarten, the L1 children performed significantly better than the ESL children on tasks of rhyme detection, pseudoword repetition, memory for sentences, syntactic awareness, rapid naming, and spelling. On all other tasks, there were no significant differences between the 2 language groups. There were no significant differences between the ESL at-risk and ESL not at-risk groups on tasks of language and memory. On

all other tasks, the ESL not at-risk group performed significantly better than the ESL at-risk group. The L1 at-risk group performed significantly more poorly than the L1 not at-risk group on all tasks.

Grade 4

A series of 2x2 analysis of variance (ANOVA) were conducted with language status in kindergarten and reader group in grade 4 as fixed factors and all grade 4 tasks as dependent measures. A significant main effect for language status on the battery of grade 4 tasks was detected, $F(13, 827) = 1.97$, $p<.05$, $\eta^2 = 0.03$., and a significant main effect for reader group was detected on grade 4 performance, $F(13, 827) = 14.49$, $p<001$, $\eta^2 = 0.20$. There was no interaction between language status and reader group on grade 4 performance, $F(13, 827) = .947$, *ns*, $\eta^2 = 0.01$.

Insert Table 6 about here

Reading Measures. The performance of the reader and language groups on the reading measures is shown in Table 6. There were no differences between the L1 average readers and the ESL average readers on the Word Attack, $F(1, 810) = 1.60$, *ns*, $\eta^2 = 0.01$, the Stanford Diagnostic Reading Comprehension Test, $F(1, 810) = 1.76$, *ns*, $\eta^2 = 0.01$, the one minute word reading task, $F(1, 810) = 2.88$, *ns*, $\eta^2 = 0.01$, and the one minute pseudoword task, $F(1, 810) = 1.01$, *ns*, $\eta^2 = 0.01$. The ESL average readers read significantly more words than the L1 average readers on the WRAT Reading subtest, $F(1, 810) = 5.02$, $p<.05$, $\eta^2 = 0.01$, and on the Word Identification, $F(1, 810) = 4.02$, $p<.05$, $\eta^2 = 0.01$. There were no differences between the ESL disabled readers and L1 disabled readers on the WRAT3 reading subtest, $F(1, 29) = 0.60$, *ns*, $\eta^2 = 0.01$, Word Attack, $F(1, 29) = 0.001$, *ns*, $\eta^2 = 0.01$, Word Identification, $F(1, 29) = 0.81$, *ns*, $\eta^2 = 0.02$, and the Stanford Diagnostic Reading Comprehension Test, $F(1, 29) = 0.13$, *ns*, $\eta^2 = 0.01$.

By definition, L1 average readers scored significantly higher than the L1 reading disabled children on the WRAT3 reading subtest, $F(1, 713) = 226.97$, $p<0.001$, $\eta^2 = 0.24$,

and the ESL average readers scored significantly higher than the ESL disabled readers on WRAT3 reading subtest, $F(1, 126) = 57.45$, $p<.001$, $\eta^2 = 0.31$. The L1 and ESL average readers had significantly higher scores than the L1 and ESL disabled readers, respectively on the Word Attack, [L1, $F(1, 713) = 86.61$, $p<.001$, $\eta^2 = 0.11$; ESL, $F(1, 126) = 20.92$, $p<.001$, $\eta^2 = 0.14$], the Word Identification, [L1, $F(1, 713) = 135.10$, $p<.001$, $\eta^2 = 0.06$; ESL, $F(1, 126) = 36.49$, $p<.001$, $\eta^2 = 0.23$] and the Stanford Diagnostic Reading Comprehension Test, [L1, $F(1, 713) = 46.98$, $p<.001$, $\eta^2 = 0.06$; ESL, $F(1, 126) = 10.36$, $p<.01$, $\eta^2 = .08$]. On the One-Minute Word Reading Test, the L1 and ESL average readers read significantly more words than the L1 and ESL reading disabled groups, respectively, [L1, $F(1, 713) = 68.26$, $p<.001$, $\eta^2 = .09$; ESL, $F(1, 126) = 17.23$, $p<.001$, $\eta^2 = 0.12$], and read more pseudowords on the One-Minute Pseudoword Reading Test, [L1, $F(1, 713) = 155.54$, $p<.001$, $\eta^2 = 0.18$; ESL, $F(1, 126) = 24.52$, $p<.001$, $\eta^2 = 0.16$].

Insert Table 7 about here

Syntactic Awareness, Phonological Processing and Rapid Naming. Table 7 summarizes the results on grade 4 measures of syntactic awareness, phonological processing, and rapid naming. The ESL average readers performed significantly more poorly than the L1 average readers on Oral Cloze, $F(1, 810) = 6.60$, $p<.01$, $\eta^2 = 0.01$, whereas the ESL average readers' performance on the Rapid Naming task was significantly higher than the L1 average readers, $F(1, 810) = 4.17$, $p<.05$, $\eta^2 = 0.01$. There were no significant differences between ESL and L1 average readers performance on the Rosner Auditory Analysis Test, $F(1, 810) = 0.93$, *ns*, $\eta^2 = 0.01$ and there were no differences between the ESL and L1 disabled readers performance on Oral Cloze, $F(1, 29) = 0.89$, *ns*, $\eta^2 = 0.03$, Rosner Auditory Analysis Test, $F(1, 29) = 1.09$, *ns*, $\eta^2 = 0.04$, and Rapid Naming, $F(1, 29) = 1.80$, *ns*, $\eta^2 = 0.06$.

The pattern of results within the two language groups was similar. On Oral Cloze, the L1 and ESL average readers had significantly higher scores than the L1 and ESL disabled

readers, respectively on Oral Cloze, [L1, $F(1, 713) = 23.93$, $p<.001$, $\eta^2 = 0.03$; ESL, $F(1, 126) = 4.95$, $p<.05$, $\eta^2 = 0.04$], and Rosner Auditory Analysis Test, [L1, $F(1, 713) = 48.20$, $p<.001$, $\eta^2 = 0.06$; ESL, $F(1, 126) = 30.57$, $p<.001$, $\eta^2 = .20$]. The L1 average readers were significantly faster than the L1 disabled readers on rapid naming, $F(1, 713) = 40.42$, $p<.001$, $\eta^2 = .05$. In contrast, there was no difference between the ESL typical and disabled readers on rapid naming, $F(1, 126) = 1.46$, *ns*, $\eta^2 = 0.01$.

Insert Table 8 about here

Working Memory and Arithmetic. The performance of the reader and language groups on measures of working memory and arithmetic are shown in Table 8.

Working Memory. There were no differences between ESL and L1 disabled readers on the Working Memory for Numbers task, $F(1, 29) = 2.24$, *ns*, $\eta^2 = 0.07$, and the Working Memory for Words task, $F(1, 29) = 2.12$, *ns*, $\eta^2 = 0.07$. There was no significant difference between ESL and L1 average readers on the Working Memory for Numbers task, $F(1, 810) = 0.37$, *ns*, $\eta^2 = 0.01$, but the L1 average readers recalled significantly more words than the ESL average readers on the Working Memory for Words task, $F(1, 810) = 6.66$, $p<.01$, $\eta^2 = 0.01$.

The pattern of results was different for the two language groups on the working memory measures. Within the ESL children, similar to the results on RAN, there were no significant differences between the average and the disabled readers on the Working Memory for Numbers task, $F(1, 126) = 0.02$, *ns*, $\eta^2 = 0.01$, whereas on the Working Memory for Numbers task in the L1 sample, the L1 average readers performed significantly better than the L1 disabled readers, $F(1, 713) = 12.06$, $p<.001$, $\eta^2 = 0.02$. In contrast, both the ESL and the L1 typical readers remembered significantly more than the ESL and L1 disabled readers, respectively, on the Working Memory for Words task, [ESL, $F(1, 126) = 4.10$, $p<.05$, $\eta^2 = 0.03$; L1, $F(1, 713) = 8.02$, $p<.01$, $\eta^2 = 0.01$].

Arithmetic. The performance of the ESL average readers was significantly higher than the L1 average readers on the WRAT3 arithmetic subtest, $F(1, 810) = 21.94$, $p<.001$, $\eta^2 = 0.03$.

Within the disabled readers group, there were no differences between the ESL and L1 children on the WRAT3 arithmetic, $F(1, 29) = 0.19$, *ns*, $\eta^2 = 0.01$.

The pattern of results for the language groups was similar. The L1 and ESL average reader groups performed significantly better than the L1 and ESL disabled readers, respectively, [L1, $F(1, 713) = 35.68$, $p<.001$, $\eta^2 = 0.05$; ESL $F(1, 126) = 10.25$, $p<.01$, $\eta^2 = 0.08$.

