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A LONGITUDINAL INVESTIGATION OF ORAL LANGUAGE ABILITIES IN JUNIOR AND SENIOR KINDERGARTEN AS PREDICTORS OF READING OUTCOMES IN EARLY AND LATE ELEMENTARY SCHOOL

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ABSTRACT

Literature supports that development of oral language is strongly related to future reading abilities and hence, academic success. In order to further investigate the oral language skills which may predict reading disorders, the present study reported a longitudinal investigation of the reading abilities of children in early and late elementary school who were originally assessed for their oral language abilities when they were in Junior Kindergarten (JK) and Senior Kindergarten (SK). Findings of the present study indicated that sentence repetition abilities predicted outcomes for reading accuracy, reading comprehension, as well as text levels on the *Developmental Reading Assessment (DRA)*. Further, story comprehension and retell abilities were also found to predict reading comprehension outcomes on the *DRA*. Overall, the investigated oral language skills predicted reading outcomes better at grade 3 than at grade 6. The oral language skills also predicted reading outcomes differently based on their assessment at JK or SK. Finally, the analysis revealed that significantly more kindergarten students categorized with not average speech and/or language (s/l) skills were distributed into below reading expectation categories on the *DRA* compared to average speech and language kindergarten students. Results from the present study may add to the literature supporting the use of early language markers to anticipate potential vulnerability for the development of literacy.

Key Words: Sentence Repetition, Story Comprehension, Story Retell, Oral Language Skills, Early identification, Predicting Reading Outcomes, Longitudinal

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1. DRA: Developmental Reading Assessment
    a. DRA Acc: Developmental Reading Assessment, Accuracy
    b. DRA Comp: Developmental Reading Assessment, Comprehension
    c. DRA Text: Developmental Reading Assessment, Text Level
2. ESL: English as a Second Language
3. ITBS: Iowa Test of Basic Skills
4. JK: Junior Kindergarten
5. *M:* Mean
6. PA: Phonological Awareness
7. RAN: Rapid Automized Naming
8. *SD:* Standard Deviation
9. SK: Senior Kindergarten
10. s/l: speech and/or language
11. SOLST: Stephens Oral Language Screening Test
12. TVDSB: Thames Valley District School Board

CHAPTER ONE

Introduction

1.1 Prevalence of School Age Language Learning Disabilities

Learning language involves mastering the intricate relationships among phonology, phonetics, syntax, semantics, morphology and pragmatics. Given the complex nature of language, it is common to find language learning disabilities amongst the general population. This is evident from Tomblin et al. (1997) who screened 7,218 kindergarten students for language impairments from rural, urban and suburban areas in the United States of America. Students who failed the screener were administered a diagnostic battery to confirm the presence of a possible language impairment. Approximately 7% of kindergarten students met the diagnostic criteria for language learning difficulties in preschool (Tomblin et al., 1997). Studies of Canadian preschool students demonstrate comparable statistics for language impairments. Beitchman, Nair, Clegg and Patel (1986) screened 1,655 kindergarten students in the Ottawa-Carleton region for speech and language impairments. Similar to Tomblin et al. (1997), those students who failed the screening measure were administered a complete diagnostic assessment for language abilities. Outcomes of this study estimated prevalence rates to be approximately 8% for language impairments amongst Canadian kindergarten students.

1.2 Development of Reading Abilities

Parallel to the complexities involved with oral language learning, reading abilities also emerge from complex processes. Reading involves the organization

of higher mental processes such as thinking, judging, imagining, reasoning, evaluating and problem solving in response to graphic signals (Hoover & Gough, 1990). According to Chall (1983), reading is developed through explicit instruction and a series of stages. See Table 1.1 for Chall's Stages of Reading Development. At the pre-reading stage, also known as Literacy Socialization, students are exposed to print and daily routines involving literacy. Stage one is marked by the decoding phase, which typically develops during grades 1 and 2. During this stage, students are able to blend various sounds in words. As students move through the remaining four stages, they become more fluent with their decoding skills. As these skills become automated, students begin to increase their comprehension of the text. Thus, the fifth and final stage of reading development is marked by the ability to think critically and amalgamate knowledge, which is a skill typical of post secondary students.

Clearly, a failure to develop skills sufficiently at the earliest stages of reading would hinder advancement to the next stage and therefore, inhibit the adequate emergence of literacy. This is illustrated by findings from Juel (1988), who discovered that 88% of poor readers at the end of grade 1 remained as such at the end of grade 4. Studies have further documented that poor reading comprehension is magnified as students advance through school. In a study by Hoover and Gough (1990), the authors followed 254 students over a span of five years. These participants were initially tested on pre-reading, decoding, reading comprehension and listening comprehension skills.

Table 1.1

Chall's 5 Stages of Reading Development

Stage	Grade Level	Literacy Achievements
Stage 0: Prereading	PreKindergarten - Kindergarten	• Literacy Socialization
Stage 1: Decoding	Grades 1 – 2	• Segmentation/synthesis of single words • Phonological Analysis develops
Stage 2: Automaticity	Grades 2 – 4	• Increased attention to text comprehension • Child becomes a fluent reader
Stage 3: Reading to Learn	Grades 4 – 8	• Reading becomes automatic • Increased complexity of comprehension
Stage 4: Reading for Ideas	Grades 8 – 12	• Make use of inferencing • Recognition of different points of view
Stage 5: Critical Reading	College +	• Begin thinking critically • New knowledge is synthesized

From: Chall, J. (1983). *Stages of Reading Development.* New York: McGraw-Hill.

As students progressed into later grade levels, they became increasingly dependent on their decoding and oral language skills in order to succeed academically. The researchers concluded that success in reading comprehension was attributed to students' skills in decoding and listening comprehension.

1.3 The Simple View of Reading

As a result of these findings, Hoover and Gough (1990) proposed a model, The Simple View of Reading, which attempts to explain reading development. Specifically, the Simple View of Reading offers two main components that are involved in reading: decoding and linguistic comprehension. Decoding is "simply efficient word recognition: the ability to rapidly derive a representation from printed input that allows access to the appropriate entry in the mental lexicon, and thus, the retrieval of semantic information at the word level" (Hoover & Gough, 1990). Linguistic comprehension is "the ability to take lexical information and derive sentence and discourse interpretations" (Hoover & Gough, 1990). Each of these components is separately developed and reading success cannot be achieved without the presence of both components.

1.4 Link Between Language and Reading

There is a growing body of evidence to support a link between the language component of the Simple View model (Hoover & Gough, 1990) and literacy skills. Catts, Fey, Zhang and Tomblin (1999) found that poor readers in grade 2 were four to five times more likely than their age matched peers to have had difficulties with language skills in kindergarten. Specifically, these students

were observed to have increased problems with phonological awareness and rapid automated naming. It has been demonstrated that the relationship between poor oral language skills and reading disabilities continues to persist over time. This is demonstrated by Strothard, Snowling, Bishop, Chipchase and Kaplan (1998) who followed 71 students with early language impairments at age 4 into adolescence. These students were re-assessed on language skills at ages 4;6, 5;6, 8;6 and 15 years of age. Results indicated that those students who were no longer categorized as language impaired at 5 years of age demonstrated significant difficulties with sentence repetition, non-word repetition, phonological awareness, single word reading, single word spelling and reading comprehension in adolescence. These findings suggest that language and reading difficulties are not outgrown in the elementary school years. The relationship between language and reading difficulties was also demonstrated in a longitudinal study conducted by Catts, Fey, Tomblin and Zhang (2002). Investigators examined the reading outcomes of 328 students identified with language impairments in kindergarten and compared them to 276 normally developing, age matched peers. Language and reading skills for both groups of students were examined in grades 2 and 4. Approximately 43% of students classified with language impairments met criterion for reading impairments in grade 2 and 48% met criterion for reading impairments in grade 4. In comparison, 8.6% and 8.2% of normally developing students met criterion for reading disorders in grades 2 and 4, respectively.

The strong relationship between oral language and literacy suggests that the presence of a language disorder can predict a higher risk for reading disorders. Catts, Fey, Zhang and Tomblin (2001) identified five clinical markers that predicted later reading outcomes. The students in this study were given a battery of tests in kindergarten, including tests of vocabulary, grammar, narration, phonological awareness, rapid automated naming, letter identification, nonverbal cognition and reading comprehension. Catts et al. (2001) then applied a stepwise logistic regression to identify the distinctive kindergarten measures that predicted later reading outcomes. Results indicated five main measures that uniquely predicted reading outcomes: letter identification, sentence imitation, phonological awareness, rapid naming and mother's education. Of these identified risk factors, three of the five markers (sentence imitation, phonological awareness and rapid naming) were oral language skills.

It is evident that the link between phonological based awareness skills and future reading abilities remains dominant in the literature. However, there is some evidence to suggest other oral language skills can also predict future reading. Given that these oral language skills can be used to reliably predict a language disorder, it would be beneficial to further explore their predictive abilities for reading outcomes.

1.5 Sentence Repetition, Story Comprehension and Retell as Indicators of Language Impairment

Sentence repetition is the ability to immediately imitate a sentence after its presentation. This recall task is a widely accepted method for identifying

language impairments and has been incorporated in a host of language screening batteries such as the *Clinical Evaluation of Language Fundamentals – Preschool, Second Edition, CELF-P2*, (Wiig, Secord & Semel, 2004) and the *Test of Language Development – Primary, Third Edition, TOLD-P3* (Newcomber & Hammel, 1997). There is a growing interest in exploring sentence repetition as a unique clinical marker for language impairments. In 2003, Botting and Conti-Ramsden compared four groups of students: 1) students with primarily pragmatic impairments, 2) students with pragmatic impairments who also displayed autism-like behaviors, 3) students with autism spectrum disorder, and 4) students with specific language impairments. All students were given tasks involving sentence repetition, non-word repetition, and use of past tense markers. Sentence repetition was identified as the most efficient clinical marker for distinguishing students with language disorders from the other experimental groups. The authors concluded that students with specific language impairments experience difficulties with sentence repetition tasks because they lack the linguistic processing abilities necessary to repeat real-word sentences. In a previous study, Conti-Ramsden, Botting and Faragher (2001), compared 160, 11-year old students with specific language disorders to 100 age-matched students on four tasks: non-word repetition, tense marking, third-person singular language tasks and sentence repetition. Sentence repetition tasks were found to have 90% sensitivity and 85% specificity for identifying students with specific language impairments. Conti-Ramsden et al. (2001) concluded that poor performance on

sentence repetition tasks may be attributed to impairments in language processing, working memory or a combination of both.

Support for using sentence repetition as a clinical marker for language impairments is further illustrated in cross-linguistic research. Stoke, Wong, Fletcher and Leonard (2006) investigated non-word and sentence repetition skills of 44 language impaired, Cantonese monolingual students, with an average age of 4;11. The experimental group of students was compared with typically developing age matched and typically developing younger students. The non-word repetition task consisted of 24 non-words of varying syllable lengths. All non-words followed consonant-vowel patterns that were possible combinations in Cantonese. Stimuli in the sentence repetition task used 16 sentences, 9 to 10 syllables in length. Results illustrated that sentence repetition tasks were able to accurately differentiate students with language impairments from their typically developing peers. Further, the experimental group of students was found to perform better than younger normally developing peers on non-word repetition tasks. This is expected given that the short-term memory mechanisms in the experimental group were adequately developed. Results demonstrated that sentence repetition tasks require the use of language processing skills that may be impaired in students with language disorders. Evidently, sentence repetition tasks have been demonstrated to be valuable clinical tools for identifying language impairments since research findings remain consistent across languages (Conti-Ramsden et al., 2001; Stoke et al., 2006).

Assessing language abilities beyond the sentence level are also necessary to determine the presence of a language disorder. This is evident from Catts, Adolf and Weismer (2006) who assessed the text structure knowledge of 182 students in grade 8. Participants were administered tests of reading achievement to determine reading comprehension abilities as well as single word decoding. Results indicated that poor performance on these reading comprehension measures could accurately identify a subgroup of students with difficulties unique to reading comprehension from typical readers and those with decoding difficulties. Retrospective analysis revealed a consistency with language comprehension difficulties throughout elementary school. The subgroup of students identified with reading comprehension difficulties in grade 8 displayed difficulties with story narratives in grades 2 and 4.

Story recall measures have also been shown to reliably predict persisting language disorders in adolescence (Strothard, Snowling, Bishop, Chipchase & Kaplan, 1998). The findings of Strothard et al. (1998) revealed that the language used to retell *The Bus Story* (Renfew, 1991) in kindergarten students predicted persisting difficulties with language at age 15. Thus, story narrative abilities in students can reliably predict both present and persisting difficulties with language.

Recently emerging literature has provided specific support to use *The Bus Story Test* as a means of identifying students with language impairments (Pankratz, Plante, Vance & Insalaco, 2007). The researchers administered a range of language tests along with *The Bus Story Test* to 32 students identified

as having specific language impairments and 32 normal language developing students with a mean age of 4;9. The results indicated large, significant differences between the SLI group and non SLI group on both the Information (d = 1.06) and Length (d = 0.8) scores of *The Bus Story Test*. The accuracy of the test's ability to classify students as language impaired was expressed by the test's sensitivity (the frequency at which students with SLI are identified as such) and specificity (the frequency at which normally developing students are identified as such). The combined Information and Length scores were found to yield 84.4% sensitivity and 78.1% specificity. The overall conclusions drawn by Pankratz et al. (2007) lend strong evidence to use *The Bus Story Test* to measure the presence of language impairment.

Additional support for the use of story narratives in determining the presence of language disorders is apparent from Montague, Maddux and Dereshiwsky (1990). The researchers investigated the story grammars of 12 learning disabled and 12 normally developing students in each of three grade levels: elementary, junior high and high school. Students were asked to listen to a story about "Judy's birthday" and retell the story to the examiner immediately after its presentation. Although participants in this study consisted of students identified as learning disabled, Gibbs and Cooper (1989), found that 90.5% of learning disabled students also have oral language deficits. Montague et al. (1990) found that the story schemata of learning disabled students, across all grade levels, contained significantly fewer units of information compared to the control groups. Based on these findings, the authors argued that students with

learning disabilities contain the basic framework for story grammar but these skills lag behind those of normally developing students.

Further support for these findings is evident from research conducted by Gardill and Jitendra (1999). The aim of this study was to investigate the effectiveness of story grammar instruction on the reading abilities of students with learning disabilities. Participants included six students in grades 6 to 8 who were categorized as learning disabled. Baseline measures of story retell abilities were gathered by asking students to recall a narrative that was read to them one minute after its presentation. Students then began a 3-phase block of direct intervention that took place over a 14 to 20 week period. Upon completion of the direct instruction phase, students entered into the independent practice stage where they were required to read three new stories and complete story grammar work sheets. The final phase of treatment involved assessing generalization and maintenance of skills. The overall results of this study showed substantial increases in measures of reading comprehension compared to baseline measures.

1.6 Sentence Repetition, Story Comprehension and Retell as Predictors of Reading Outcomes

Sentence repetition has recently been established as a strong predictor of future reading abilities. This was reported by Catts, Fey, Zhang and Tomblin (2001) who identified sentence repetition abilities as one of five variables that uniquely predict reading outcomes. These findings are consistent with Strothard, Snowling, Bishop, Chipchase and Kaplan (1998) who used sentence repetition

scores in a language assessment battery to identify language impaired from non language impaired kindergarten students. Follow-up at 15 years of age revealed that these students remained distinguishable from normally developing peers based on measures of reading and spelling. Moreover, 52% of students with what appeared to be resolved language difficulties in early childhood displayed poor reading outcomes compared to 22% of controls. Thus, early identified language difficulties remain as stable predictors of literacy outcomes in adolescence, despite the appearance of resolved language abilities in early school years.

There is some evidence to also suggest an association between story narrative abilities and reading comprehension. Catts, Fey, Tomblin and Zhang (2002) examined the reading outcomes of 604 kindergarten students in grades 2 and 4. The participants included 328 language impaired and 276 typically developing students who were initially tested on language measures, such as the *Test of Language Development – 2 Primary, TOLD-2,* (Newcomer & Hammill, 1988), story narration, and phonological processing. Catts et al. (2002) combined measures of story recall and story comprehension to form an overall narration score. Results indicated a small correlation between grade 2 and 4 reading scores and story narrative abilities. Further investigation of these skills is needed to completely understand the value they may have in predicting reading success.

1.7 Age Effects of Language and Reading Testing on Reading Outcomes

Recent evidence suggests that the age of oral language testing affects the predictability of reading skills in school aged years. Morris, Bloodgood and

Perney (2003) examined the pre-reading skills of 102 students at the beginning, middle and end of their kindergarten school year. Among the six pre-reading skills that were tested, two tasks consisted of phonemic awareness abilities: beginning consonant awareness and phoneme segmentation. Pre-reading skills were used to predict reading outcomes in passage reading and reading comprehension tasks at the end of grade 1 and 2. The authors found tests of reading were best predicted by beginning consonant awareness scores gathered at the end of kindergarten rather than the beginning or middle of the school year.

Furthermore, predicting risk for future reading disabilities varies with the age at which reading is tested. Roth, Speece and Cooper (2002) followed 39 students from kindergarten until grade 2. Students were initially tested at 5 years of age on three domains of oral language: structural oral language, phonological awareness and narrative discourse. Reading measures were collected in grades 1 and 2 by administering the Letter Word Identification, Word Attack and Passage Comprehension subtests of the *Woodcock-Johnson Psychoeducational Battery-Revised* (Woodcock, 1987). The researchers found phonological awareness skills in kindergarten contributed uniquely to single-word reading measures in grade 1. Furthermore, grade 1 reading comprehension skills were uniquely predicted by kindergarten narrative discourse and phonological awareness scores. Kindergarten oral language skills were also found to contribute to grade 2 reading measures. Phonological awareness continued to uniquely predict single-word reading while narrative discourse scores were found to uniquely predict grade 2 reading comprehension. Interestingly, phonological

awareness skills no longer contributed to reading comprehension abilities in the older grade levels. However, findings by Savage, Carless and Ferraro (2007) indicate that phonological awareness scores at kindergarten can be used to predict reading achievement at 11 years of age. In this study, 382 students were tested at age 5 across six different tasks of phonological awareness. Participants were later administered a Nationwide Test for academic achievement which consisted of Reading, Writing, Math and English subtests at age 11. Results indicated that phonological awareness uniquely predicts achievement on the Reading subtest (R^2=.06) of the Nationwide Test. Consistent with Roth et al. (2002), oral language skills remain an important indicator of literacy development well past the grade 2 level.

1.8 Research Objectives

Based on the findings from the relevant literature, it is clear that the data predicting reading outcomes based on language measures in young students has concentrated primarily on 5 year olds. The present study sought to examine whether future reading achievement can be predicted from language skills at younger ages, prior to entry into senior kindergarten. This study is a longitudinal design, using data collected during a speech and language screening study (Smith, 2000) to investigate (1) the contribution of three oral language abilities: sentence repetition, story recall, and story comprehension as predictors of reading outcomes in early and late school age years, and (2) the age at which future reading success can be predicted. Text level, accuracy and comprehension reading scores from the *Developmental Reading Assessment*

(*DRA)* in grades 3 and 6 were extracted from the Thames Valley District School Board's (TVDSB) databases and analyzed to address the following research questions:

1. Are the oral language measures of junior kindergarten (JK) students and senior kindergarten (SK) students predictive of reading ability at grade 3 and/or grade 6?
    a. Which of the three language measures in JK or SK (i.e., sentence repetition, story comprehension and story retell) are the best predictors of grade 3 and 6 reading ability (i.e., text level, reading accuracy and reading comprehension on the *DRA*)?
    b. Do the language scores of JK and SK students differ in their predictive ability for reading scores at grade 3 and/or grade 6?
2. What percentage of students identified with average and not average speech and/or language (s/l) abilities in kindergarten are within and below reading expectations at grades 3 and 6?
    a. Is the distribution of students within or below reading expectations at grades 3 and 6 different for the s/l average and not average kindergarten groups of students?

As described in the literature, researchers hypothesized that the specified oral language skills would reliably predict both early (grade 3) and late (grade 6) elementary school reading outcomes. This was supported by literature that suggests these measures reliably indicate language impairments in young students and thus, have the potential to also predict future reading abilities.

Since research supports the predictive ability of language measures in senior kindergarten (Catts et al., 2001), it was expected that language measures administered in junior kindergarten would also predict future reading success.

Further, as evidenced by Catts et al. (2001), it was speculated that scores on Sentence Repetition tasks, as measures by *Stephens Oral Language Screen Test (SOLST)*, would provide the strongest predictive value to reading outcomes.

Finally, it was speculated that students categorized as below average or average on their s/l abilities would be similarly distributed into within and below reading expectation groups at grades 3 and 6. Catts et al. (2002) demonstrated that approximately 50% of students categorized as below average only in their language abilities would also be categorized as below targets on their reading skills at grade 4. The *Woodcock Reading Mastery Tests – Revised* 2 (Woodcock, 1987) were used to assess reading in the Catts et al. (2002) study while the present study will use *Developmental Reading Assessment (DRA)* to measure reading outcomes. Given the different types of reading measures used, it was expected that the distribution of students in within and below reading expectation categories would differ from that of Catts et al. (2002). Further, Catts et al. (2002) examined the reading distributions of students with language impairments only, while the present study will examine reading distributions of kindergarten students with speech only, language only and speech and language difficulties.

CHAPTER TWO

Method

2.1 Participants

This study followed students who originally participated in a speech and language screening study in 1999-2000 (Smith, 2000) while enrolled in junior and senior kindergarten classrooms, within the Thames Valley District School Board (TVDSB). The initial screening sample consisted of students from 10 participating schools: five from the central TVDSB region, two in the southern region and three in the eastern region. A representative sample was selected based on the diversity of location, school size and socio-economic status, ethnic and linguistic backgrounds of the students enrolled. A total of 657 students between the ages of 3;10 and 5;11 were initially screened on three speech and language measures: *The Photo Articulation Test – Third Edition*, *PAT-3*, (Lippke, Dickey, Selmar & Soder, 1993), *The Bus Story* (Renfew, 1991) and the *Stephens Oral Language Screening Test, SOLST,* (Stephens, 1997). Forty-four of the participants did not have English as a first language and were subsequently removed from the data. Thus, the final screening sample consisted of 613 English-only speaking students.

Approximately 26% (162) of these students were identified as "not average" in their s/l abilities, 9% (55) had "borderline" s/l difficulties, and 65% (396) were identified with normal s/l skills. "Not average" was defined as greater than -1 standard deviation below the mean performance on one or more areas of testing. See Table 2.1 for a summary of the 1999 – 2000 screening results.

Table 2.1

Summary of 1999 – 2000 Speech and Language Screening Results for all Junior and Senior Kindergarten Participants by Number and Percentage

Speech and Language Screening Results	**Junior Kindergarten**		**Senior Kindergarten**		**Total Number and Percentage**	
	Number	**Percentage**	**Number**	**Percentage**		
Average Speech and Language Abilities	236	62%	160	68%	396	64.6%
Borderline Speech and/or Language Abilities	27	7%	28	12%	55	8.97%
Not Average Speech and/or Language Abilities	116	31%	46	20%	162	26.46%
Total	379	100%	234	100%	613	100%

Validation of the accuracy of the screening for identification of the speech and language status of junior and senior kindergarten students was undertaken following completion of the screening phase of the present study. A sample of screened schools was chosen to represent all geographic regions, including city, county, rural settings, school size and socio-economic levels. From these schools, 30 junior kindergarten and 30 senior kindergarten students were randomly chosen to undergo a complete speech and language assessment. Within the sample chosen from junior kindergarten, 23 (77%) of the student were designated as 'average' and 7 (23%) were designated as 'below average' on the screening. Within the sample chosen from senior kindergarten 21 (70%) were designated as 'average' and 9 (30%) were designated as 'below average' on the screening.

Two registered speech-language pathologists with over 20 years of experience completed full assessments of speech and language skills for the follow-up sample of students chosen for full assessment. The speech-language pathologists were blinded to the speech and language screening results of each of the students and all students were assessed within their neighborhood schools. The *Goldman-Fristoe Test of Articulation, GFTA* (Goldman & Fristoe, 1986) was utilized to assess articulation skills and *the Clinical Evaluation of Language Fundamentals - Preschool, CELF- P* (Wiig, Secord & Semal, 1992) and the *"One Frog Too Many" Story Reformulation* (Warr-Leeper, Pearce & Moser, 1990) were employed to assess receptive and expressive language skills. Point to point comparisons of the screening status and the diagnostic status of

each of the 30 students in JK revealed only one discrepancy for one student (96.6% agreement). The student in question was considered 'below average' on the screening but 'borderline average' on the full assessment. Point to point comparisons for the SK students revealed similar results with one discrepancy for one student (96.6% agreement). The student in question was considered 'average' on the screening and the full assessment for structural speech and language skills but 'below average' for pragmatic skills on the diagnostic. Thus, the screening did not detect pragmatic deficits.

In the present study, 336 participants from the original data set were followed over seven years. See Table 2.2 for a summary of the speech and language screening results for the current sample. Table 2.3 summarizes students identified as not average in their speech, language, or speech and language skills. Information on the students' reading abilities was gathered from results on the *Developmental Reading Assessment, DRA,* (Beaver, 2001; Beaver & Carter, 2003) in grades 3 and 6. All participants were placed in one of two experimental groups: Group JK (3;11 -4;11) and Group SK (5;0 – 6;0) based on preschool enrollment at time of initial screening. See Table 2.4 for a summary by the number of participants in each experimental group, sex and mean age. Attrition in the current study was due to unavailability of complete *DRA* scores, incomplete screening results or inability to locate original participants within the school board.

Table 2.2

Summary of Speech and Language Screening Results for Present Sample by Number and Percentage

Speech and Language Screening Results	Junior Kindergarten		Senior Kindergarten		Total Number and Percentage	
	Number	Percentage	Number	Percentage		
Average Speech and Language Abilities	146	69%	93	76%	239	71.13%
Borderline Speech and/or Language Abilities	11	5%	6	5%	17	5.06%
Not Average Speech and/or Language Abilities	56	26%	24	20%	80	23.81%
Total	213	100%	123	100%	336	100%

Table 2.3

Summary of Speech and Language Screening Results for Not Average Students in Present Sample

Not Average Screening Results	Number	Percentage in Total Sample
Not Average Speech Skills	9	2.66%
Not Average Language Skills	50	14.9%
Not Average Speech and Language Skills	21	6.25%
Total	80	23.81%

Table 2.4

Summary of Participants by Sex, Number in each Experimental Group and Mean Age

Category	Junior Kindergarten	Senior Kindergarten
Number of Males	114	66
Number of Females	99	57
Mean Age (in years; months)	4;7	5;6
Standard Deviation (in months)	± 3.78	± 3.34

2.2 Procedure

2.2.1 Language Screening Measures

2.2.1.1 Sentence Repetition

The Stephens Oral Language Screen Test, SOLST, (Stephens, 1977), contains a series of 15 sentences that are presented to students in a sequential manner by the examiner. In the present study, procedures as outlined in the *SOLST* Administration Manual were followed. Prior to beginning the *SOLST*, all students were introduced to the task with a scripted set of instructions. The examiner gave the following directions: "We're going to play a game of copycat. I'm going to do something and I want you to do exactly what I do (e.g., the examiner claps his/her hands). Now I'm going to say something and I want you to copy what I say (e.g., the examiner says, "I like snow")". In an instance where a participant had difficulty repeating a test item, the examiner would allow for one repetition of the test item. More than one repetition of each test item was not permitted.

Responses were immediately recorded and scored on a 7 point scale. A score of 0 corresponded to an exact repetition of the test item while a score of 7 indicated an unintelligible or lack of response. Any responses that included an addition or absence of test words were transcribed for later analysis. Scores for each of the 15 test items were summarized and compared to standardized, age appropriate norms. It should be noted that a higher score represents increased errors on the test items, and thus a weak performance on the test. (See Appendix A for Screener Form)

The *SOLST* is standardized on a population consisting of 477 pre-kindergarteners, 1320 kindergarteners and 933 first graders (Stephens, 1977). The *SOLST* is an acceptable screening measure of language impairments with a reported sensitivity of .79 (Stuner et al., 1994). The *SOLST* has an inter-reliability score between .94 to .97 (Sturner et al., 1994) among speech-language pathologists. Additionally, reports by Sturner et al. (1994) have illustrated a high concurrent validity with the *Developmental Sentence Scoring Test* (r =.86 -.92) and with *Carrow's Elicited Language Inventory* (r =.86 -.92) amongst students in kindergarten and early elementary school.

2.2.1.2 *Story Comprehension and Retell*

The Bus Story Test (Renfrew, 1991) is a standardized story retell test used to examine the components of a child's story grammar. Specifically, information content, comprehension, and general oral language performance can be assessed with *The Bus Story Test*. The story is accompanied with four test plates that each contained three pictures illustrating the story. In the present study procedures as outlined in *The Bus Story* Administration Manual were followed. The examiner told the child a short story that was about a bus while the child looked at the corresponding pictures. The child was then asked to retell the story back to the examiner as accurately as he or she could. The child was provided with the test plates that could be used as cues to the events in the story. Prior to beginning *The Bus Story Test*, students were introduced to the task with a set of instructions provided by Renfrew (1991): "Now I'm going to tell you a story about a bus. I want you to look at these pictures while I tell you the

story. When I'm finished I want you to tell me the story." The examiner pointed to the corresponding pictures while telling the story in order to emphasize specific aspects of the story. No part of the story was repeated for the participants as indicated by the test instructions. Once the story retell was completed, each child's story memory and comprehension were evaluated by having them respond to ten content-based questions. These questions were an addition to *The Bus Story* developed by the senior author of the screening tool and were utilized in the present study based on previous research (Warr-Leeper et al.,1990). Investigations of several story reformulation tools revealed that for some students, the ability to retell a story and ability to answer memory and comprehension questions could be different. That is, some students who evidenced difficulty in retelling the story were still able to answer all questions about story content and events following their retell (Warr-Leeper et al, 1990). Thus ability to retell the story was not necessarily representative of story memory and comprehension skills, suggesting that both story comprehension and retell should be assessed separately.