Insert Table 9 about here

Spelling. Table 9 shows the performance of the reader and language groups on the spelling measures. The ESL average readers' performance was significantly higher than the L1 average readers' performance on the WRAT3 Spelling, $F(1, 810) = 11.12$, $p <.001$, $\eta^2 = 0.01$, and the L1 average readers performed significantly higher than the ESL average readers on Nonword Spelling, $F(1, 810) = 4.10$, $p<.05$, $\eta^2 = 0.01$. There were no differences between the ESL and L1 disabled readers on the WRAT3 Spelling, $F(1, 29) = 1.80$, *ns*, $\eta^2 = 0.06$ and Nonword Spelling, $F(1, 29) = 2.29$, *ns*, $\eta^2 = 0.07$.

The pattern of results for the language groups was similar. The L1 and ESL average readers performed significantly higher than the L1 and ESL disabled reader groups, respectively, on the WRAT3 Spelling, [L1, $F(1, 713) = 70.24$, $p<.001$, $\eta^2 = 0.09$; ESL, $F(1,126) = 12.50$, $p<.001$, $\eta^2 = 0.09$], and Nonword Spelling, [L1, $F(1, 713) = 23.75$, $p<.001$, $\eta^2 = 0.03$; ESL, $F(1, 126) = 13.71$, $p<.001$, $\eta^2 = 0.10$].

Summary. In grade 4, the performance of the ESL children was significantly better than the L1 children on Rapid Naming, WRAT3 Spelling, and WRAT3 arithmetic. On the Oral Cloze and Working Memory for Words, the performance of the ESL children was significantly lower than the performance of the L1 children. On all other tasks, there was no difference between the language groups. Within the ESL children, there was no significant difference between the disabled readers and the average readers on the Working Memory for Numbers and RAN tasks. On all other tasks, the ESL average readers performed significantly better than

the ESL disabled readers. For the L1 children, the average readers performed significantly better than the L1 disabled readers on all measures. Within the average reader population, the ESL average readers performed significantly better than the L1 average readers on WRAT3 reading and Word Identification, while the L1 average readers performed significantly better than the ESL average readers on pseudoword spelling.

Prediction of Word Reading and Reading Comprehension

Insert Tables 10 & 11 about here

In order to examine the contribution of kindergarten variables to performance on grade 4 word reading and grade 4 reading comprehension, fixed-order hierarchical regression analyses were conducted. Separate analyses were conducted for the L1 and ESL groups. All assumptions for hierarchical regression were met. For the word reading regression, grade 4 WRAT3 reading was the dependent variable. In each analysis (L1 and ESL), rhyme detection was entered as the first variable (Step 1) while letter identification was entered next (Step 2), and oral cloze was entered last (Step 3). Tables 10 and 11 provide a summary of the regression analyses results for word reading. For the L1 group, rhyme detection explained 5% of the variance. Letter identification explained just over 8% of additional variance. Oral cloze explained almost 3% of additional variance. For the ESL group, rhyme detection explained 2% of the variance, while letter identification and oral cloze did not account for any significant variance in performance on the WRAT3 word reading test.

Insert Tables 12 & 13 about here

For the nonword reading regression, grade 4 Woodcock Word Attack reading was the dependent variable. Two separate analyses were conducted for the L1 and ESL groups. All assumptions for hierarchical regression were met. In each analysis (L1 and ESL), rhyme detection was entered as the first variable (Step 1) while letter identification was entered next (Step 2), and oral cloze was entered last (Step 3). Tables 12 and 13 provide a

summary of the regression analyses results for nonword reading. For the L1 group, rhyme detection explained 3% of the variance. Letter identification explained just over 6% of additional variance. Oral cloze explained almost 2% of additional variance. For the ESL group, rhyme detection explained 5% of the variance, while letter identification explained an additional 4% of additional variance. Oral cloze did not account for any significant variance in performance on the Woodcock Word Attack reading test.

Insert Tables 14 & 15 about here

In order to examine the contribution of kindergarten variables to performance on grade 4 reading comprehension, grade 4 SDRT Reading Comprehension was entered as the dependent variable. Two separate analyses were conducted for the L1 and ESL groups. All assumptions for hierarchical regression were met. In each analysis, rhyme detection was entered as the first variable (Step 1), letter identification was entered next (Step 2), and oral cloze was entered in the final step (Step 3). Tables 14 and 15 provide a summary of the regression analyses. For the L1 group, rhyme detection explained just over 7% of the variance in grade 4 reading comprehension. Letter identification explained just over 9% of additional variance, and oral cloze explained just over 3% of additional variance. For the ESL group, rhyme detection explained just over 3% of the variance in reading comprehension performance. Letter identification explained just over 10% of additional variance. Oral cloze did not account for any additional variance in grade 4 ESL speakers' SDRT Reading Comprehension performance.

Kindergarten and Grade 4 Classification

Insert Figure 1 here

Figure 1 shows the results of the kindergarten and grade 4 assessments. As shown in Figure 1, 22.60% of the L1 children were identified as at-risk for reading failure in kindergarten, while 73.60% of the L1 children were identified as not at risk for reading failure, and 3.80% were classified as borderline. In kindergarten, 30.45% of the ESL

children were identified as at-risk for reading failure, while 50.76% of the ESL children were identified as not at-risk for reading failure, and 18.79% were classified as borderline. In grade 4, 3.57% of the L1 children were identified as reading disabled, while 94.65% of the L1 children were identified as normal readers, and 1.78% of L1 children were classified as borderline. Of the ESL children in grade 4, 3.79% were identified as reading disabled, while 93.18% were identified as normal readers, and 3.03% were classified as borderline.

Latent Growth Curve Analysis

Insert Figure 2 here

In order to examine the influence of native language (ESL or L1) and kindergarten phonological processing skill on the individual development of word reading development, latent growth curve analysis was employed. This technique allowed for the examination of the impact of native language status and kindergarten phonological processing on the initial status of word reading (grade 1), and on the development of word reading from grade 1 to grade 4 for individual children. Individual growth curves depict change as a continuous process underlying individual performance within a longitudinal dataset (Francis, Fletcher, Stuebing, Davidson, & Thompson, 1991). Within the individual growth curve model, the repeated measures data from each individual is used to estimate the trajectory of that individual over time. The initial status of individuals is a critical aspect of individual growth curve models and is used in estimating the individual growth parameters. The individual trajectories, or parameters of the growth curves, are then treated as a new outcome variable to be explained by external (latent) variables (e.g. language background, phonological processing).

The focus and interpretation of the latent growth analysis centers around the intercept and the slope. The intercept is strictly the initial status of the individual at the time of measurement – the value at the start of the process. The slope refers to how much that individual changes for each time interval after the initial measurement point. Predictors of

intercept and slope are incorporated into the model to try to explain the rate of change; in this case language background (ESL or L1) and kindergarten phonological processing (at-risk or not at-risk).

As shown in Figure 1, the model examined kindergarten phonological processing and language status on initial status in reading and on reading development at grades 1 through 4. The Root Mean Square Error of Approximation index indicates that the model is a good fit, RMSEA= 0.049; that is, there is a close fit between the hypothesized model and the data, as determined by how well the covariance matrix was reproduced. As shown in Figure 1, phonological processing in the presence of language status significantly predicted the intercept for reading ability, t= 3.01, but not slope, t= 0.04, while language status in the presence of phonological processing did not significantly predict initial status in reading, t=1.40, and did not have a significant relationship with reading development, t=-0.28. The error variance on the intercept term was 13.18 and the intercept accounted for 4% of the overall variance in the model.

Discussion

The main goal of the present study was to investigate the development of reading of children who enter kindergarten with little or no exposure to English. The study also sheds light on the appropriateness of a model of early identification and intervention for kindergarten children identified at-risk for reading failure for children from diverse linguistic backgrounds.

The findings of the present study demonstrate that the time course for ESL reading development is not predetermined by lack of language proficiency in English upon entering school. It is clear that kindergarten phonological awareness instruction, in the context of a balanced early literacy program, is as effective for ESL speakers as it is for L1 speakers in the early grades of school. Given the linguistic diversity of the ESL sample studied, the findings appear robust. The impact of the phonological awareness instruction is evident

when examining basic reading and spelling skills, as well as reading comprehension. In response to the literature that calls for further understanding of the methods that work best to give ESL children access to the academic opportunities that native English speakers have while they are learning English (e.g. August & Hakuta, 1997), it is clear that theoretically motivated and appropriate instruction is generally effective to help ESL children to acquire skills necessary for academic success. Furthermore, the results are consistent with the findings of Geva (1999) that provide evidence for the appropriateness of assessing phonological abilities in English with children whose home language is not English.

The growth curve model provides evidence that language status in kindergarten does not have a significant effect on initial status of grade 1 reading, nor on the underlying growth patterns of reading. The lack of relationship between language status in kindergarten and initial reading status in grade 1, as well as subsequent reading development across grades 1 through 4, provides support for the phonological processing model of reading acquisition. Although an ESL speaker may be at greater risk in kindergarten, subsequent reading development was not negatively affected by ESL status.

Consistent with previous research (e.g. Share, Jorm, Maclean & Matthews, 1984), phonological processing skills in kindergarten had an impact on the initial status of reading ability in grade 1. Given that it has been established that kindergarten phonological skills are a powerful predictor of future reading acquisition, this finding was expected. However, the finding of most interest is that risk status for phonological processing skills in kindergarten did not have a significant relationship with the growth in reading ability from grade 1 through to grade 4. This finding is one that would be unexpected given what is known about the persistence of phonological difficulties (e.g. Fletcher et al., 1994; Bruck, 1990, 1992; Shafrir & Siegel, 1994; Wilson & Lesaux, 2001). The findings of the present study likely reflect the model of kindergarten identification and intervention for children at-risk for reading failure that the school district implemented in the kindergarten year for this cohort of children. The

majority of the children in grade 4, including ESL speakers, had strong skills in reading and related abilities.

Although the ESL speaking children had difficulties in kindergarten, by grade 4 they had in most cases caught up, and in some cases surpassed the performance of the native English speakers on various tasks. In kindergarten, the ESL speaking children performed more poorly than the L1 children on the tasks of rhyme detection, pseudoword repetition, memory for sentences, syntactic awareness, and rapid naming. These tasks require children to manipulate and remember English, and proved difficult for all ESL speaking children as compared to their native English speaking peers. There were no significant differences between the ESL at-risk and ESL not at-risk children on the tasks of sentence memory and pseudoword repetition. Performance on the memory for sentences task is one that is confounded by vocabulary knowledge and syntactic awareness, and pseudoword repetition is a task that involves phonological processing skills. Globally, these tasks relate to children's language skills. The ESL children entered school with difficulties in English as evidenced by their poorer performance on the oral cloze task as compared to their native English-speaking peers. These findings are consistent with previous research that outlines that many language minority children enter schools at-risk for oral language difficulties as well as phonological and print-related difficulties (Foorman & Torgesen, 2001). In grade 4, the ESL children's performance on the oral cloze and working memory for verbal information tasks remained inferior to the L1 children. Thus, while the ESL children's academic achievement, was very similar, and in some cases better than the L1 children, the tasks that demanded syntactic awareness and the manipulation of and memory for verbal information, proved more difficult for the ESL children. The absence of difficulty with word recognition tasks despite lower scores in syntactic awareness is consistent with previous research in the area of second language reading acquisition (e.g. Chiappe & Siegel, 1999; Da Fontoura & Siegel, 1995). Although the ESL children had native English speaking peers and teachers

as oral language models from kindergarten through to grade 4, this exposure was not sufficient to develop their syntactic skills to the same extent as their L1 peers.

However, by grade 4 the ESL children had acquired the sound-symbol relationships of the English language to the extent that their academic achievement and cognitive skills were equivalent to, and in the case of arithmetic, speeded naming, and spelling, better than their L1 peers. Previous research on ESL speaking children has also demonstrated the ability of ESL speakers to perform at the same levels as their L1 peers on tasks of reading and spelling (Geva, Yaghoub-Zadeh & Schuster, 2000). The frequency with which ESL children were classified as reading disabled in grade 4 was virtually the same as the L1 children. The results of the present study speak to the universality of reading problems and the persistent nature of phonological difficulties, and suggest that the findings around monolingual speakers' reading development may be extended to the L2 children. It is of note that on those tasks where the ESL speakers performed significantly better than the L1 speakers, two of the tasks are not language-based, but are number based. The third task, spelling, is another task that is one that, for the most part, requires rote memorization of spelling of words in isolation. It is interesting to consider whether these skills are easier for the ESL speakers because, since the early grades they had more facility with these tasks, possibly because verbal skills are not required to the same degree as with other tasks. Another possible explanation for the RAN and arithmetic findings is that there are cultural differences in emphasis on numbers and counting. The ESL average readers performed significantly better than their L1 peers on word reading measures.

Although one might argue that a measure of non-verbal cognitive measure may further explain differences between the ESL and L1 speakers, the use of a cognitive measure for the assessment of reading, and specifically with ESL speakers is problematic, and the utility questionable. There is no evidence that the IQ-achievement criterion provides a differential prediction of response to intervention or educational outcomes (Torgesen et al.,

1999; Vellutino, Scanlon & Lyon, 2000). This supports a model of early identification and intervention for all children identified as at-risk for reading difficulties, before reading failure has occurred. Further, in light of the significant number of ESL speaking-children in this study, the appropriateness of a cognitive measure, albeit non-verbal, remains questionable. Muter & Diethelm (2001) found that L1 and L2 kindergarten children differed with respect to their performance on the Ravens Matrices test; the L1 children performed at higher levels than the L2 speakers. However, the differences between the two groups disappeared when vocabulary scores were controlled for. Such findings suggest that non-verbal measures cognitive ability, such as matrices-type measures, may be assessing verbal (including vocabulary) and non-verbal abilities, and thus do not necessarily provide reliable assessments of ESL speakers' cognitive ability.

The present findings are relevant to the body of research that has examined the metalinguistic awareness skills of bilingual children. The ESL speakers had a higher incidence of risk status in kindergarten, presumably because of their lack of experience with the language and also with North American literacy activities. However, as ESL-speaking children acquired English, their metalinguistic awareness was heightened, and this may account for their elevated performance on reading tasks as compared to L1 speakers. These findings are consistent with the findings of previous research on the positive effects of bilingualism (e.g. Baker, 1998; Bialystok, 1997; Bialystok & Hakuta, 1994; Bialystok & Ryan, 1985; Campbell & Sais 1995). This in turn supports previous research that has found that even if a young child is still developing phonological awareness skills in their native language, their skills from their first language help reading acquisition in a second language, and that these phonological awareness skills can be a stronger predictor of reading ability than oral proficiency in the native or second language of the child (e.g. Cisero & Royer, 1995; Durgunoglu, Nagy & Hancin-Bhatt, 1993). The results of the regression analyses and

individual growth curve analysis for the present study are consistent with these previous findings.

The results of the hierarchical regression analyses support the usefulness of examining phonological skills in kindergarten of children who are ESL speakers, and shed further light on the role of syntactic awareness and language ability in reading. These results suggest that the research that identified kindergarten phonological awareness as one of the single best predictors of reading development in native English speakers (e.g. Share, Jorm & Matthews, 1984) may be extended to ESL speakers. For L1 children, kindergarten rhyme detection, letter identification, and syntactic awareness tasks each predicted variance in performance on grade 4 reading, while for the ESL children, rhyme detection predicted variance in reading performance, and oral cloze and letter identification did not. A similar pattern was evident for nonword reading, except that letter identification, along with rhyme detection, accounted for additional variance in nonword reading. These results suggest that for ESL children, phonological awareness skills in kindergarten had an effect on later reading ability, but oral cloze was not a reliable predictor of word and nonword reading skills; this is consistent with previous findings (e.g. Muter et al, 2001; Geva & Siegel, 2000). Also consistent with the findings of previous research, this study demonstrates that phonological awareness is not a language specific mechanism but a general one, given that phonological awareness predicted English word reading for L2 children.

With regards to reading comprehension, the results of the L1 and ESL groups were slightly different. For the L1 speakers, letter identification accounted for the most variance in reading comprehension, followed by rhyme detection, and then oral cloze. For the ESL group, rhyme detection explained the most variance in reading comprehension, followed by letter identification. As with word reading, oral cloze was not a significant predictor of grade 4 reading comprehension for ESL speakers. These results suggest that for L1 speakers, kindergarten measures of letter identification, phonological processing, and syntactic

awareness in combination prove significant in predicting word reading and reading comprehension performance in grade 4. However, for the ESL group, phonological processing explained the most variance in word reading and reading comprehension in grade 4. As a result of the impact of the intervention and kindergarten literacy program, the kindergarten variables did not show the high level of prediction found in other studies; the intervention appeared to modify the predictive nature of the variables because it provided remediation for the difficulties experienced by the children.