In the present study, a student's ability to recall main and supporting events from the story was scored along with his or her ability to comprehend and remember the content of the story. The test provided normative data for recalling main and supportive events which were standardized on a population of students 3;9 to 8;3 years of age. The numbers of correctly answered comprehension questions were compared to predetermined cut-off scores based on a normalized population of London and St. Thomas, Ontario students who completed the *One*

Frog Too Many story retell task (Warr-Leeper et al., 1990). See Table 2.5 for a summary of the means and standard deviations of JK and SK oral language performance. Figure 2.1 depicts the mean results in a bar graph.

The Bus Story is a widely used story retell test that was primarily developed as a screening measure of verbal comprehension and expression. The test was intended to be used by speech-language pathologies in order to assess semantic, grammatical, sequencing and phonological problems. *The Bus Story Test* has demonstrated a high predictive value for detection of language impairments and language outcomes as discussed by Bishop and Edmundson (1987). The researchers administered this story retell test to 87 students with language impairments at 4, 4;6 and 5 years of age. Results indicated that performance on the story retell test best predicted language outcomes at age 5 compared to other expressive language measures, such as mean length of utterance and grammar scores. Specifically, Bishop and Edmundson (1987) could predict with 90% accuracy, a child's language outcome at age 5 based on the number of events included in a story retell at age 4.

Table 2.5

Means and Standard Deviations for JK and SK Oral Language Measures

Category	Junior Kindergarten		Senior Kindergarten	
	M	*SD*	*M*	*SD*
Sentence Repetition	17.85	15.64	8.21	9.53
Story Comprehension	8.65	1.61	9.24	1.09
Story Retell	23.9	6.61	27.43	7.40

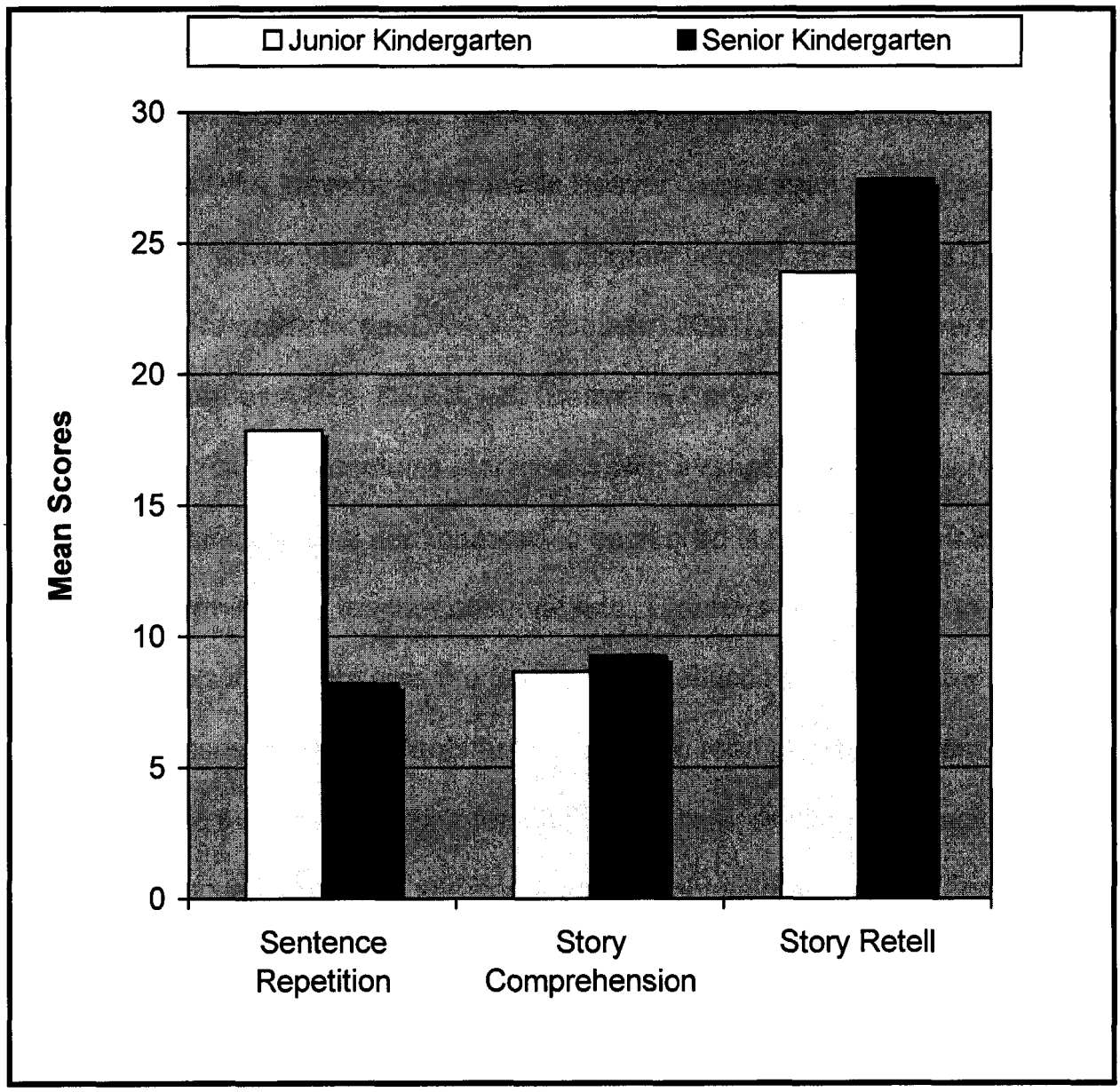


Figure 2.1. Mean sentence repetition, story comprehension and story retell scores of 339 JK and SK students.

2.2.2 Reading Outcome Measures

2.2.2.1 The Developmental Reading Assessment (DRA)

The *Developmental Reading Assessment*, *DRA*, (Beaver, 2001) is designed to assess a student's reading development between kindergarten and grade 8. The *DRA*, developed by Joetta Beaver over a span of eight years, is segmented into two different versions: a primary version for students in kindergarten to grade three, *DRA* K-3, (Beaver, 2001) and a junior version for students in grades 4 to 8, *DRA* 4 – 8, (Beaver & Carter, 2003).

The *DRA* K – 3 contains storybooks with a range of 20 different difficulty levels. The difficulty level administered to each child is based on their literacy level as determined by teacher observations. Teachers are required to change difficulty levels if they observe the text to be too difficult or easy for the child during the assessment. Students are expected to read a passage from the story aloud and are evaluated on their reading behaviours, reading accuracy, fluency, nature of miscues, phrasing, self-corrections, problem-solving skills and reading comprehension. Each student is scored on three aspects on the *DRA*: text level, accuracy and reading comprehension. The scores are recorded along a graphically represented continuum that demonstrates a students reading progress in each successive grade.

Text level scores for students on the *DRA* are assigned based on a child's ability to read passages with some complex sentence structures and vocabulary. Conversely, reading accuracy scores are calculated based on a student's ability to fluently read a passage aloud with minimal errors. Lastly, reading

comprehension scores are computed based on correct responses to questions relevant to the reading passage. It is expected that educators use these results to make decisions about the type of literacy programming to provide their students.

The *DRA 4-8* contains texts with reading levels ranging from 40 to 80. The student is first required to complete a reading survey that provides the teacher with information regarding the student's level of reading engagement. The results of the reading survey are used by the teacher to decide on a set of stories within a *DRA* reading level believed to be appropriate for the student. The student then selects a text from the teacher-selected set and chooses a segment of the chosen text to read aloud to the teacher. Students are then expected to work independently to write their predictions of the events in the book, read the entire text and write their answers to a set of comprehension questions. Similar to the scoring protocol of the *DRA K-3* (Beaver, 2001), scores on text level, accuracy and reading comprehension are calculated and placed on a continuum along with scores on the reading engagement questionnaire.

Williams (1999) examined the reliability of the *DRA* by assessing its inter-reliability agreement and internal consistency among 87 teachers. A sample of 306 students from the United States in kindergarten through grade 3 were administered the *DRA*. Each student received a total of three ratings: one was provided by an educator and then videotaped for two naive raters to assess. The Rasch rating scale was used to analyze the scores provided by the original test administrator and the second blind rater. The inter-reliability was strong (.80) for

two raters and weakened slightly with the addition of the third rater (.74). Similar to inter-rater reliability results, internal consistency was measured to be high as well, with an item separation of 0.98 (Chronbach's alpha) and a text separation reliability of 0.97 (Chronbach's alpha). William (1999) also measured the *DRA* 's construct validity by comparing *DRA* scores of 2470 grade 2 students with the results of their Iowa Test of Basic Skills (*ITBS*) in grade 3. Significant correlations of $r = 0.68$, $r = 0.71$ and $r = 0.68$ were found between the *DRA* and *ITBS* Reading Comprehension, Total Reading and Vocabulary subscales respectively at the 0.01 level.

In 2000, Weber correlated students' performance on the *DRA* in grade 1 with their *DRA* scores in grade 3 in order to evaluate the test-retest reliability. Data analysis showed significant test-retest reliability varying from +0.92 in grade 1 to +0.99 in grade three by using a Spearman rank-order correlation procedure. Test-retest reliability was measured as +0.99 when scores for all students were correlated. Weber (2000), determined criterion validity by correlating student performance on the *DRA* across all grade levels with the Reading Comprehension subtest of the *ITBS*. The Spearman rank-order technique was used to reveal a statistically significant correlation ($p < 0.001$) with an overall moderate correlation of 0.83 for all students across all grades.

In the fall and spring of each school year, the *DRA* is administered to all students within the TVDSB. Test administration begins in the spring of a child's senior kindergarten year and continues until the spring of the child's 8th grade. For each grade level, the TVDSB has specified target expectations for text,

accuracy and comprehension levels (See Table 2.6 for grade three and six cut off scores). In the current study, the *DRA* text, accuracy and comprehension scores were categorized where "1" refers to "below targeted expectations", "2" refers to "on and above targeted expectations".

The TVDSB provides extensive teacher training for administration, scoring, and reporting of the *DRA*. To ensure fidelity of measurement, *DRA* certified expert instructors deliver teacher training. One full day is devoted to training for the *DRA* K - 3 and one full day for the *DRA* 4 - 8. During the training, teachers practice scoring standardized profiles for several students at different levels. Further, teachers practice scoring from recordings of students reading a variety of different texts. Direct instruction is given by the *DRA* instructors during the teacher training and instructors are available following the training session for individual teachers at their home schools. Additionally, teachers are trained to administer and score a special adaptation of the *DRA* 4 – 8 for students who are reading at the primary level or have difficulty with writing answers to comprehension questions. Teachers who are unable to meet the standards for accurate administration and scoring receive extra training until the standards are met.

Table 2.6

TVDSB DRA Cut Offs

Targets	Grade	Text Level	Accuracy	Comprehension
Below	3	A-36	0 – 91%	< 16
	6	40-50		
On	3	38-40	92-96%	16 – 21
	6	60		
Above	3	42-44	97 – 100%	22 – 24
	6	70-80		

2.3 Data Analysis

2.3.1 Questions 1, 1a and 1b

For students in JK, six stepwise multiple regression analyses were completed to determine the predictive ability of each of the oral language measures: sentence repetition, story retell and story comprehension for each of the *DRA* reading measures: text levels, accuracy and story comprehension measures. Similarly, six stepwise multiple regression analyses were also completed to determine that predictive ability of the three oral language measures for each of the *DRA* reading scores for the students in SK.

2.3.2 Questions 2 and 2a

A total of six cross tabulation statistics using Chi-square analyses were completed to determine the relationship between categorization of average and not average s/l skills in kindergarten and categorization of within and below reading expectations in grade 3 and grade 6.

An alpha level of .05 was applied in order to establish statistical significance. Students were categorized as follows: 1 = below average on speech and language screening, 2 = average on speech and language screening. Students categorized with borderline speech and language abilities were removed from these analyses. Thus, a sample size of 319 participants was used for the analyses. Outcomes on measures of *DRA* text levels, accuracy and comprehension were categorized as follows: 1 = below reading expectations, 2 = within reading expectations.

CHAPTER THREE

Results

The primary aim of the current study was to determine if grade 3 and 6 reading abilities could be best predicted by oral language scores in junior kindergarten (JK) compared to senior kindergarten (SK) within the Thames Valley District School Board (TVDSB). The secondary aim of the study was to examine sentence repetition, story retell and story comprehension as predictors of reading outcomes as determined by scores on *DRA* text levels, accuracy and comprehension. The final objective of the investigation was to determine the percentages of students with average and not average speech and/or language (s/l) abilities who were classified as within and below reading expectations in grades 3 and 6.

3.1. Data Analysis

3.1.1 Question 1: Are the oral language measures of junior kindergarten (JK) students and senior kindergarten (SK) students predictive of reading ability at grade 3 and/or grade 6?

Twelve stepwise multiple regression analyses were completed to determine how well JK and SK sentence repetition, story retell and story comprehension scores predicted text level, accuracy and reading comprehension scores on the *DRA* in grades 3 and 6. The sample used for analyses of the JK students consisted of 213 participants while 123 participants were used for analyses of the SK students. Standard conventions of effect size magnitudes

were followed such that .10 was categorized as a small effect, .30 was a medium effect and .50 was a large effect as determined by Green & Salkind (2005).

3.1.1.1 JK Predictor of Grade 3 Text Levels

Results indicated that the regression model was significant, F (1, 211) = 41.99, $p < .05$, with sentence repetition being the exclusive contributor to grade 3 text levels on the *DRA*. Story comprehension was found to be significantly correlated with grade 3 text levels, r (212) = .20, $p < .05$, but was consequently not entered into the regression model because it did not make a unique contribution to the prediction equation, t (212) = .20, $p > .05$. Likewise, the story retell variable correlated significantly with the outcome measure, r (212) = .25, $p < .05$, but did not make a unique contribution to predicting grade 3 text levels, t (212) = 1.22, $p > .05$. The sentence repetition correlation coefficient was medium and negative, $r = -.407$, indicating that 16.6% of text level scores on the *DRA* could be explained by this predictor variable. The negative correlation coefficient suggested that lower scores on the sentence repetition task (i.e., fewer repetition errors) indicated advanced grade 3 text levels. See Table 3.1 for bivariate and partial correlations of the JK predictor variables with grade 3 text levels.

3.1.1.2 JK Predictor of Grade 3 Accuracy Levels

Outcomes of the analysis revealed that sentence repetition did not correlate significantly, r (212) = -.10, $p > .05$ to grade 3 reading accuracy levels. In addition, grade 3 reading accuracy levels were not significantly

Table 3.1

The Bivariate and Partial Correlations of the JK Predictor Variables with Grade 3 Text Levels.

	DRA Gr. 3 Text Level	Sentence Repetition	Story Comprehension	Story Retell
	Correlation between each predictor variable and DRA grade 3 text levels			
DRA Gr. 3 Text Level	1.00	-.41*	.20*	.25*
Sentence Repetition	-.41*	1.00	-.47*	-.43*
Story Comprehension	.20*	-.47*	1.00	.58*
Story Retell	.25*	-.43*	.58*	1.00
	Correlation between each predictor and DRA grade 3 text levels controlling for all other predictors			
Sentence Repetition	-.41**	1.00		
Story Comprehension	.01		1.00	
Story Retell	.08			1.00

* $p < .05$ for bivariate correlation
** $p < .05$ for partial correlation

predicted by story comprehension, r (212) = -.06, p > .05 or story retell, r (212) = -.3, p > .05. Thus, the results suggested that reading accuracy in grade 3 is not predicted by the investigated oral language skills in JK. See Table 3.2 for bivariate correlations of the JK predictor variables with reading accuracy levels.