In the area of reading comprehension, the ESL children performed at comparable levels to the L1 average readers. This finding is inconsistent with previous findings in second language reading acquisition. Verhoeven (1990) found that even after 20 months of literacy instruction, the performance of the bilingual Turkish-Dutch children, although comparable in word recognition, was inferior in the area of reading comprehension. Verhoeven (1990) attributed the lower performance to syntactic ability and oral proficiency. Research with Turkish-Dutch children has converged to indicate that Turkish-Dutch children often lag behind their monolingual Dutch-speaking peers (Aarts & Verheoven, 1999). One of the differences between the groups is that the Turkish children often come from low socioeconomic backgrounds, and related variables such as home stimulation, parents' motivation, and the children's self-esteem have been linked to lower levels of literacy attainment in this group of language minority children (Aarts & Verhoeven, 1999). For the children in the present study, the similar performance of ESL and L1 speakers on a measure of reading comprehension may be due to the phonological awareness intervention and/or the lack of differences in socioeconomic status between the two language groups. One additional hypothesis to consider, although not tested directly in this study, is the power of reading to promote vocabulary development in the ESL speakers. Like phonological awareness, a reciprocal relationship between vocabulary development and reading has been suggested for L1 speakers (e.g. Stanovich, 1986).

Previous research has identified that individual vocabulary knowledge is a significant determinant of differences in reading comprehension ability. Furthermore, there is evidence that the majority of vocabulary growth does not occur by direct instruction, but rather that reading is a critical skill for vocabulary development. There are specific applications of L1 vocabulary research that may be made to the present ESL findings. Nagy & Anderson (1984) provided evidence for the importance of learning word meanings from encountering words in different contexts during free reading. Stanovich (1986) argued that the relationship between reading and vocabulary growth is bi-directional. Although the hypothesis was not tested directly, if this argument and logic is applied in the present study and had been tested directly, it may be the case that for the typical ESL readers, reading was a major mechanism leading to vocabulary growth. In turn, this may have facilitated reading comprehension for the ESL typical readers and thus their reading comprehension ability did not differ significantly from the comprehension ability of their L1 peers. The commitment of the district to effective reading instruction may in fact provided considerable language experience that indirectly allowed the majority of the ESL speakers the same academic opportunities as their L1 peers. More research needs to be conducted to examine this hypothesis.

Although a subgroup of ESL speaking children did experience difficulty with reading acquisition in English, their performance profile is very similar to the L1 children with a reading disability. Low scores on all measures of phonological processing, as well as syntax and working memory characterized reading disability in both the L1 children and ESL children. The similar difficulties experienced by the disabled readers across both language groups is consistent with previous research that demonstrates the role that phonological processing, syntactical awareness and working memory play in the development of reading skills in English (for a review see Siegel, 1993), and provides further evidence that these cognitive processes are also very important for children who are ESL speakers (e.g. Fitzgerald, 1995; Chiappe & Siegel, 1999; da Fontoura & Siegel, 1995). From a linguistic

perspective children with literacy difficulties learning to read in a non transparent orthography develop phoneme representations even more slowly than their counterparts who are learning to read and spell transparent orthographies (Goswami, 1999). The persistent difficulty with phonological processing and reading tasks experienced by the poor readers speaks to the reciprocal nature of the relationship between phonological awareness and reading ability; for typical readers the initial understanding of the spelling-sound correspondence drives further phonological processing development, and thus reading experience aids phonological awareness (e.g. Perfetti, 1985). For poor readers, their difficulties with reading and phonological processing deficits are closely related.

It is evident that the development of reading skills in children who speak English as a second language is very similar to the development of reading skills in native English speakers. The successful acquisition of the sound-symbol relationship in English for early reading is dependent on such factors as instruction and individual differences as opposed to proficiency in English. Difficulties in acquiring the sound-symbol relationship for fluent, automatic decoding arise in approximately 20% of children (Lyon, 1995). Within the sample in this study, it is important to note that approximately 4% of the children continue to experience reading failure. These results are consistent with previous research with native English speakers demonstrating that well-balanced and skilled instruction in the classroom has the potential to drastically decrease the number of children experiencing reading failure in grades 1 and 2 who need individualized intervention (Foorman, Francis, Fletcher, Schatschneider, & Mehta, 1998). The results from the present study indicate that such a finding may extend to speakers from diverse linguistic backgrounds that are immersed in English reading instruction. The present findings speak to the powerful nature of effective early instruction to promote reading acquisition for children from diverse linguistic backgrounds.

There is a higher incidence of school dropout in high school students from ESL backgrounds as compared to native English-speaking students (Gunderson, 1998). As demonstrated by the larger percentage of ESL speaking children identified as at-risk in kindergarten, and their poor performance on tasks as compared to L1 children, entering kindergarten with instruction in a language in which the children were not yet proficient was an additional risk factor. However, their response to appropriate instruction was virtually the same as their L1 peers.

Findings from correlational, longitudinal and training studies examining phonological processes, reading ability, and reading-related skills of ESL speakers receiving instruction in English are beginning to accumulate. The findings from these studies resemble those of studies with monolingual children. The results of the present study, especially the results of the ESL speakers on the measure of reading comprehension, suggest that effective reading instruction may also aid in developing skills related to word reading. From a pedagogical perspective, it is important to identify children who may be struggling with basic literacy because of phonological difficulties. Once identified as having early reading difficulty, it is necessary that those children receive early intervention that includes, but is not limited to, explicit phonological awareness instruction. Finally, it is evident that bilingualism is not an impediment to the acquisition of literacy skills in a second language, and may even facilitate reading acquisition.

Limitations

There are some limitations to consider in the present study. Given the large scope of the study, the majority of the data collected was quantitative, based on standardized and experimental tests. There is not as much descriptive information on the children in the study, however, qualitative information about the ESL speakers' native language and L2 use at home may have been useful as a contextual piece for the examination of the reading growth across the 5 years of study. Additional qualitative information to gather might have included

the amount of tutoring in L1 or L2 that ESL children receive outside the home and school, as well as number of extra-curricular activities the ESL children participate in, and whether they are in L1 or L2.

The other limitation to consider from a measurement perspective is the one-minute word and pseudoword tasks as an indicator of reading fluency. Because the alternate forms of the WRAT-3 reading test and the WJ Word Attack were used, these are measures of word and nonword reading of increasing difficulty, designed also for use with adults. As such, many children may have been able to read more words of their level in one-minute but in fact reached a point where they could no longer read the words because they were too difficult, and thus finished under the one-minute mark. While the one-minute word and pseudoword reading tests were suitable for making comparisons within the sample, and useful as a proxy for fluency, the results do not necessarily contribute to the specific body of research on reading fluency.

Future Research

Given the positive findings of the study and the large amount of data collected, there are many questions that arise and possibilities for future work. In the area of examining more precisely the effectiveness of the model of early identification and intervention, there is opportunity to gather implementation data and more extensive data about the model, and the subsequent curriculum. This implementation data would provide an opportunity to examine the effects of particular characteristics of the program, and would provide specific information about individual differences in response to the program.

From a methodological standpoint, the size of the dataset including multiple waves provides considerable opportunity for further modeling with the data. A hierarchical nested design would be suitable and could examine growth at the individual, classroom, and school levels, and thus to make statements about growth and impact of instruction at these levels.

Further to the point about qualitative description of the ESL sample, there is an opportunity to examine the impact of an older sibling on the academic achievement of the children. Within the dataset, the number and age of siblings has been documented. It would be interesting to explore the hypothesis that ESL speaking-children with older siblings experienced faster growth and development than those children without older siblings. This hypothesis is based on the fact that a child who has an older sibling also attending school, is likely to speak English at home with their sibling, as a novelty as well as to continue to improve in the language that the majority of their peers are speaking on a daily basis.

Finally, the findings of the present study focus on the results of the ESL children as a group. However, to further inform the research on characteristics of native language and reading development in L1, there is the opportunity to disaggregate the ESL sample based on the orthographic characteristics of native language. Once disaggregated, examining the performance of the groups on the various tasks, oral cloze in particular, to determine whether the orthography and structure of the native language has an impact on L1 performance may provide further insight into the development of reading for L2 speakers.

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Table 1. Overall Results by Language Group in Kindergarten

Kindergarten	English (n=1041)	ESL (n=197)
WRAT3 percentile	55.33 28.59	51.45 33.41
Letter Identification (max. 26)	15.51 7.51	14.54 9.20
GFW Sound Mimicry percentile	80.90 21.35	75.80* 26.67
Rhyme Detection (max. 8)	6.95 3.07	5.19** 3.24
Oral Cloze (max. 11)	2.39 2.73	1.30** 2.21
Memory for Sentences	16.82 3.73	14.08** 4.18
Rapid Naming (sec.)	68.39 22.37	79.87** 29.86
Syllable Identification (max. 8)	4.73 4.66	4.42 2.50
Phoneme Identification (max. 8)	2.82 2.95	2.75 2.15
Phoneme Deletion (max. 16)	3.56 4.39	2.95 4.49
Simple Spelling (max. 6)	2.62 1.79	2.14* 1.82

*p<.01, **p<.001

WRAT3 = Wide Range Achievement Test (3rd Ed.)

GFW = Goldman Fristoe Woodcock

Table 2. Grade 4 Performance of ESL and L1 Children

Grade 4	English (n=728)	ESL (n=132)
WRAT3 Reading percentile	71.49 22.20	74.47 21.57
Woodcock Word Identification percentile	74.61 2.98	77.57 20.12
Woodcock Word Attack percentile	72.02 26.38	74.01 26.59
Stanford Reading Comprehension percentile	52.70 23.56	49.38 22.81
One Minute Word Reading (max.42)	21.16 5.12	21.80 4.64
One Minute Nonword Reading (max.45)	30.91 7.25	31.40 7.42
Oral Cloze (max. 11)	8.60 1.39	8.20** 1.71
Rosner AAT (max. 40)	31.31 6.66	31.77 5.93
Rapid Naming (sec.)	10.25 2.45	9.75** 2.01
Working Memory for Numbers (max.12)	8.50 2.20	8.45 2.18
Working Memory for Words (max.12)	5.05 1.96	4.55* 1.98
Nonword Spelling (max.15)	9.86 2.73	9.20* 2.78
WRAT3 Arithmetic percentile	52.92 25.03	63.17*** 24.67
WRAT3 Spelling percentile	65.84 24.96	73.18** 24.77

*p<.05, **p<.01, ***p<.001

WRAT3 = Wide Range Achievement Test (3rd Ed.)

Table 3. Kindergarten Mean Scores on Measures of Early Literacy.

Kindergarten	Not at-risk		At-risk	
	L1 (n=766)	ESL (n=100)	L1 (n=236)	ESL (n=60)
WRAT3 reading percentile				
M	68.18	72.28	12.85	10.50
SD	18.02	18.58	7.19	7.25
Letter Identification (max. 26)				
M	18.34	19.99	6.25	4.67
SD	5.67	5.88	4.70	4.75
Spelling (max. 6)				
M	3.05	2.72	1.18	.96
SD	1.81	1.87	.98	.87

WRAT3= Wide Range Achievement Test (3rd Ed.)

Table 4. Kindergarten Mean Scores on Measures of Phonological Processing

Kindergarten	Not at-risk		At-risk	
	L1 (n=766)	ESL (n=100)	L1 (n=236)	ESL (n=60)
GFW Sound Mimicry percentile				
M	82.51	76.01	73.64	69.28
SD	19.49	25.56	25.33	28.80
Rhyme Detection (max. 10)				
M	7.24	5.64	5.71	4.03
SD	2.91	3.23	3.37	3.05
Syllable Identification (max.8)				
M	5.03	4.72	3.53	3.07
SD	2.38	2.19	2.81	2.67
Phoneme Identification (max.8)				
M	3.23	3.51	1.44	1.42
SD	3.01	2.99	2.33	1.99
Phoneme Deletion (max. 16)				
M	3.93	3.48	2.04	1.56
SD	4.74	4.89	3.25	2.95

GFW=Goldman Fristoe Woodcock

Table 5. Kindergarten Mean Scores on Measures of Syntactic Awareness, Memory and Rapid Naming.

Kindergarten	Not at-risk		At-risk	
	L1 (n=766)	ESL (n=100)	L1 (n=236)	ESL (n=60)
Oral Cloze (max.11)				
M	2.63	1.68	1.55	.56
SD	2.84	2.55	2.12	1.25
Memory for Sentences (max. 37)				
M	17.26	14.21	15.36	13.53
SD	3.70	4.12	3.47	4.41
Rapid Naming (sec.)*				
M	66.46	73.86	76.73	91.13
SD	2.87	26.55	24.72	33.32

*scale is reversed whereby longer time indicates slower naming.

Table 6. Grade 4 Mean Scores on Measures of Reading.

Grade 4	Average Readers		Reading Disabled	
	L1 (n=689)	ESL (n=123)	L1 (n=26)	ESL (n=5)
WRAT3 reading percentile				
M	74.01	78.18	16.81	19.20
SD	19.31	17.30	6.36	6.10
Woodcock Word Identification percentile				
M	76.69	80.72	28.19	34.00
SD	21.12	16.99	12.70	15.94
Woodcock Word Attack percentile				
M	73.99	76.98	29.38	29.20
SD	24.24	23.21	15.85	8.87
SDRT Comprehension percentile				
M	54.12	51.17	22.88	19.20
SD	22.84	22.04	21.95	11.01
One-minute word reading* (max.42)				
M	21.51	22.31	13.50	14.20
SD	4.92	4.32	2.34	3.11
One-minute pseudoword reading* (max.45)				
M	31.57	32.22	15.23	17.00
SD	6.59	6.74	5.66	6.67

* = number correct

WRAT3 = Wide Range Achievement Test (3rd Ed.)

SDRT = Stanford Diagnostic Reading Test

Table 7. Grade 4 Mean Scores on Measures of Syntactic Awareness, Phonological Processing and Rapid Naming.

Grade 4	Average Readers		Reading Disabled	
	L1 (n=689)	ESL (n=123)	L1 (n=26)	ESL (n=5)
Oral Cloze* (max.11)				
M	8.65	8.29	7.31	6.60
SD	1.37	1.68	1.57	1.34
Rosner Auditory Analysis (max.30)				
M	31.67	32.25	22.73	18.60
SD	6.36	5.36	8.31	6.80
Rapid Naming (sec.)*				
M	10.14	9.68	13.17	10.80
SD	2.32	2.04	3.86	1.48

*=scale is reversed whereby longer time indicates slower naming.

Table 8. Grade 4 Mean Scores on Measures of Working Memory and Arithmetic

Grade 4	Average Readers		Reading Disabled	
	L1 (n=689)	ESL (n=123)	L1 (n=26)	ESL (n=5)
Working Memory Words* (max.12)				
M	5.11	4.61	4.00	2.80
SD	1.96	1.97	1.70	1.64
Working Memory Numbers* (max.12)				
M	8.58	8.45	7.08	8.40
SD	2.17	2.20	1.85	1.52
WRAT3 Arithmetic percentile				
M	54.08	64.66	26.58	31.20
SD	23.18	22.46	19.24	33.74

WRAT3= Wide Range Test of Achievement (3rd Ed.)

Table 9. Grade 4 Mean Scores on Measures of Spelling

Grade 4	Average Readers		Reading Disabled	
	L1 (n=689)	ESL (n=123)	L1 (n=26)	ESL (n=5)
WRAT3 Spelling percentile				
M	67.60	75.47	27.35	38.40
SD	24.27	23.11	16.52	18.81
Nonword Spelling* (max.10)				
M	9.97	9.44	7.35	5.00
SD	2.69	2.53	2.86	4.69

WRAT3= Wide Range Test of Achievement (3rd Ed.)

Table 10. Fixed Order Hierarchical Regression Analysis Predicting L1 Children's WRAT-3 Reading Performance in Grade 4.

Kindergarten	R^2	R^2
Step 1		
Rhyme Detection	.050	.050*
Step 2		
Letter Identification	.131	.081*
Step 3		
Oral Cloze	.161	.029*

*p<.001

Table 11. Fixed-Order Hierarchical Regression Analysis Predicting ESL Children's WRAT-3 Reading Performance in Grade 4.

Kindergarten	R^2	R^2
Step 1		
Rhyme Detection	.024	.024*
Step 2		
Letter Identification	.045	.021
Step 3		
Oral Cloze	.051	.006

*p<.05

Table 12. Fixed-Order Hierarchical Regression Analysis Predicting L1 Children's Woodcock Word Attack Performance in Grade 4.

Kindergarten	R^2	R^2
Step 1		
Rhyme Detection	.032	.032*
Step 2		
Letter Identification	.100	.068*
Step 3		
Oral Cloze	.119	.019*

*p<.001

Table 13. Fixed-Order Hierarchical Regression Analysis Predicting ESL Children's Woodcock Word Attack Performance in Grade 4.

Kindergarten	R^2	R^2
Step 1		
Rhyme Detection	.055	.055**
Step 2		
Letter Identification	.094	.040*
Step 3		
Oral Cloze	.116	.022

*p<.05 **p<.01

Table 14. Fixed-Order Hierarchical Regression Analysis Predicting L1 Children's Reading Comprehension Performance in Grade 4.

Kindergarten	R^2	R^2
Step 1		
Rhyme Detection	.075	.075*
Step 2		
Letter Identification	.174	.099*
Step 3		
Oral Cloze	.205	.031*

*p<.001

Table 15. Fixed Order Hierarchical Regression Analysis Predicting ESL Children's SDRT Reading Comprehension Performance in Grade 4.