3.1.1.3 JK Predictor of Grade 3 Comprehension Levels

Results indicated that the regression model was significant, F (1, 211) = 7.502, p < .05, with story retell being the exclusive contributor to grade 3 reading comprehension. Story comprehension was found to be significantly correlated with grade 3 text levels, r (212) = .12, p = < .05, but was consequently not entered into the regression model as it did not make a unique contribution to the prediction equation, t (212) = .42, p > .05. The sentence repetition variable did not correlate significantly with the outcome measure, r (212) = -.10, p > .05, and as such, did not make a unique contribution to predicting grade 3 reading comprehension, t (212) = -.392, p > .05. The story retell correlation coefficient was small and positive, r = -.19, indicating that 3.4% of reading comprehension scores on the *DRA* could be explained by this predictor variable. The positive correlation coefficient suggested that higher scores on the story retell task indicated advanced reading comprehension in grade 3. See Table 3.3 for bivariate and partial correlations of the JK predictor variables with grade 3 reading comprehension levels.

3.1.1.4 JK Predictor of Grade 6 Text Levels

Results indicated that the regression model was significant, F (1, 211) = 33.476, p < .05, with sentence repetition being the exclusive contributor to

Table 3.2

The Bivariate Correlations of the JK Predictor Variables with Grade 3 Accuracy Levels.

	DRA Gr. 3 Accuracy Level	Sentence Repetition	Story Comprehension	Story Retell
	Correlation between each predictor variable and DRA grade 3 accuracy levels			
DRA Gr. 3 Accuracy Level	1.00	-.10	-.06	-.03
Sentence Repetition	-.10	1.00	-.47*	-.43*
Story Comprehension	-.06	-.47*	1.00	.58*
Story Retell	-.03	-.43*	.58*	1.00

* $p < .05$ for bivariate correlation

Table 3.3

The Bivariate and Partial Correlations of the JK Predictor Variables with Grade 3 Reading Comprehension Levels.

	DRA Gr. 3 Comprehension	Sentence Repetition	Story Comprehension	Story Retell
	Correlation between each predictor variable and DRA grade 3 reading comprehension			
DRA Gr. 3 Comprehension	1.00	-.10	.13*	.19*
Sentence Repetition	-.10	1.00	-.47*	-.43*
Story Comprehension	.13*	-.47*	1.00	.58*
Story Retell	.19*	-.43*	.58*	1.00
	Correlation between each predictor and DRA grade 3 reading comprehension controlling for all other predictors			
Sentence Repetition	-.03	1.00		
Story Comprehension	.03		1.00	
Story Retell	.19**			1.00

* $p < .05$ for bivariate correlation
** $p < .05$ for partial correlation

grade 6 text levels. Story comprehension was found to be significantly correlated with grade 6 text levels, r (212) = .13, p <.05, but was not entered into the regression model as it did not make a unique contribution to the prediction equation, t (212) = -.79, p > .05. Likewise, the story retell variable correlated significantly with the outcome measure, r (212) = .12, p < .05, but did not make a unique contribution to predicting grade 6 text levels, t (212) = -.70, p > .05. The sentence repetition correlation coefficient was medium and negative, r = -.37, indicating that 13.7% of text level scores on the *DRA* could be explained by this predictor variable. The negative correlation coefficient suggested that lower scores on the sentence repetition task (i.e., fewer repetition errors) indicated advanced grade 6 text levels. See Table 3.4 for bivariate and partial correlations of the JK predictor variables with grade 6 reading accuracy levels.

3.1.1.5 JK Predictor of Grade 6 Accuracy Levels

Outcomes of the analysis revealed that sentence repetition did not correlate significantly, r (212) = -.05, p > .05 to grade 6 reading accuracy levels. In addition, grade 6 reading accuracy levels were not significantly predicted by story comprehension, r (212) = -.05, p > .05 or story retell abilities, r (212) = -.01, p > .05. Thus, the results suggested that reading accuracy in grade 6 is not predicted by JK oral language skills (i.e., sentence repetition, story comprehension, story retell). See Table 3.5 for bivariate correlations of the JK predictor variables with grade 6 reading accuracy levels

Table 3.4

The Bivariate and Partial Correlations of the JK Predictor Variables with Grade 6 Text Levels.

	DRA Gr. 6 Text Level	Sentence Repetition	Story Comprehension	Story Retell
	Correlation between each predictor variable and DRA grade 6 text levels			
DRA Gr. 6 Text Level	1.00	-.37*	.13*	.12*
Sentence Repetition	-.37*	1.00	-.47*	-.43*
Story Comprehension	.13*	-.47*	1.00	.58*
Story Retell	.12*	-.43*	.58*	1.00
	Correlation between each predictor and DRA grade 6 text levels controlling for all other predictors			
Sentence Repetition	-.37**	1.00		
Story Comprehension	.05		1.00	
Story Retell	.05			1.00

* $p < .05$ for bivariate correlation
** $p < .05$ for partial correlation

Table 3.5

The Bivariate of the JK Predictor Variables with Grade 6 Accuracy Levels.

	DRA Gr. 6 Accuracy	Sentence Repetition	Story Comprehension	Story Retell
	Correlation between each predictor variable and DRA grade 6 accuracy levels			
DRA Gr. 6 Accuracy	1.00	-.05	-.05	-.01
Sentence Repetition	-.05	1.00	-.47*	-.43*
Story Comprehension	-.05	-.47*	1.00	.58*
Story Retell	-.01	-.43*	.58*	1.00

* $p < .05$ for bivariate correlation

3.1.1.6 JK Predictor of Grade 6 Comprehension Levels

Results indicated that the regression model was significant, F (1, 211) = 8.582, $p < .05$, with sentence repetition being the exclusive contributor to grade 6 reading comprehension levels. Story comprehension did not significantly correlate with grade 6 reading comprehension, r (212) = .02, $p > .05$, and as such, was not entered into the regression model as it did not make a unique contribution to the prediction equation, t (212) = -1.12, $p > .05$. Likewise, the story retell variable did not correlate significantly with the outcome measure, r (212) = .05, $p > .05$, and therefore, did not make a unique contribution to predicting grade 6 comprehension levels, t (212) = -.57, $p > .05$. The sentence repetition correlation coefficient was small and negative, r = -.20, indicating that 3.9% of comprehension scores on the *DRA* could be explained by this predictor variable. The negative correlation coefficient suggested that lower scores on the sentence repetition task (i.e., fewer repetition errors) indicated advanced reading comprehension in grade 6. See Table 3.6 for bivariate and partial correlations of the JK predictor variables with grade 6 reading comprehension levels.

3.1.1.7 SK Predictor of Grade 3 Text Levels

Results indicated that the regression model was significant, F (1, 121) = 5.241, $p < .05$, with story retell being the exclusive contributor to grade 3 text levels. Story comprehension did not significantly correlate with grade 3 text levels, r (121) = .15, $p > .05$, and as such, was not entered into the model since it did not make a unique contribution to the prediction equation, t (121) = -.33, $p > .05$. The sentence repetition variable was correlated significantly with the

Table 3.6

The Bivariate and Partial Correlations of the JK Predictor Variables with Grade 6 Reading Comprehension Levels.

	DRA Gr. 6 Comprehension	Sentence Repetition	Story Comprehension	Story Retell
	Correlation between each predictor variable and DRA grade 6 reading comprehension			
DRA Gr. 6 Comprehension	1.00	-.20*	.02	.05
Sentence Repetition	-.20*	1.00	-.47*	-.43*
Story Comprehension	.02	-.47*	1.00	.58*
Story Retell	.05	-.43*	.58*	1.00
	Correlation between each predictor and DRA grade 6 reading comprehension controlling for all other predictors			
Sentence Repetition	-.20**	1.00		
Story Comprehension	.08		1.00	
Story Retell	.04			1.00

* $p < .05$ for bivariate correlation
** $p < .05$ for partial correlation

outcome measure, r (121) = -.16, p < .05, but was not entered into the model since it did not make a unique contribution to predicting grade 3 text levels, t (121) = -.96, p > .05. The story retell correlation coefficient was small and positive, r = -.20, indicating that 4.2% of text level scores on the *DRA* could be explained by this predictor variable. The positive correlation coefficient suggested that higher scores on the story retell task (i.e., increased number of events retold) indicated advanced text levels in grade 3. See Table 3.7 for bivariate and partial correlations of the SK predictor variables with grade 3 text levels.

3.1.1.8 SK Predictor of Grade 3 Accuracy Levels

Results indicated that the regression model was significant, F (1, 121) = 4.725, p < .05, with sentence repetition being the exclusive contributor to grade 3 reading accuracy levels. Story comprehension did not significantly correlate with grade 3 reading accuracy levels, r (121) = .04, p > .05, and as such, was not entered into the regression model since it did not make a unique contribution to the prediction equation, t (121) = -.32, p > .05. Likewise, the story retell variable did not correlate significantly with the outcome measure, r (121) = .11, p > .05, and therefore, did not make a unique contribution to predicting grade 3 reading accuracy levels, t (121) = -.45, p > .05. The sentence repetition correlation coefficient was small and negative, r = -.19, indicating that 3.8% of accuracy scores on the *DRA* could be explained by this predictor variable. The negative correlation coefficient suggested that lower scores on the sentence repetition task (i.e., fewer repetition errors) indicated advanced reading accuracy

Table 3.7

The Bivariate and Partial Correlations of the SK Predictor Variables with Grade 3 Text Levels.

	DRA Gr. 3 Text Levels	Sentence Repetition	Story Comprehension	Story Retell
	Correlation between each predictor variable and DRA grade 3 text levels			
DRA Gr. 3 Text Levels	1.00	-.20*	.02	.05
Sentence Repetition	-.16*	1.00	-.36*	-.39*
Story Comprehension	.17	-.36*	1.00	.60*
Story Retell	.20*	-.39*	.60*	1.00
	Correlation between each predictor and DRA grade 3 text levels controlling for all other predictors			
Sentence Repetition	-.09	1.00		
Story Comprehension	.03		1.00	
Story Retell	.20**			1.00

* $p < .05$ for bivariate correlation
** $p < .05$ for partial correlation

in grade 3. See Table 3.8 for bivariate and partial correlations of the SK predictor variables with grade 3 reading accuracy levels

3.1.1.9 SK Predictor of Grade 3 Comprehension Levels

Results indicated that the regression model was significant, F (1, 121) = 5.921, $p < .05$, with story comprehension being the exclusive contributor to grade 3 reading comprehension levels. Sentence repetition was significantly correlated with grade 3 reading comprehension, r (121) = -.16, $p < 05$, but did not enter into the regression model since it did not make a unique contribution to the prediction equation, t (121) = -.95, $p > .05$. Likewise, the story retell variable was significantly correlated with the outcome measure, r (121) = .19, $p < .05$, but did not make a unique contribution to predicting grade 3 reading comprehension levels, t (121) = .86, $p > .05$. The story comprehension correlation coefficient was small and positive, r = .21, indicating that 4.7% of comprehension scores on the *DRA* could be explained by this predictor variable. The positive correlation coefficient suggested that higher scores on the story comprehension task (i.e., increased understanding of the story's contents) indicated advanced reading comprehension abilities in grade 3. See Table 3.9 for bivariate and partial correlations of the SK predictor variables with grade 3 reading comprehension levels

Table 3.8

The Bivariate and Partial Correlations of the SK Predictor Variables with Grade 3 Accuracy Levels.

	DRA Gr. 3 Accuracy	Sentence Repetition	Story Comprehension	Story Retell
	Correlation between each predictor variable and DRA grade 3 accuracy levels			
DRA Gr. 3 Accuracy	1.00	-.19*	.04	.11
Sentence Repetition	-.19*	1.00	-.36*	-.39*
Story Comprehension	.04	-.36*	1.00	.60*
Story Retell	.11	-.39*	.60*	1.00
	Correlation between each predictor and DRA grade 3 accuracy levels controlling for all other predictors			
Sentence Repetition	-.19**	1.00		
Story Comprehension	03		1.00	
Story Retell	.04			1.00

* $p < .05$ for bivariate correlation
** $p < .05$ for partial correlation

Table 3.9

The Bivariate and Partial Correlations of the SK Predictor Variables with Grade 3 Reading Comprehension Levels.

	DRA Gr. 3 Comprehension	Sentence Repetition	Story Comprehension	Story Retell
	Correlation between each predictor variable and DRA grade 3 reading comprehension levels			
DRA Gr. 3 Comprehension	1.00	-.16*	.22*	.19*
Sentence Repetition	-.16*	1.00	-.36*	-.39*
Story Comprehension	.22*	-.36*	1.00	.60*
Story Retell	.19*	-.39*	.60*	1.00
	Correlation between each predictor and DRA grade 3 reading comprehension controlling for all other predictors			
Sentence Repetition	-.09	1.00		
Story Comprehension	.22**		1.00	
Story Retell	.08			1.00

* $p < .05$ for bivariate correlation
** $p < .05$ for partial correlation

3.1.1.10 SK Predictor of Grade 6 Text Levels

Outcomes of the analysis revealed that sentence repetition did not correlate significantly, r (121) = -.12, p > .05 to grade 6 text levels. In addition, grade 6 text levels were not significantly predicted by story comprehension, r (121) = -.03, p > .05 or story retell, r (121) = .02, p > .05. Thus, the results suggested that text levels in grade 6 are not predicted by SK oral language skills (i.e., sentence repetition, story comprehension, story retell). See Table 3.10 for bivariate correlations of the SK predictor variables with grade 6 text levels

3.1.1.11 SK Predictor of Grade 6 Accuracy Levels

Outcomes of the analysis revealed that sentence repetition did not correlate significantly, r (121) = -.08, p > .05 to grade 6 reading accuracy. In addition, grade 6 reading accuracy was not significantly predicted by story comprehension, r (121) = .06, p > .05 or story retell abilities, r (121) = .16, p > .05. Thus, the results suggested that reading accuracy levels in grade 6 are not predicted by SK oral language skills (i.e., sentence repetition, story comprehension, story retell). See Table 3.11 for bivariate correlations of the SK predictor variables with grade 6 reading accuracy levels.

3.1.1.12 SK Predictor of Grade 6 Comprehension Levels

Outcomes of the analysis revealed that sentence repetition did not have a significant correlation, r (121) = -.17, p > .05 to grade 6 reading comprehension. In addition, grade 6 reading comprehension was not significantly predicted by story comprehension, r (121) = .15, p > .05 or story retell abilities, r (121) = .07, p > .05. Thus, the results suggested that comprehension levels in grade 6 are

Table 3.10

The Bivariate Correlations of the SK Predictor Variables with Grade 6 Text Levels.