Kindergarten	R^2	R^2
Step 1		
Rhyme Detection	.037	.037*
Step 2		
Letter Identification	.140	.103**
Step 3		
Oral Cloze	.146	.006

*p<.05, **p<.001

Figure 1. Frequency of reader type classification by language group - kindergarten and grade 4

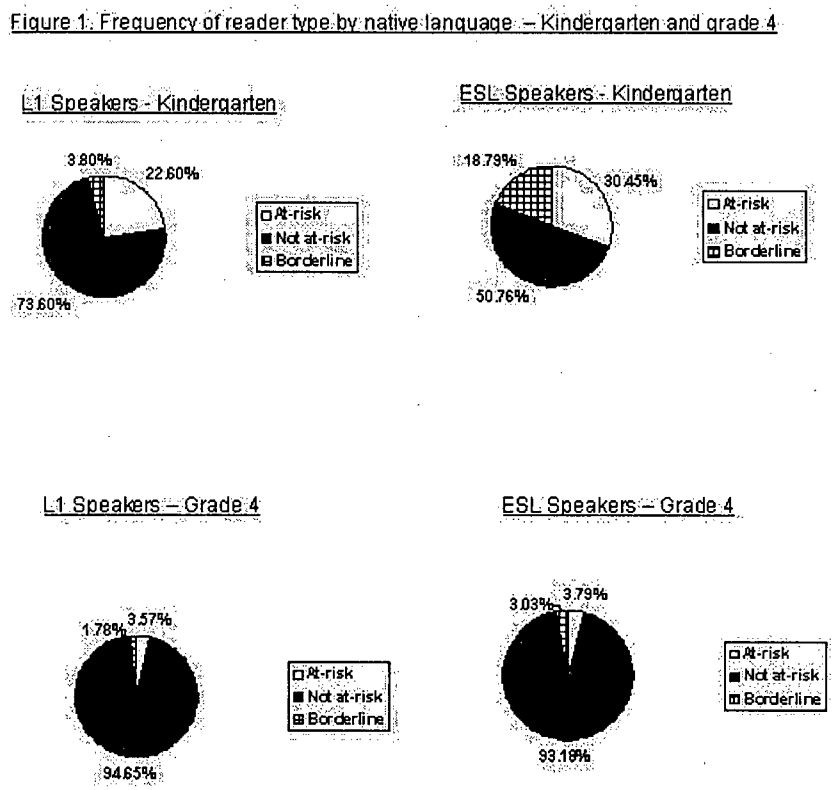
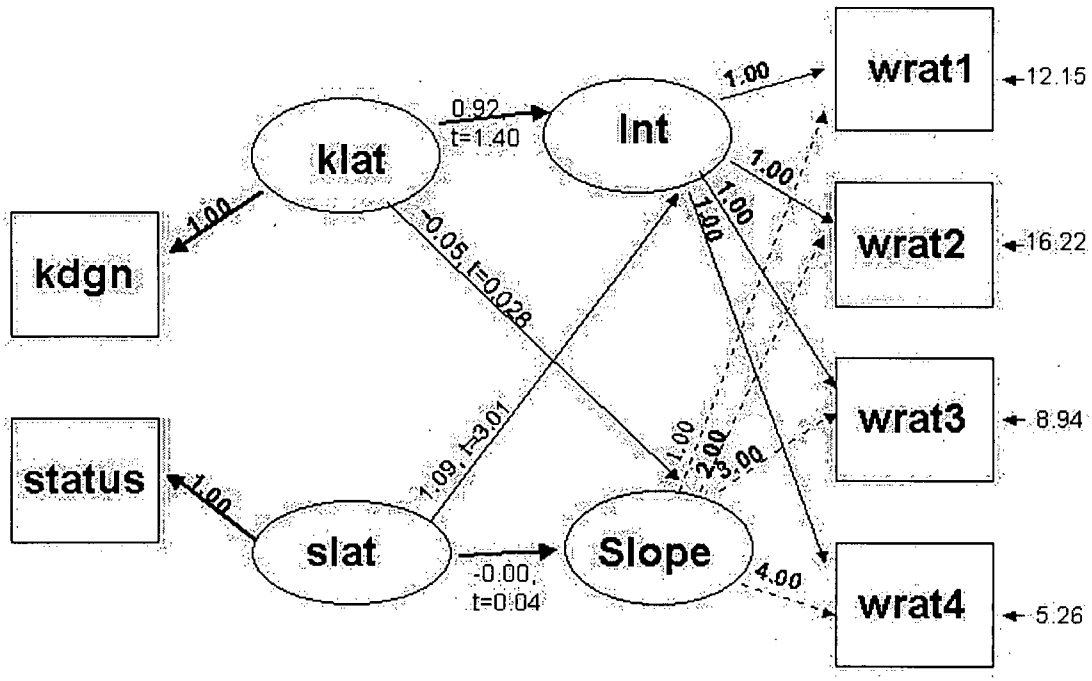


Figure 2. Kindergarten Phonological Processing and Language Status on Reading Development from Grades 1 through 4.



Chi-Square=20.27, df=8, P-value= 0.00937, RMSEA=0.049

APPENDIX A: KINDERGARTEN NON-STANDARDIZED TASKS

Letter Identification

Instructions

Examiner: I am going to show you letters one at a time. Tell me the name of each letter.

_____j
_____g
_____l
_____z
_____s
_____a
_____e
_____u
_____d
_____w
_____t
_____f
_____n
_____o
_____c
_____m
_____x
_____v
_____h
_____r
_____b
_____q
_____y
_____l
_____k
_____p

Score _____/26

j	g	l	z
s	a	e	u
d	w	t	f
n	o	c	m
x	v	h	r
b	q	y	i
k	p		

Rhyme Detection

Instructions

Examiner:

"Here is a picture of a cat. Down here are three more pictures..." (the examiner points to and names each of the 3 choice pictures). Now which of these three - fish, sun or hat rhymes with cat?" Provide the correct answer (hat) if necessary and explain that hat rhymes with cat because they end with the same sound (at).

Continue as above with the other 2 demonstration items, giving explanations when necessary. The instructions fro the 10 items are the same as for the demonstration items. Do not give feedback on the test items.

If the child fails the demonstration items and the first 5 test items, you may discontinue the test.

Demonstration Items

Stimulus Word	Response Items		
1. cat	fish	sun	hat
2. ball	wall	bell	bag
3. spoon	cup	moon	ship

Test Items

Stimulus Word	Response Items		
1. boat	foot	bike	coat
2. key	cow	tree	door
3. chair	car	table	bear
4. house	mouse	horse	window
5. head	hand	bed	eye
6. bell	bottle	dress	shell
7. sock	clown	clock	shoe
8. train	rain	tractor	spoon
9. egg	bag	spoon	leg
10. car	star	bike	cake

Syllable and Phoneme Identification

Instructions for Syllable Identification (Word completion)

Examiner: "Here is a picture of a rabbit. I'm going to say the first part of the word. Can you finish it off for me? Here is a ra..." (The child should respond 'bit.' If the child fails to give the correct answer, say "IF I say ra, you finish the word by saying bit. Let's try it again with rabbit. Ra...." Supply the bit again if necessary.)

Repeat as above for the second example, bottle. A full explanation and feedback are given for the two demonstration items.

Present the test items 1 to 8 with the instructions, "This is a table. Ta...." Do not give feedback for the test items.

If the child fails the demonstration items and the first four test items, the task may be discontinued.

Demonstration Items

____ Ra-bbit
____ Bo-ttle

Test Items

1. ____ Ta-ble
2. ____ Pic-ture
3. ____ Cabb-age
4. ____ Mon-ey
5. ____ O-range
6. ____ Sand-wich
7. ____ Mon-ster
8. ____ Lem-on

score: _____/8

Instructions for Phoneme Identification

Examiner: "Now we are going to do something that is a bit more difficult. Here is a picture of a watch. I'll say the first part - you finish it off. Here is a watch. Wa..." Provide corrective feedback if necessary. Repeat for the demonstration item, cat.

Proceed with items 1-8 using the instructions "This is a horse. Hor..." Do not provide feedback for test items.

If the child fails the demonstration items and the first four test items, the task may be discontinued.

Demonstration Items:

____ Wa-tch
____ Ca-t

Test Items:

1. ____ Hor-se
2. ____ Fi-sh
3. ____ Kni-fe
4. ____ Shi-p
5. ____ Bo-ne
6. ____ Car-d
7. ____ Ga-te
8. ____ Do-g

score: _____/8

Phoneme Deletion

Instructions for Initial Phoneme Deletion:

Examiner: "Here is a picture of a bus. If I say the word /bus/ without the /b/, we'll be left with /us/. Bus without /b/ says us. Let's try some more. Give all 4 demonstration items, and explain fully, as for "bus."

Administer items 1 to 8 with the instruction, "Meat without /m/ says...." Do not give feedback for the test items.

If the child fails the demonstration items and the first 4 test items, you may discontinue the task.

Demonstration Items

____ bus ____ sad ____ pie ____ cow

Test Items

1. ____ seat
2. ____ bear
3. ____ hat
4. ____ sit
5. ____ jam
6. ____ tin
7. ____ cake
8. ____ cup

score ____/8

Instructions for Final Phoneme Deletion

Examiner: "Now this time, instead of taking off the first sound of words, let's try and take off the last sound. This will make things that are not real words. Here's a picture of a foot. Can you hear the last sound in foot? The last sound in foot is /t/. Now can you say foot without /t/? Foot without /t/ is foo."

Give all 4 demonstration items, and explain fully as for foot.

Administer items 1 to 8 with the instruction, "Meat without /t/ says...." Do not give feedback for the test items.

If the child fails the demonstration items and the first 4 test items, you may discontinue the task.

Demonstration Items

____ foot ____ bag ____ bell ____ spoon

Test Items

1. ____ seat
2. ____ sad
3. ____ hat
4. ____ bus
5. ____ jam
6. ____ tin
7. ____ cake
8. ____ cup

score _____/8

Total score _____/16

Picture Naming (Rapid Automatized Naming)

Show the child the 8 X 5 table of pictures and say:

> "I want you to look at these pictures and tell me what they are. Let's look at the first row. I'll point to each picture, and then you can tell me what it's a picture of. Let's start."

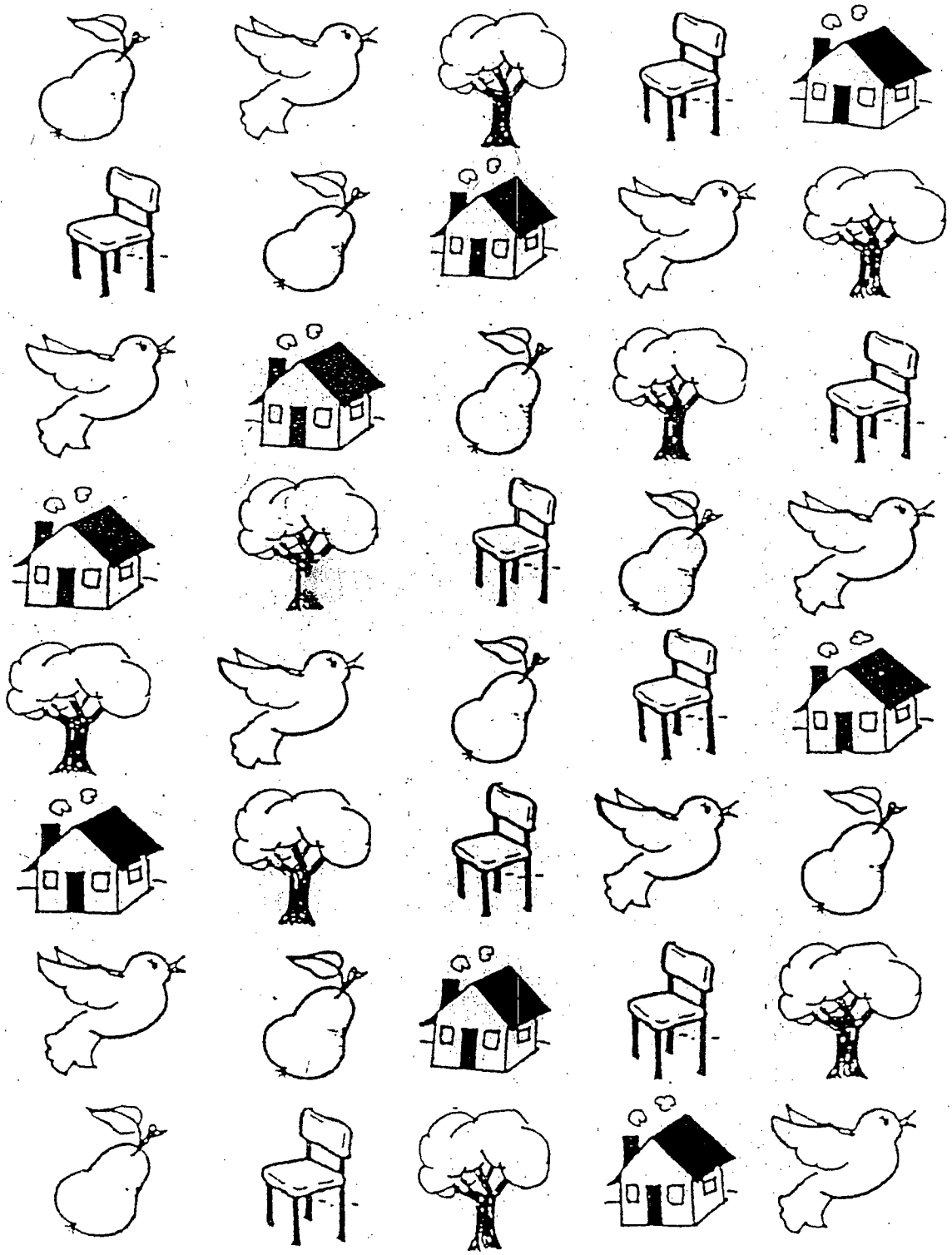
Point (from left to right) to the pear, the bird, the tree, the chair, and the house. Once the child can successfully name each picture, say:

> "Now let's see how fast you can tell me the names of all these pictures. I want you to go from here (point to the top left picture) to here (point to the top right picture), and then go to the next row and go from here (left) to here (right). Start when I say go. Ready? Set. Go!"

Record how long it takes the child to name all the pictures from the time you say "Go," and the number of uncorrected errors. Both the time (in seconds) and the number of uncorrected errors should be recorded on the coversheet.

If children consistently misname one of the pictures (such as calling the pear an apple) despite instructions to the contrary during practice, let them continue. However, make a note of it on the coversheet.

RAPID AUTOMATIZED NAMING (RAN) - Stimulus Sheet



Oral Cloze

Instructions: I will read something to you and there will be one word missing. Where the word is missing, I will say "beep." I want you to think of a word that would sound right in the "beep."

For example, I might say, "The moon shines bright in the "beep." (pause and repeat) and I want you to say "sky" , etc. O.K. Let's try another one. I'll say, "The children "beep" with the toys." (pause and repeat). What is the missing word? If the child fails to respond, say, "How about play?" Then it would be "The children play with the toys." Let's try another one. "The puppy wags its "beep". (pause and repeat). Good! Let's try some more.

Discontinue if the child fails the practice items and the first three task items.

1. The _____ little pigs ate corn.
2. Fred put the big turkey _____ the oven.
3. The _____ put his dairy cows in the barn.
4. Jane _____ her sister ran up the hill.
5. It was a sunny day with a pretty _____ sky.
6. Betty _____ a hole with her shovel.
7. Jim set the lamp on the desk so he could _____.
8. The boy had big brown eyes and a pleasant _____.
9. The children put on their boots _____ it snows.
10. When we go _____ the building, we must be quiet.
11. Dad _____ Bobby a letter several weeks ago.

Simple Spelling

" I would like you to show me how to write your name. Will you write your name here for me?" (Have the child write his or her name on the top line of the page.)

"Now I would like you to write some more words for me. I am going to read some words to you, and I would like you to print them for me. Try to spell them as best you can. I will say the word, then read a sentence with the word in it, and the say the word again. You only have to write the word once. Try your best. If you are not sure how to spell a word, it's okay to guess."

1.	no	There are no wrong answers.	no
2.	dad	My dad is happy.	dad
3.	mom	My mom played with me.	mom
4.	I	I live at home.	I
5.	cat	The cat played with the string.	cat

APPENDIX B: GRADE 4 NON-STANDARDIZED TASKS

Working Memory Task

Instructions:

I am going to say some sentences and the last word in each sentence will be missing. I want you to tell me what you think the last word should be. Let's try one. "*For breakfast the little girl had orange* _____." Now I am going to read two sentences. After each sentence, I want you to tell me the word that should go at the end of the sentence. When I finish the two sentences, I want you to tell me the two words that you said for the end of each sentence. Please tell me the words in the order that you said them. Let's try it. "*When we go swimming, we wear a bathing* _____." *Cars have to stop at a red* _____."

Discontinue when the child has failed an entire level (i.e. all three items – A, B, C of a particular number)
Note: Announce each new level. Record the words in the order the child has said them.