	DRA Gr. 6 Text Level	Sentence Repetition	Story Comprehension	Story Retell
	Correlation between each predictor variable and DRA grade 6 text levels			
DRA Gr. 6 Text Level	1.00	-.12	.03	.02
Sentence Repetition	-.12	1.00	-.36*	-.39*
Story Comprehension	.03	-.36*	1.00	.60*
Story Retell	.02	-.39*	.60*	1.00

* $p < .05$ for bivariate correlation

Table 3.11

The Bivariate Correlations of the SK predictor variables with Grade 6 Reading Accuracy.

	DRA Gr. 6 Accuracy	Sentence Repetition	Story Comprehension	Story Retell
	Correlation between each predictor variable and DRA grade 6 accuracy levels			
DRA Gr. 6 Accuracy	1.00	-.08	.06	.16
Sentence Repetition	-.08	1.00	-.36*	-.39*
Story Comprehension	.06	-.36*	1.00	.60*
Story Retell	.16	-.39*	.60*	1.00

* $p < .05$ for bivariate correlation

not predicted by SK oral language skills (i.e., sentence repetition, story comprehension, story retell). See Table 3.12 for bivariate correlations of the SK predictor variables with grade 6 reading comprehension levels

3.1.2 Question 1a: Which of the three language measures in JK or SK (i.e., sentence repetition, story comprehension, and story retell) are the best predictors of grade 3 and 6 reading ability (i.e., text level, reading accuracy and reading comprehension on the DRA)?

Results from the same 12 regression analyses applied in question 1 were used to determine the oral language skills that best predicted reading performance on the *DRA* at grades 3 and 6. Standard conventions of effect size magnitudes were followed such that .10 was categorized as a small effect, .30 was a medium effect and .50 was a large effect as determined by Green & Salkind (2005).

3.1.2.1 Grade 3 Reading Predictors

An overview of all grade 3 regression analyses revealed that sentence repetition skills, $r\,(121) = -.19$, $p < .05$, solely contributed to grade 3 reading accuracy outcomes. Further, sentence repetition skills, $r\,(212) = -.40$, $p < .05$, along with story retell, $r\,(121) = .20$, $p < .05$ abilities were significant predictors of grade 3 text levels. However, grade 3 reading comprehension scores could be predicted based on story comprehension, $r\,(121) = .22$, $p < .05$, and story retell abilities, $r\,(212) = .19$, $p < .05$. These findings indicated that sentence repetition skills have the most predictive value of grade 3 reading performance.

Table 3.12

The Bivariate Correlations of the SK Predictor Variables with Grade 6 Reading Comprehension.

	DRA Gr. 6 Comprehension	Sentence Repetition	Story Comprehension	Story Retell
	Correlation between each predictor variable and DRA grade 6 reading comprehension			
DRA Gr. 6 Comprehension	1.00	-.17	.15	.07
Sentence Repetition	-.17	1.00	-.36*	-.39*
Story Comprehension	.15	-.36*	1.00	.60*
Story Retell	.07	-.39*	.60*	1.00

* $p < .05$ for bivariate correlation

3.1.2.2 Grade 6 Reading Predictors

An overview of all grade 6 regression analyses revealed that sentence repetition skills were the sole predictors of grade 6 text levels, r (212) = -.37, $p < .05$ and grade 6 reading comprehension, r (212) = -.20, $p < .05$. These findings indicated that sentence repetition skills have the most predictive value of grade 3 reading performance. See Table 3.13 for an overview of all oral language predictors in grades 3 and 6.

3.1.3 Question 1b: Do the language scores of JK and SK students differ in their predictive ability for reading scores at grade 3 and/or grade 6?

Results from the same 12 regression analyses applied in question 1 were used to determine potential differences between JK and SK language measures that best predicted reading abilities. Standard conventions of effect size magnitudes were followed such that .10 was categorized as a small effect, .30 was a medium effect and .50 was a large effect as determined by Green & Salkind (2005).

3.1.3.1 Predicting Text Levels

3.1.3.1.1 Grade 3 Text Levels

Examination of the JK regression on grade 3 text levels revealed that sentence repetition was the only significant contributor to the model, r (212) = -.41, $p < .05$. The regression model for the text scores in grade 3 revealed that SK sentence repetition scores did not have a unique contribution, r_p (121) = -.09, $p > .05$. These findings indicated that sentence repetition abilities in JK were stronger in predicting participants' grade 3 text level performance than in SK.

Table 3.13

Overall Summary of JK and SK Oral Language Predictors for Reading Performance in Grades 3 and 6

	Oral Language Skills		
Reading Outcome Measures	Sentence Repetition	Story Comprehension	Story Retell
		Grade 3 *DRA*	
Text Levels	+	-	+
Effect Size	r = .41 (medium)		r = .20 (small)
Accuracy Levels	+	-	-
Effect Size	r = .19 (small)		
Comprehension Levels	-	+	+
Effect Size		r = .22 (small)	r = .19 (small)
		Grade 6 *DRA*	
Text Levels	+	-	-
Effect Size	r = .37 (medium)		
Accuracy Levels	-	-	-
Effect Size			
Comprehension Levels	+	-	-
Effect Size	r = .20 (small)		

Note. + refers to significant unique predictors at $p < .05$
- refers to not significant unique predictors at $p > .05$

Alternatively, the regression analysis of SK predictors on grade 3 text levels suggested that story retell was the only significant contributor to the model, r (121) = .20, p < .05 while the same skills did not have a unique contribution, r_p (212) = .08, p > .05, to text level outcomes in JK. These findings indicated that story retell abilities in SK were stronger in predicting participants' grade 3 text level performance than in JK.

3.1.3.1.2 Grade 6 Text Levels

Examination of the JK regression on grade 6 text levels revealed that sentence repetition was the only significant contributor to the model, r (212) = -.37, p < .05. The regression model for the text scores in grade 6 revealed that SK sentence repetition scores were not significantly correlated, r (121) = -.12, p > .05. These findings indicated that sentence repetition abilities in JK were stronger in predicting participants' grade 6 text level performance than in SK.

Alternatively, the regression analysis of SK predictors on grade 6 text levels revealed that none of the hypothesized oral language skills; story comprehension, r (121) = -.03, p > .05, story retell, r (121) = -.02, p > .05, were significant predictor variables.

3.1.3.2 Predicting Reading Accuracy

3.1.3.2.1 Grade 3 Reading Accuracy

Examination of the SK regression on grade 3 reading accuracy revealed that sentence repetition was the only significant contributor to the model, r (121) = -.20, p < .05. The regression model for the reading accuracy scores in grade 3 revealed that JK sentence repetition scores did not have a significant

contribution, $r(212) = -.10$, $p > .05$. These findings indicated that sentence repetition abilities in SK were stronger in predicting participants' grade 3 reading accuracy performance than in JK.

Alternatively, the regression analysis of JK predictors on grade 3 reading accuracy revealed that none of the hypothesized oral language skills; story comprehension, $r(212) = -.06$, $p > .05$, story retell, $r(212) = -.03$, $p > .05$, were significant predictor variables.

3.1.3.2.2 Grade 6 Reading Accuracy

Examination of the JK regression analysis on grade 6 reading accuracy revealed that none of the hypothesized oral language abilities; sentence repetition, $r(212) = -.05$, $p > .05$, story comprehension, $r(212) = -.05$, $p > .05$, story retell, $r(212) = -.01$, $p > .05$, were significantly correlated with grade 6 reading accuracy outcomes. Similarly, the SK regression analyses on grade 6 reading accuracy also indicated no significant correlation between grade 6 reading accuracy and sentence repetition, $r(121) = -.08$, $p > .05$, story comprehension, $r(121) = .06$, $p > .05$ or story retell, $r(121) = .16$, $p > .05$. Thus, none of the oral language skills in either the JK or SK students were reliable predictors of grade 6 reading accuracy outcomes.

3.1.3.3 Predicting Reading Comprehension

3.1.3.3.1 Grade 3 Reading Comprehension

Examination of the JK regression on grade 3 reading comprehension revealed that story retell was the only significant contributor to the model, $r(212) = .19$, $p < .05$. The regression model for the text scores in grade 3

revealed that SK story retell scores did not have a unique contribution, r_p (121) = .08, p > .05. These findings indicated that story retell abilities in JK were stronger in predicting participants' grade 3 reading comprehension than in SK.

Alternatively, the regression analysis of SK predictors on grade 3 reading comprehension levels suggested that story comprehension was the only significant contributor to the model, r (121) = .22, p < .05 while the same skills did not have a unique contribution, r_p (212) = .03, p > .05, to reading comprehension outcomes in JK. These findings indicated that story comprehension abilities in SK were stronger in predicting participants' grade 3 reading comprehension than in JK.

3.1.3.3.2 Grade 6 Reading Comprehension

Examination of the JK regression on grade 6 reading comprehension revealed that sentence repetition was the only significant contributor to the model, r (212) = -.20, p < .05. The regression model for the text scores in grade 6 revealed that SK sentence repetition scores did not have a unique contribution, r_p (121) = -.13, p > .05. These findings indicated that sentence repetition abilities in JK were stronger in predicting participants' grade 6 reading comprehension performances than in SK.

Alternatively, the regression analysis of SK predictors on grade 6 reading comprehension revealed that none of the hypothesized oral language skills; story comprehension, r (121) = .15, p > .05, story retell, r (212) = .07, p > .05 were significant predictor variables. See Table 3.14 for a comparison of JK and SK predictor variables on reading performance.

Table 3.14

Comparison of Significant Oral Language Predictors of Reading Performance in Grades 6 and 6

Reading Outcome Measures	Oral Language Skills					
	Junior Kindergarten			Senior Kindergarten		
	Rep	Comp	Retell	Rep	Comp	Retell
	Grade 3 *DRA*					
Text Levels Effect Size	+ r = .41 (medium)	-	-	-	-	+ r = 39 (small)
Accuracy Levels Effect Size	-	-	-	+ r = .19 (small)	-	-
Comprehension Levels Effect Size	-	-	+ r = .19 (small)	-	+ r = .22 (small)	-
	Grade 6 *DRA*					
Text Levels Effect Size	+ r = .37 (medium)	-	-	-	-	-
Accuracy Levels Effect Size	-	-	-	-	-	-
Comprehension Levels Effect Size	+ r = .20 (small)	-	-	-	-	-

Note. + refers to significant unique predictors at $p<.05$
- refers to not significant unique predictors at $p>.05$
Rep = Sentence Repetition, Comp = Story Comprehension, Retell = Story Retell

3.1.4. Question 2: What percentage of students identified with average and not average speech and/or language (s/l) abilities in Kindergarten are within and below reading expectations in grades 3 and 6?

Descriptive analyses were conducted to determine the percentages of students with average and not average s/l skills classified as within and below expectations on text level, accuracy and reading comprehension performance.

3.1.4.1 Grade 3 Text Levels

Results indicated that 61% of students classified with average s/l skills were later classified as within text level expectations in grade 3 while 40% of the participants were categorized as below text level expectations. In contrast, 34% of the not average s/l kindergarten students were within text level expectations in grade 3 while 66% of the students remained below text level reading performances. See Table 3.15 and Figure 3.1 for the number and proportion of students with average and not average s/l skills categorized as within and below text level expectations.

3.1.4.2 Grade 3 Reading Accuracy Levels

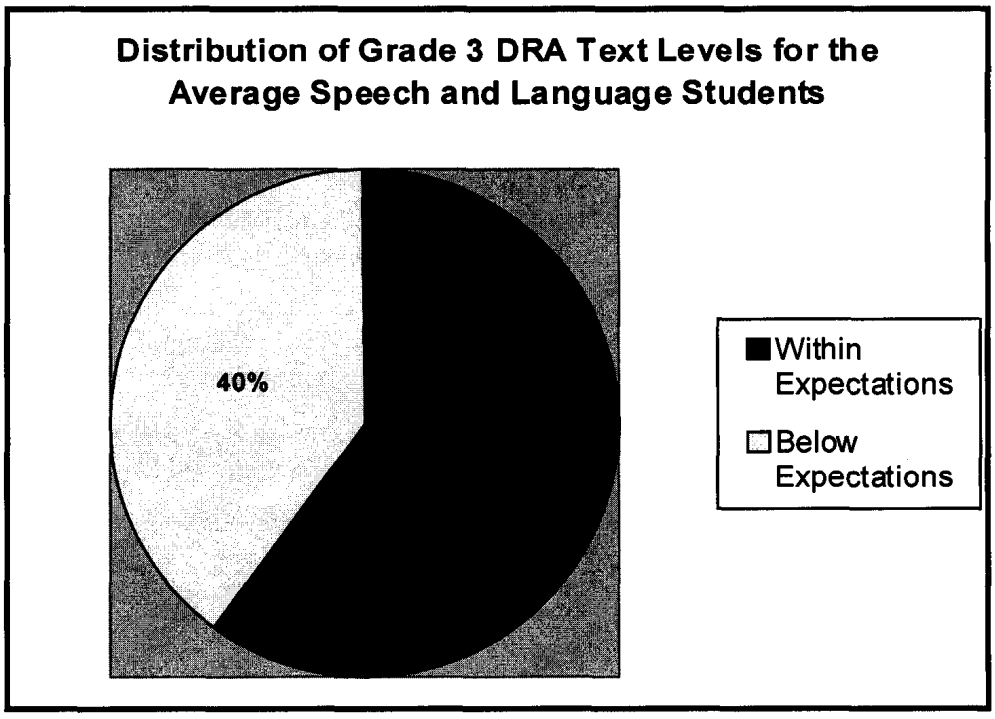
Results indicated that 99.6% of students classified with average s/l skills were later classified as within reading accuracy expectations in grade 3 while .4% of the participants were categorized as below reading accuracy expectations. Similarly, 100% of the not average s/l kindergarten students were within reading accuracy expectations. See Table 3.16 and Figure 3.2 for the number and proportion of students with average and not average s/l skills categorized as within and below reading accuracy expectations.

Table 3.15

Distribution of Grade 3 DRA Text Levels

	Average Speech and Language Skills		Not Average Speech and/or Language Skills	
Category	Number	Proportion (%)	Number	Proportion (%)
Within Expectations	145	60.7*	27	33.8*
Below Expectations	94	39.3*	53	66.2*
Total	239	100	80	100

*$p < .05$



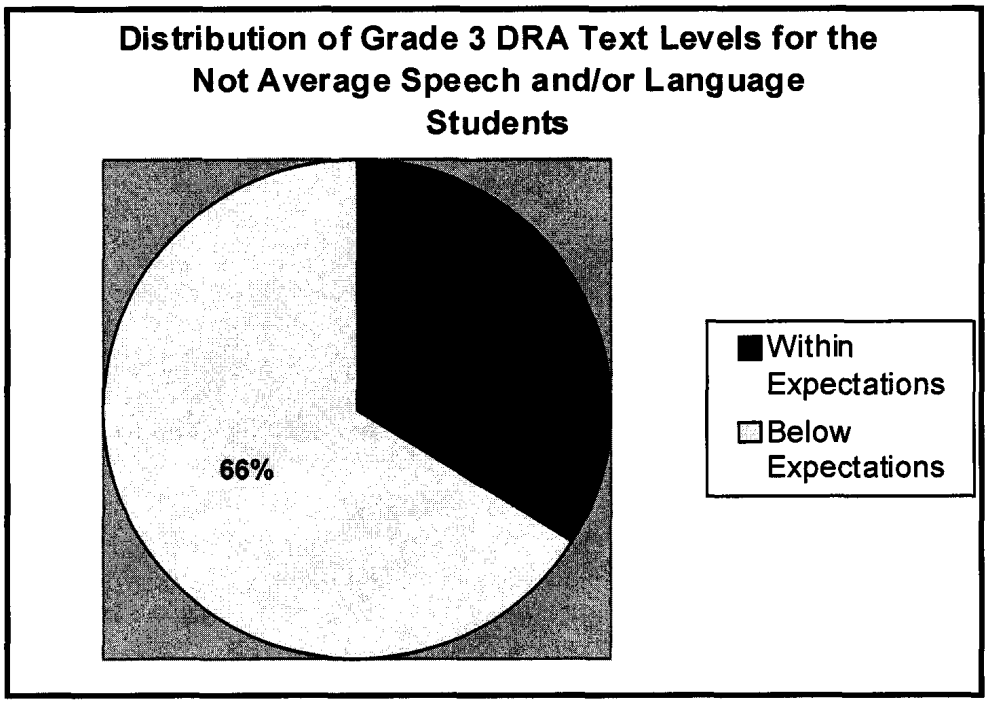
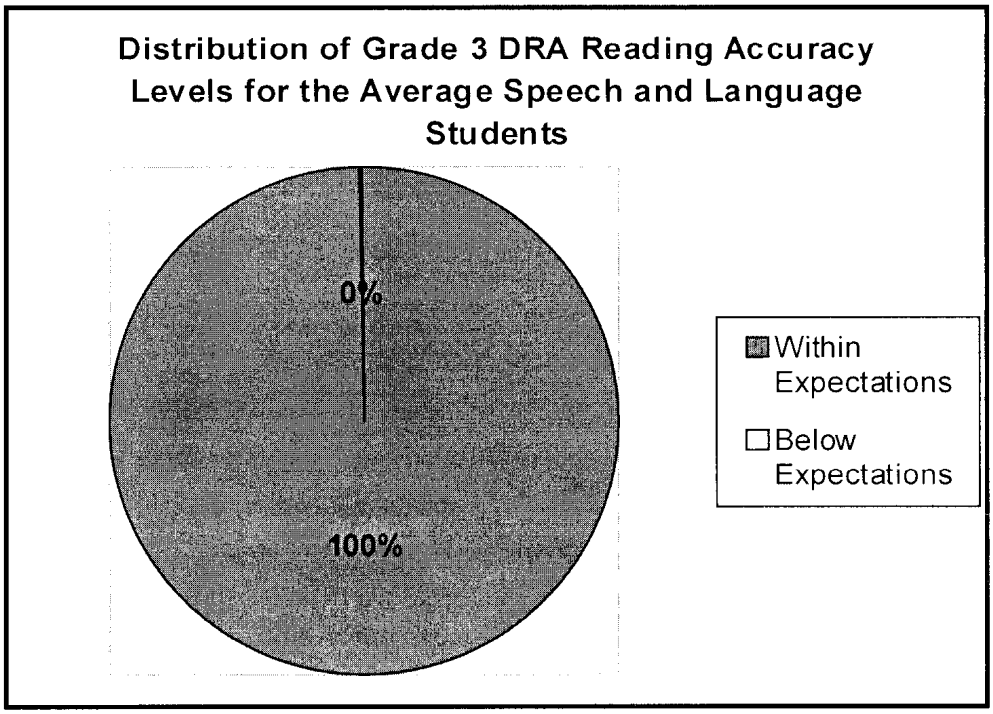


Figure 3.1. Distribution of grade 3 DRA text level performance for the average and not average speech and/or language students

Table 3.16

Distribution of Grade 3 DRA Reading Accuracy Levels

	Average Speech and Language Skills		Not Average Speech and/or Language Skills	
Category	Number	Proportion (%)	Number	Proportion (%)
Within Expectations	238	99.6	80	100
Below Expectations	1	.4	0	0
Total	239	100	80	100



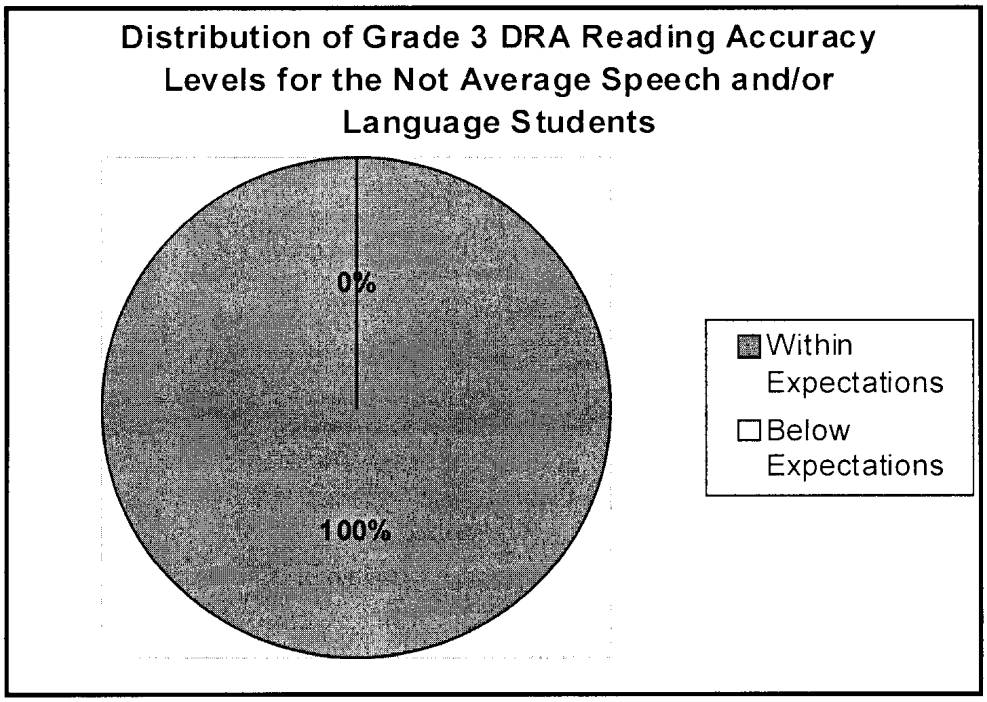


Figure 3.2. Distribution of grade 3 DRA reading accuracy performance for the average and not average speech and/or language students

3.1.4.3 Grade 3 Reading Comprehension Levels

Results indicated that 94% of students classified with average s/l skills were later classified as within reading comprehension expectations in grade 3 while 6% of the students were below reading comprehension expectations. In contrast, 85% of the not average s/l kindergarten students were within reading comprehension expectations in grade 3 while 15% remained below reading comprehension performances. See Table 3.17 for the number and proportion of students with average and not average s/l skills categorized as within and below reading comprehension expectations. These proportions are also graphically represented in Figure 3.3.

3.1.4.4 Grade 6 Text Levels

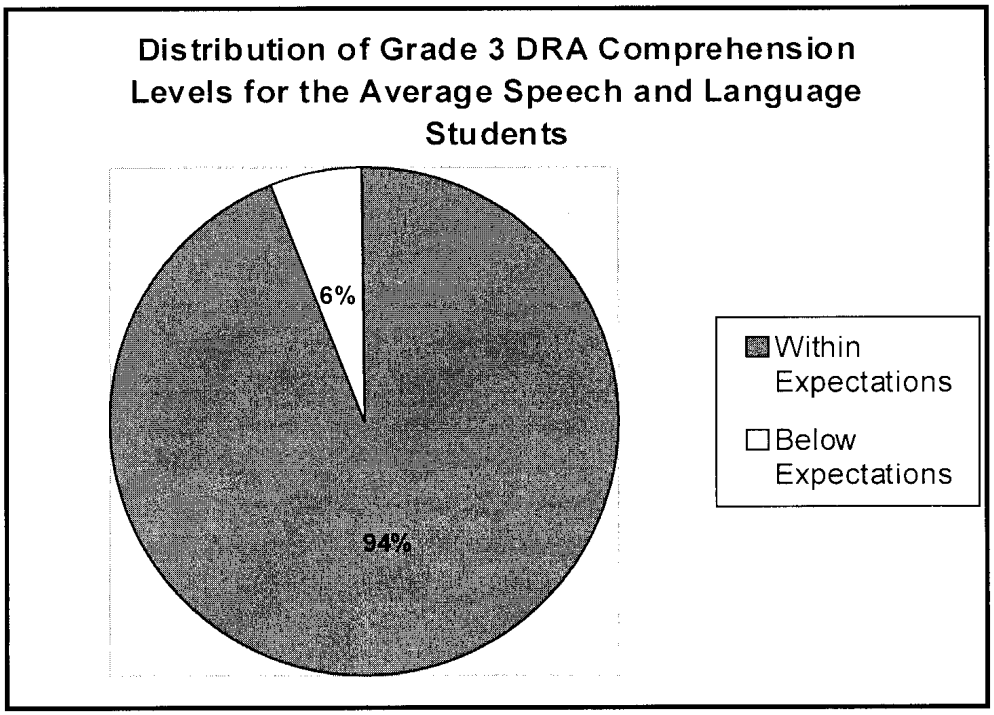
Results indicated that 80% of students classified with average s/l skills were later classified as within text level expectations in grade 6 while 20% were below text level expectations. In contrast, 67% of the not average s/l kindergarten students were within grade 6 text level performances while 33% remained below grade 6 text levels. See Table 3.18 for the number and proportion of students with average and not average s/l skills categorized as within and below text level expectations. These proportions are also graphically represented in Figure 3.4.

Table 3.17

Distribution of Grade 3 DRA Reading Comprehension Levels

	Average Speech and Language Skills		Not Average Speech and/or Language Skills	
Category	Number	Proportion (%)	Number	Proportion (%)
Within Expectations	225	94.1*	68	85*
Below Expectations	14	5.9*	12	15*
Total	239	100	80	100

*$p < .05$



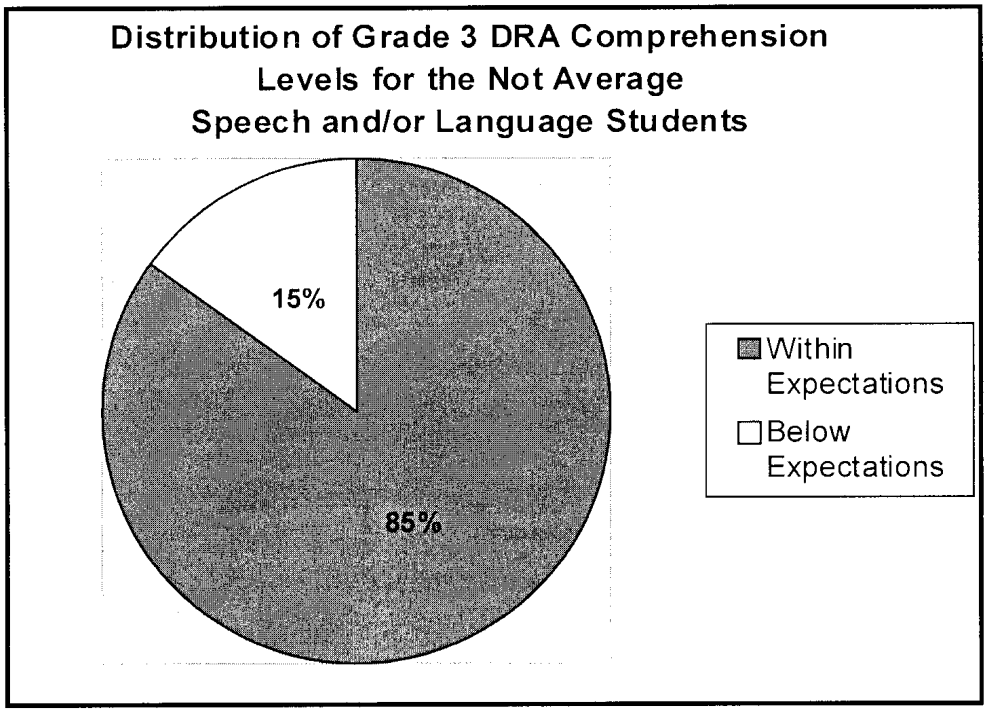
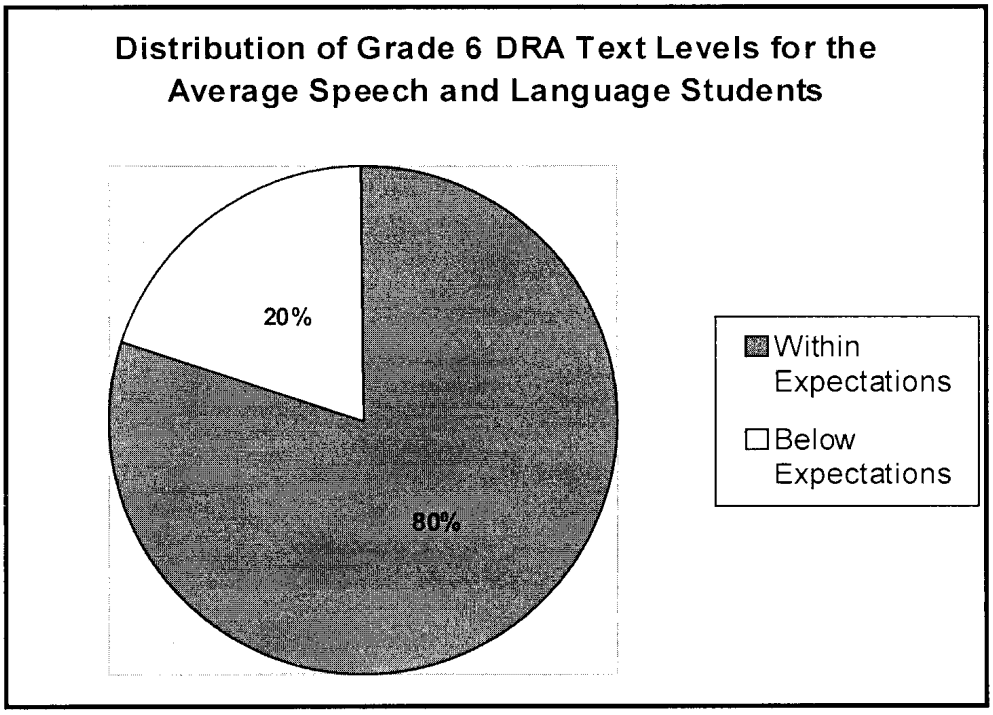


Figure 3.3. Distribution of grade 3 DRA reading comprehension performance for the average and not average speech and/or language students

Table 3.18

Distribution of Grade 6 DRA Text Levels

	Average Speech and Language Skills		Not Average Speech and/or Language Skills	
Category	Number	Proportion (%)	Number	Proportion (%)
Within Expectations	189	79.1*	54	67.5*
Below Expectations	50	20.9*	26	32.5*
Total	239	100	80	100