Items

2A
1) In a baseball game, the pitcher throws the _____.
2) On my two hands, I have ten _____.
Child's responses: _____(ball, fingers)

2B
1) In the fall, we need to rake _____.
2) When we are sick, we often go to the _____.
Child's responses: _____(leaves, doctor)

2C
1) An elephant is big, a mouse is _____.
2) A saw is used to cut _____.
Child's responses: _____(small, wood)

3A
1) Running is fast, walking is _____.
2) At the library people read _____.
3) An apple is red, a banana is _____.
Child's responses: _____(slow, books, yellow)

3B
1) The sun shines during the day, the moon at _____.
2) In the spring, the farmer plows the _____.
3) The young child had black hair and brown _____.
Child's responses: _____(night, field, eyes)

3C
1) In the summer it is very _____.
2) People go to see monkeys in a _____.
3) With dinner, we sometimes drink _____.
Child's responses: _____(hot, zoo, milk)

4A
1) Please pass the salt and _____.
2) When our hands are cold we wear _____.
3) On the way to school I mailed a _____.
4) After swimming, I was soaking _____.
Child's responses: _____
_____(pepper, gloves, letter, wet)

4B
1) Snow is white, grass is _____.
2) After school, the children walked _____.
3) A bird flies, a fish _____.
4) In the barn, the farmer milked the _____.
Child's responses: _____
_____(green, home, swims, cow)

4C
1) In the autumn, the leaves fall off the _____.
2) We eat soup with a _____.
3) I go to the pool to _____.
4) We brush and comb our _____.
Child's responses: _____
_____(trees, spoon, swim, hair)

5A
1) For the party, the girl wore a pretty pink _____.
2) Cotton is soft, and rocks are _____.
3) Once a week, we wash the _____ _____.
4) In the spring it is very ___ _____ _____.
5) I throw the ball up and then it comes _____.
Child's responses: _____
_____(dress, hard, car..., rainy, down)

5B
1) The snail is slow, the rabbit is _____.
2) At a birthday party, we usually eat ice cream and _____.
3) Sandpaper is rough but glass is _____.
4) In a garden, we pick _____.
5) Over the field, the girl rode the galloping _____.
Child's response: _____
_____(fast, cake, smooth, flowers, horse)

5C
1) To cut meat we use a sharp _____.
2) In the daytime it is light, and at night it is _____.
3) Dogs have four _____.
4) At the grocery store, we buy _____.
5) A man is big, a baby is _____.
Child's responses: _____
_____(knife, dark, legs, food, small)

NUMBER CORRECT IN ANY ORDER ____/12

NUMBER CORRECT IN EXACT ORDER ____/12

Working Memory Numbers

Procedure: Place card A in front of child. After child finishes counting, immediately turn card over on a stack near yourself, not the child.

Using the card A, teach the child to count the yellow dots, ignoring the blue ones.

"Count the yellow dots. Try not to pay attention to the blue dots. Just count the yellow dots. You should touch each dot with your finger while you count out loud. Now you can practice counting the yellow dots."

"How many yellow dots were there?"

Using cards B and C:

"Now I want you to count the yellow dots on one card and then on another card. Be sure to touch each yellow dot and to count out loud. Then I want you to tell me how many dots there were on the first card and then on the second card."

"Okay, let's try it."

"Now we are going to count yellow dots on some more cards. You should start to count as soon as you see a new card. When you see a blank card, you should tell me how many yellow dots were on each card in that set. In the beginning, you will only count 1 card at a time, then 2 cards at a time, and then even more cards. Each time you see the blank card you should tell me the numbers for each card you counted. You should tell me the numbers in the order in which you saw the cards - that is, how many yellow dots on the first card, the second, and so on."

Discontinue when child has failed an entire level (i.e. all three items – A, B, C of a particular number).
Note: Announce each new level. Record numbers in the order the child has said them.

Practice:

1. Card A _____

1b. Cards B,C _____ _____

Test Items:

2. A. _____ _____
   B. _____ _____
   C. _____ _____

3. A. _____ _____ _____
   B. _____ _____ _____
   C. _____ _____ _____

4. A. _____ _____ _____ _____
   B. _____ _____ _____ _____
   C. _____ _____ _____ _____

5. A. _____ _____ _____ _____ _____
   B. _____ _____ _____ _____ _____
   C. _____ _____ _____ _____ _____

NUMBER CORRECT IN ANY ORDER _____/12

NUMBER CORRECT IN EXACT ORDER _____/12

Rosner Auditory Analysis Test

Now we are going to play a game of removing sounds from words. I'm going to say a word and then tell you to take part of the sound off and then say what's left. Here is how it will work. "Say 'cowboy'." Wait for response. "Now say cowboy again, but without the boy sound". "Say 'toothbrush'." Wait for response. "Now say toothbrush again, but without the tooth sound". If the child fails either of the two practice items, attempt to teach the task by giving the correct response, explaining why it is correct, and re-presenting the item. Say "sat". Now say "sat" without the /s/ sound. If either item is failed again, discontinue testing and score the test zero. If the items are answered correctly, then proceed.

Discontinue after five consecutive errors. Present the remainder of the items in the same way.

Cheek items answered correctly. Mark line under last item attempted.

Sample Items:

SCORE	RESPONSE
___ cow(boy)	_____
___ (tooth)brush	_____
___ (s)at	_____

SCORE	RESPONSE	SCORE	RESPONSE
___ 1. birth(day)	_____	___10. ti(me)	_____
___ 2. (car)pet	_____	___11. plea(se)	_____
___3. (m)an	_____	___12. stea(k)	_____
___4. ro(de)	_____	___13. bel(t)	_____
___5. (w)ill	_____	___14. (sc)old	_____
___6. (l)end	_____	___15. (c)lip	_____
___7 (s)our	_____	___16. (s)mile	_____
___8. (g)ate	_____	___17. (p)ray	_____
___9. to(ne)	_____	___18. (b)lock	_____

SCORE		RESPONSE	
___	19. (b)reak	_____	
___	20. s(m)ell	_____	
___	21. (t)rail	_____	
___	22. de(s)k	_____	
___	23. (sh)rug	_____	
___	24. cr(e)ate	_____	remove [ee] answer [crate]
___	25. s(m)ack	_____	
___	26. re(pro)duce	_____	remove [pra], answer [reduce]
___	27. s(k)in	_____	
___	28. s(w)ing	_____	
___	29. (st)rain	_____	
___	30. g(l)ow	_____	
___	31. st(r)eam	_____	
___	32. c(l)utter	_____	
___	33. off(er)ing	_____	remove [er], answer [offing]
___	34. dy(na)mo	_____	remove [nuh], answer [dimo]
___	35. auto(mo)bile	_____	remove [muh], answer [autobeel]
___	36. car(pen)ter	_____	remove [puhn], answer [carter]
___	37. Ger(ma)ny	_____	remove [muh], answer [journey]
___	38. lo(ca)tion	_____	remove [kaa], answer [lotion]
___	39. con(tin)ent	_____	remove [tin], answer [conent]
___	40. phi(lo)sophy	_____	remove [law], answer [fuhsophy]

TOTAL CORRECT _____/40

RAN Task
(Speeded Number Naming)

When I turn over this piece of paper you are going to see some numbers. I want you to name them as quickly as you can. Start by going across the page and then do the next row. Keep going and don't stop.
(Use stopwatch to time and circle uncorrected errors)

4	1	3	2	5
9	4	2	7	5
3	6	1	9	3
6	8	9	4	8
3	1	5	2	6

Time (to the nearest second): _____

Number of uncorrected errors: _____

4	1	3	2	5
9	4	2	7	5
3	6	1	9	3
6	8	9	4	8
3	1	5	2	6

Name_____

ORAL CLOZE

Instructions: This time I will read something to you and there will be a word missing. Where the word is missing, I will say "beep." I want you to think of a word that would sound right in the spot where I say "beep". For example, I might say "The moon shines bright in the "beep." (pause and repeat) and I want you to say "sky." O.K. let's try another one. I'll say "The children "beep" with the toys." (pause and repeat). What's the missing word? (If the child fails to respond, say "How about, play? Then it would be "The children play with the toys." Let's try another one. "The little puppy wags its "beep." (pause and repeat). Good!

1. We have done the work already. We _____ it yesterday.
2. John is a good player. Bill is a better player than John. But Tom is the _____ player of them all.
3. Jane _____ her sister ran up the hill.
4. The brown dog is small; the gray dog is smaller; but the white one is the _____.
5. Betty _____ a hole with her shovel.
6. Yesterday, Tina and Marie _____ walking down the street.
7. The girl _____ is tall plays basketball well.
8. The hungry dogs have _____ all the food.
9. Jeffrey wanted to go _____ the roller coaster.
10. Dad _____ Bobby a letter several weeks ago.
11. Yesterday, Joe _____ the ball.

TOTAL /11