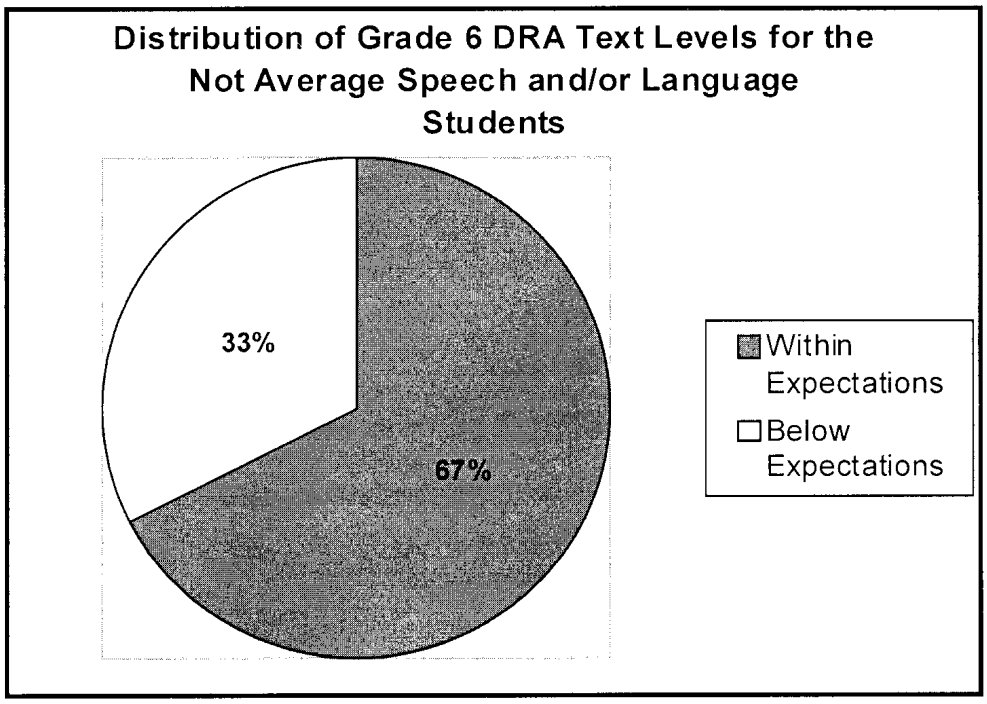


Figure 3.4. Distribution of grade 6 DRA text level performance for the average and not average speech and/or language students

3.1.4.5 Grade 6 Reading Accuracy Levels

Results indicated that 100% of students classified with average s/l skills were later classified as within reading accuracy expectations in grade 6. Similarly, 99% of the not average s/l kindergarten students were classified as within reading accuracy expectations in grade 6. See Table 3.19 for the number and proportion of students with average and not average s/l skills categorized as within and below reading accuracy expectations. These proportions are also graphically represented in Figure 3.5.

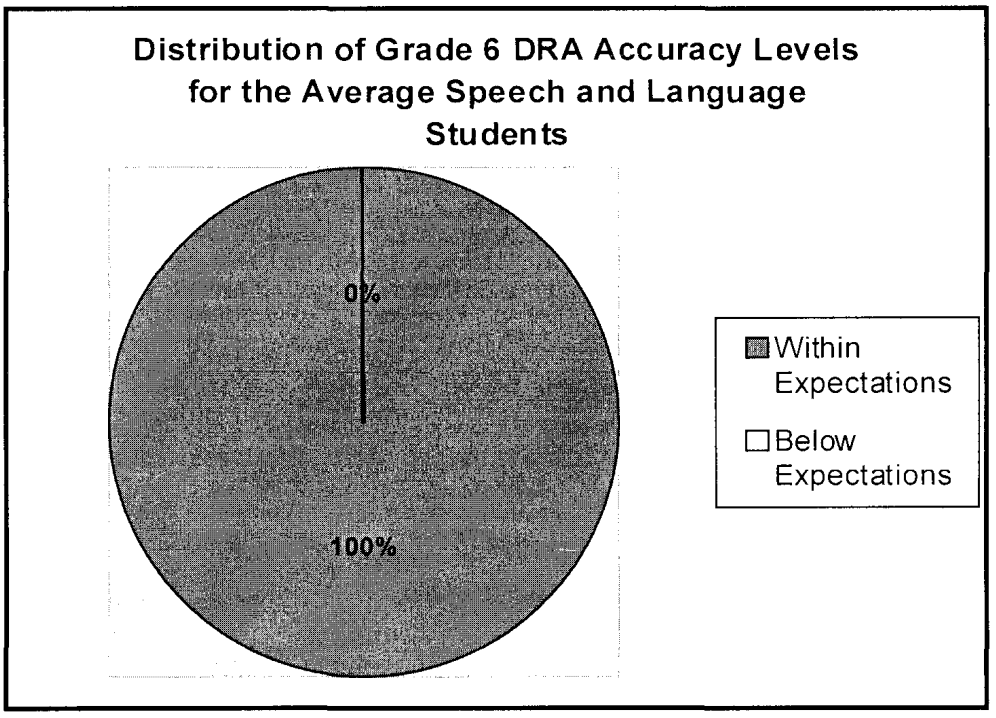
3.1.4.6 Grade 6 Reading Comprehension Levels

Results indicated that 70% of students classified with average s/l skills were later classified as within reading comprehension expectations in grade 6 while 30% were categorized as below reading comprehension levels. Similarly, 74% of the not average s/l kindergarten students were within grade 6 reading comprehension expectations while 26% remained below reading comprehension performances. See Table 3.20 for the number and proportion of students with average and not average s/l skills categorized as within and below reading comprehension expectations. These proportions are also graphically represented in Figure 3.6.

Table 3.19

Distribution of Grade 6 DRA Reading Accuracy Levels

	Average Speech and Language Skills		Not Average Speech and/or Language Skills	
Category	Number	Proportion (%)	Number	Proportion (%)
Within Expectations	239	100	79	98.8
Below Expectations	0	0	1	1.2
Total	239	100	80	100



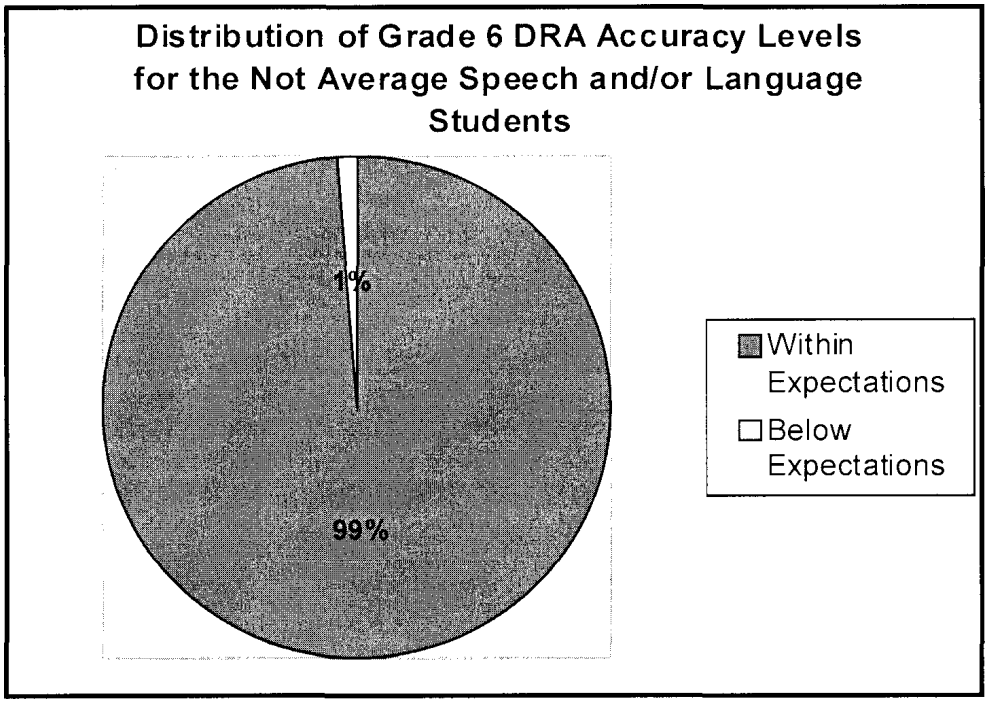
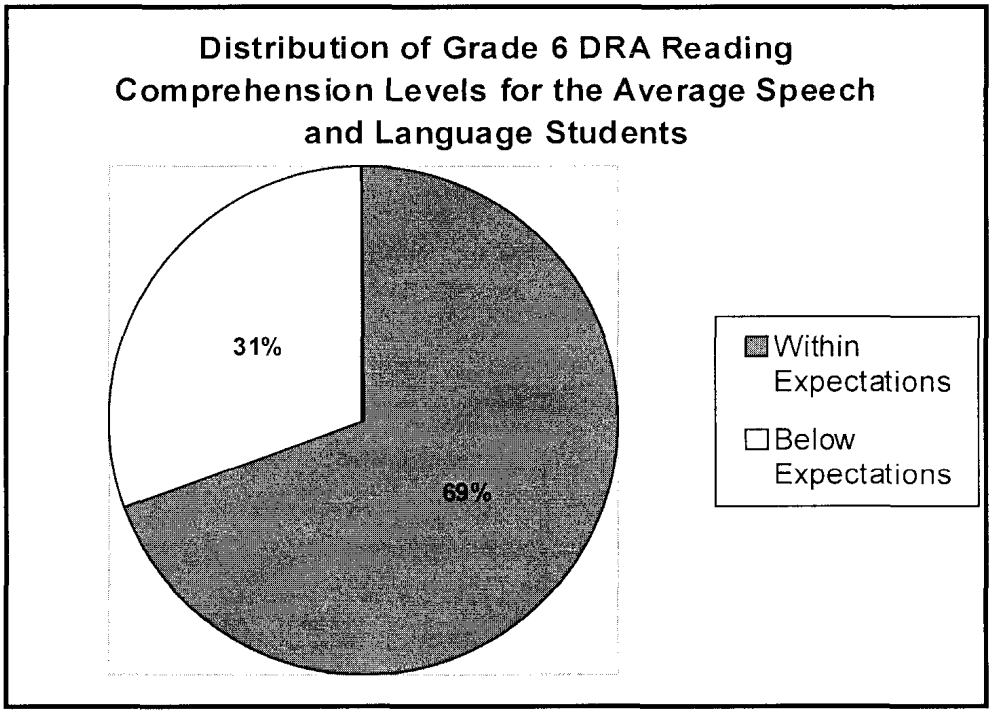


Figure 3.5. Distribution of grade 6 DRA reading accuracy performance for the average and not average speech and/or language students

Table 3.20

Distribution of Grade 6 DRA Reading Comprehension Levels

	Average Speech and Language Skills		Not Average Speech and/or Language Skills	
Category	Number	Proportion (%)	Number	Proportion (%)
Within Expectations	166	69.5	59	73.8
Below Expectations	73	30.5	21	26.2
Total	239	100	80	100



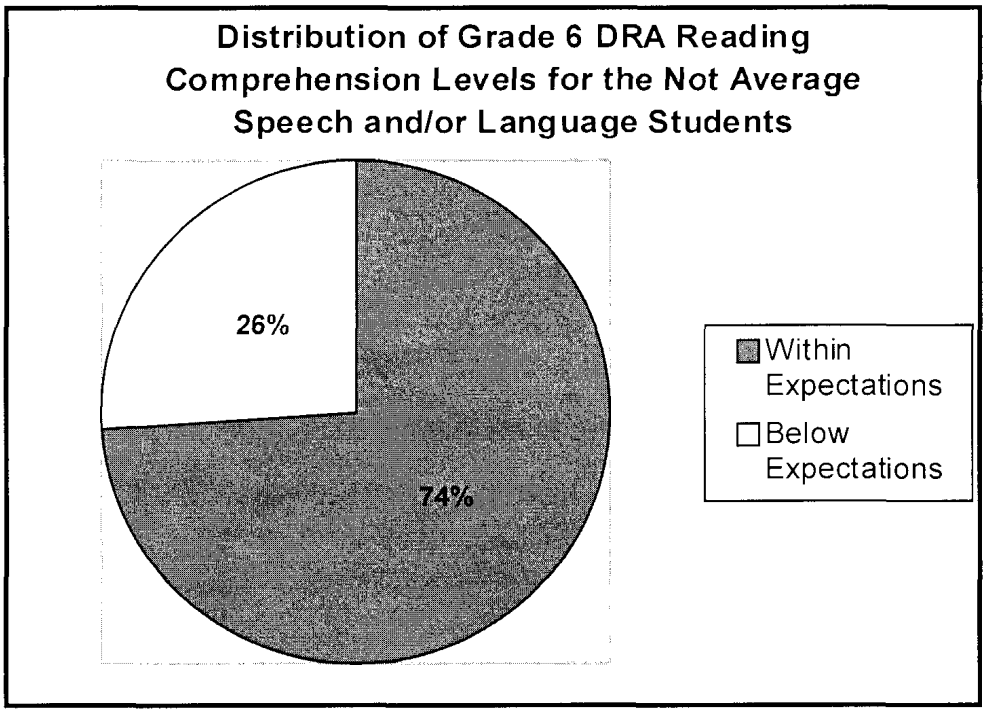


Figure 3.6. Distribution of grade 6 DRA reading comprehension performance for the average and not average speech and/or language students

3.1.5 Question 2a: Is the distribution of students within or below reading expectations at grade 3 and 6 different for the s/l average and not average kindergarten students?

Six cross tabulation statistics using a Chi-square were completed to compare the distribution between students categorized with average and not average s/l abilities in kindergarten and the same students categorized as within and below reading expectations in grades 3 and 6.

A two-way contingency table analysis was performed to evaluate whether kindergarten students classified as average and not average in their speech and/or language skills were significantly different in their distribution into within and below reading expectations of grade 3 and 6 text level, reading accuracy and reading comprehension categories. The two variables entered into the analysis were as follows: 1) kindergarten s/l abilities, which had two levels (average and not average), and 2) performance on reading outcomes, which also had two levels (within and below expectations).

3.1.5.1 Grade 3 Text Levels

Speech and language skills and distribution into grade 3 text level outcomes were found to be significantly related, Pearson χ^2 (1, N = 319) = 17.48, $p < .05$, Cramer's $V = .23$. The findings suggested that students classified as average in their kindergarten s/l skills were distributed differently among performance on grade 3 text levels than the students classified with not average s/l abilities.

3.1.5.2 Grade 3 Reading Accuracy Levels

Speech and language skills and distribution into grade 3 accuracy level outcomes were not found to be significantly related, Pearson χ^2 (1, N = 319) = .336, $p > .05$, Cramer's $V = .03$. The findings suggested that students classified as average in their kindergarten s/l skills were not distributed differently among performance on grade 3 reading accuracy levels than students classified with not average s/l abilities.

3.1.5.3 Grade 3 Reading Comprehension Levels

Speech and language skills and distribution into grade 3 text level outcomes were found to be significantly related, Pearson χ^2 (1, N = 319) = 6.69, $p < .05$, Cramer's $V = .15$. The findings suggested that students classified as average in their kindergarten s/l skills were distributed differently among performance on grade 3 reading comprehension than the students classified with not average s/l abilities.

3.1.5.4 Grade 6 Text Levels

Speech and language skills and distribution into grade 6 text level outcomes were found to be significantly related, Pearson χ^2 (1, N = 319) = 4.43, $p < .05$, Cramer's $V = .12$. The findings suggested that students classified as average in their kindergarten s/l skills were distributed differently among performance on grade 6 text levels than the students classified with not average s/l abilities

3.1.5.5 Grade 6 Reading Accuracy Levels

Speech and language skills and distribution into grade 6 accuracy level outcomes were not found to be significantly related, Pearson χ^2 (1, N = 319) = 3.00, $p > .05$, Cramer's $V = .10$. The findings suggested that students classified as average in their kindergarten s/l skills were not distributed differently among performance on grade 6 reading accuracy levels than students classified with not average s/l abilities.

3.1.5.6 Grade 6 Reading Comprehension Levels

Speech and language skills and distribution into grade 6 reading comprehension outcomes were not found to be significantly related, Pearson χ^2 (1, N = 319) = 3.00, $p > .05$, Cramer's $V = .10$. The findings suggested that students classified as average in their kindergarten s/l skills were not distributed differently among performance on grade 6 reading comprehension levels than students classified with not average s/l abilities.

CHAPTER FOUR

Discussion

4.1 Overview

The primary purpose of the present study was to investigate the ability of junior kindergarten (JK) and senior kindergarten (SK) oral language skills to predict reading skills at grades 3 and 6. Since the *Developmental Reading Assessment (DRA)* is administered twice yearly by the Thames Valley District School Board (TVDSB) and is considered to be a good assessment of reading skills, the students screened for speech and language skills in JK and SK in the 1999 – 2000 school year were followed longitudinally for performance on the *DRA*. A specific aim was to determine which of the language measures in either JK or SK, sentence repetition, story comprehension and story retell, best predicted performance on the *DRA* for text level, reading accuracy, and reading comprehension at grade 3 and grade 6. Finally, the study examined the distribution of kindergarten students within and below reading expectations at grade 3 and grade 6.

4.2 Summary of Results

Although the findings of this longitudinal investigation indicated that sentence repetition, story comprehension and story retell skills were correlated with one another; each of the skills had unique prognostic values to predict reading outcomes on specific subtests of the *DRA.* Specifically, sentence repetition abilities predicted outcomes for grades 3 reading accuracy, grade 6 reading comprehension, as well as grade 3 and 6 text levels. Further, story

comprehension and retell abilities were found to predict grade 3 reading comprehension outcomes. Overall, oral language skills were found to predict grades 3 and 6 reading outcomes differently based on their assessment at JK or SK. However, it was noted that oral language skills assessed in SK did not significantly predict text level, reading accuracy, or reading comprehension outcomes in late elementary school. The analysis also revealed that students categorized with average and not average speech and/or language (s/l) skills showed significantly different distributions into categories of within and below reading expectations for reading comprehension at grade 3 and for text level at grades 3 and 6. A larger proportion of the students with not average s/l skills compared to students with average speech and language skills were in the below average reading expectation category.

4.3 Result Interpretations

4.3.1 Methodological Considerations

The findings of the present study vary from those of similar studies (Catts et al., 2001). Methodological differences in assessment instruments and thus dependent and independent variables are a consideration when comparing the results of the present study to other findings in the literature.

The *DRA* used in the present study is a normed, criterion referenced assessment tool used to establish reading levels and monitor progress over elementary grade levels. An important intent of the tool is to guide classroom literacy programming based on students' reading progress in the key areas of decoding and comprehension skills as determined by performance on the *DRA*.

Reading measures, such as the *Woodcock-Johnson Reading Mastery*, a standardized tool commonly utilized in other studies, is administered to determine students' level of reading in key areas by deriving standardized scores for age and grade.

The oral language skills used as independent variables in the present study also differed from those used by Catts et al. (2001). Thus, it was anticipated that the outcomes of both studies would vary from one another. Findings from the current study revealed that sentence repetition, story comprehension and retell abilities were significantly correlated with one another. Implications of these results suggest that the three oral language skills measured the similar underlying general language facilities. All three abilities assessed linguistic skills which required the involvement of phonological, morphological, syntactical and text level skills, receptively and expressively. Accordingly, it might be expected that the oral language skills in the present study were correlated with one another. In contrast, two of the three language variables identified as good predictors in Catts et al. (2001) did not require the use of language skills at the sentence or text levels. For example, in the rapid automated naming task, students were asked to name a series of animals presented to them on a chart. This task tested phonological retrieval skills of single words and therefore, did not necessitate involvement of syntactical structures. Similarly, phonological awareness skills were assessed with a syllable and phoneme deletion task. Students were required to manipulate the syllables at the single word level and thus, did not need to use syntactical skills. Therefore, the oral language skills

investigated by Catts et al. (2001) may have had stronger or weaker relationships amongst the variables compared to the present study, which may explain the differences in the results of both studies.

4.3.2 Sentence Repetition as a Predictor of Reading

Analysis of the relationships between oral language and reading measures revealed that sentence repetition was the most consistent predictor of reading as measured by *DRA* text level, reading accuracy and reading comprehension outcomes. These findings are congruent with similar studies available in the literature (Catts et al., 2001). Catts and Hogan (2003) speculated that sentence repetition abilities reflect phonological memory skills that are also necessary for the development of reading skills. That is, it is possible that the ability to repeat sentences taps into core skills necessary to read efficiently.

Unlike other studies, the present investigation did not find sentence repetition skills to consistently predict reading achievements in later school years. This may be due to the population of students sampled in the present study compared to the participants in Strothard et al. (1998). The current study involved a random sample of participants within the general school aged population. On the other hand, participants in the Strothard et al. (1998) study were referred to the researchers with clinically diagnosed language disorders. As a result, it is likely that the students in Strothard et al (1998) represented a sample of individuals with extreme language difficulties. Thus, it is not surprising these students demonstrated difficulties with reading in late school aged years while the present study did not.

4.3.3 Story Comprehension and Retell Abilities as Predictors of Reading

Both story comprehension and retell abilities predicted grade 3 reading comprehension outcomes. The significant correlations between these two variables suggest that the two skills can not be easily differentiated and likely represent similar underlying language skills. In other studies, researchers have combined story comprehension and story retell scores to form a single story narrative composite score (Catts et al., 2002). Although the current study maintained story comprehension and story retell as two narrative measures that could differ from each other, and Catts et al. (2002) used a single narrative measure, both studies yielded similar results. Catts et al. (2002) found small correlations between story narrative skills and reading comprehension outcomes at grades 2 and 4. Similarly, the present study found small correlations between story comprehension and retell abilities and reading comprehension outcomes at grade 3. The parallel findings between the two studies may be attributed to the similar nature of the story retell tasks used in each investigation. The current study administered *The Renfrew Bus Story* (1991) while Catts et al. (2002) administered a narrative task, *Tommy's Birthday Party,* developed by Culatta, Page and Ellis (1983). Both *The Bus Story* and *Tommy's Birthday Party* (Culatta et al., 1983) narrative tasks were brief (185 words and 134 words, respectively) and assessed comprehension with 10 literal questions pertaining to the story. Also, both narrative tasks used age appropriate vocabulary with words that were familiar to the students. *The Bus Story*, however included picture support while *Tommy's Birthday Party* did not.

As stated by Catts and Hogan (2003), "Children with deficits in vocabulary, grammar and text processing will most certainly have difficulties extracting meaning from printed text". Both story comprehension and retell skills depend on the ability to access stored vocabulary, sentence and text structures in order to understand and retell the events in a narrative. This is analogous to reading comprehension skills that require a reader to access stored vocabulary, grammatical and text relationships coding semantic content in order to understand the meaning of written text. Thus, the findings in the present study lend support to arguments in the literature (Catts & Hogan, 2003) suggesting that access to receptive and expressive language at word, sentence, and text levels strongly influence the ability to comprehend what is read.

4.3.4 Predicting Reading Accuracy

Sentence repetition, story comprehension and retell abilities were not found to consistently predict outcomes for reading accuracy in grades 3 or 6. Reading accuracy has been shown in the literature to be best predicted by the ability to retrieve information from phonological memory stores (Catts & Hogan, 2003). One such phonological retrieval task is illustrated in the study conducted by Catts et al. (2001). Students were required to name a series of coloured animals in a confrontation naming task. The task consisted of three animals (cow, pig and horse) that were randomly coloured blue, black or red. Combinations of the coloured animals were displayed in four rows containing six items each. Participants were scored on the accuracy of their labels along with the duration of time it took to complete the task. It has been argued in the

literature (Catts, Gillispie, Leonard, Kail & Miller, 2002) that in addition to accessing phonological stores, rapid naming tasks involve attentional, perceptual, memory, lexical and articulatory process that approximate reading accuracy. Perhaps a word naming task relates to the sub-processes of reading accuracy better than sentence repetition and narrative skills.

4.3.5 Predicting Reading at Grade 6

Reading skills were not as well predicted by sentence repetition, story comprehension or retell abilities at grade 6 as at grade 3. This may be explained by the increased demands in reading expectations that occur in the curriculum at this grade level. According to Chall (1983), students should be reading to learn between grades 4 to 8 while they are still working toward automaticity of decoding in grades 3 to 4. Perhaps the investigated oral language skills predict early literacy skills but are no longer as relevant when reading becomes increasing complex, with an emphasis on reading comprehension abilities. Thus, it is likely that many added skills are involved in grade 6 reading outcomes beyond those assessed by sentence repetition, story comprehension and retell in kindergarten.

An alternative explanation for the inability to consistently predict grade 6 reading outcomes may be due to the manner in which the *DRA* 4 - 8 is administered (Beaver & Carter, 2003). As outlined in Chapter Two, the teacher chooses the text level for each student based on the results of a student questionnaire. The administration procedure then allows students to choose the specific text from a selection at the established text level that they wish to read.

The administrative procedures may create opportunities for students to choose a text with content that is familiar or of interest to them. As a result, students may be reaching ceilings on all reading measures due to the well known content of the chosen reading passage. This may have affected the predictive nature of the investigated oral language measures since students have greater control over the reading material used for assessment in grade 6 than in grade 3.

Furthermore, the *DRA* 4 – 8 administration also involves an additional written component. Students are expected to formulate answers to comprehension questions in a written format rather than express their answers verbally. The calculated scores for the grade 6 subtest may be affected by the students' writing abilities thus influencing the comprehension scores. As a result, the investigated oral language skills may not be sensitive enough to account for the added complexities involved with writing. This may explain why the relationship for grade 3 reading comprehension was stronger than the relationship for grade 6 reading comprehension.

4.3.6 Language Measures in JK versus SK

Another aim of the current study was to compare the predictive value of JK versus SK oral language measures on reading outcomes. The study found that measures of sentence repetition uniquely predicted text level at grades 3 and 6, and reading comprehension at grade 6 when assessed in JK rather than in SK. These findings may be explained by studies conducted by Willis and Gathercole (2001). Researchers investigated the involvement of phonological short term memory on the ability to process spoken sentences. The researchers

compared the sentence repetition abilities of kindergarten students with their ability to comprehend the sentence. It was found that students were able to repeat sentences without necessarily understanding them. The researchers hypothesized that ability to repeat a sentence is supported by access to short-term phonological and/or semantic memory while comprehension is primarily dependent on semantic memory. The findings from this study may explain the sentence repetition performance of the JK students in the present study. It is possible that the JK participants were repeating test items from the *SOLST* without actually processing the meaning of each sentence. As a result, JK sentence repetition performance may predict reading outcomes solely based on short-term phonological memory skills without the involvement of semantic memory. In contrast, it is possible the SK students were involving both phonological and semantic memory stores in order to complete the sentence repetition tasks. Thus, the older kindergarten students may have used complex methods for recalling sentences which were also predictive of reading abilities. This is consistent with the findings that SK sentence repetition skills were correlated to all grade 3 *DRA* reading outcomes. In the present study, sentence repetition skills in SK were not uniquely correlated to reading outcomes but nonetheless, were still significantly correlated.

Alternatively, story retell abilities in SK were stronger predictors of text level outcomes than story retell abilities in JK. Literature supports that children's memory capacity increases by two to three times between the ages of 4 and 11 (Gathercole, 1999). Thus, the older kindergarten students may have been

benefiting from an increased ability to store vocabulary and semantic content necessary to complete story retell tasks. In turn, this increased memory capacity in SK may have directly reflected the skills also needed to read text levels of varying difficulties.

4.3.7 Distribution into Within or Below Reading Expectation Groups

Finally, the investigation examined the percentages of kindergarten students with average and not average speech and/or language (s/l) abilities that were placed within and below reading expectation categories in grades 3 and 6. Approximately 15% of students not average in their s/l abilities remained below grade 3 reading comprehension expectations. This percentage was substantially lower than Catts et al. (2002) who found approximately 50% of kindergarten students with language impairments scored one standard deviation below the mean on measures of reading comprehension at grade 4. One reason for the large discrepancy between the current findings and that of Catts et al. (2002) may be due the participant sample in each study. The kindergarten students in the present study were categorized based on their difficulties with articulation, language or both. In contrast, Catts et al. (2002) examined the reading outcomes of kindergarten students diagnosed with language impairments only with participants showing articulation difficulties not included in the sample. Since articulation difficulties in general have not been found to predict future reading impairments (Bishop & Adams, 1990), it is possible that the students with articulation difficulties included in the present study confounded the results. Further, results from the current study indicate that students categorized with

average and not average s/l skills have significantly different distributions into within and below text level expectations in grades 3 and 6. Specifically, a significantly larger proportion of students with not average s/l skills were below text level expectations compared to kindergarten students with average s/l abilities. These findings are unique in the literature since other studies have investigated distributions based on reading comprehension categories or composite reading scores (Catts et al., 1999; Catts et al., 2002). One possible reason for the significant findings may be explained by theories suggesting that oral language and reading deficits fall on a continuum (Tallal & Benasich, 2002). The speech and language tasks administered in kindergarten involved all language components: phonology, morphology, semantics and syntax. Similarly, *DRA* text levels are selected based on a child's phonological, morphological, semantic and syntactical abilities. Thus, it is possible that text level performances fall along the same continuum as performance on the kindergarten screener.

Furthermore, teachers chose text levels based on their knowledge of the students' ability to use linguistic skills in order to extract information from written text. Since scores from the spring administration of the *DRA* were used, the teachers were likely familiar with the students' language abilities and therefore could make accurate text level selections. Therefore, it is possible that teachers were able to make accurate text level selections which reflected each child's oral language and ultimately, reading capabilities.

CHAPTER FIVE

Conclusions

5.1 Study Limitations

The present study has several limitations that should be acknowledged. Notably, the data collected on the *DRA* contained individual scores on each subtest while an overall score on the test was not available. It may have been useful in the present study to analyze a composite sc ore along with performance on individual subtests. Further, collection of data was also limited in the information available regarding the assessment abilities of each teacher. Although teachers are extensively trained on the administration of the *DRA,* individual teacher differences may affect how the assessment is implemented and interpreted.

A second limitation relates to the distribution of the *DRA* accuracy scores. Evidence from the available data indicated that almost all of the students scored within the expected 92-96% reading accuracy range. This suggested that the accuracy range used by the TVDSB may not be as discriminating for reading accuracy abilities compared to text level or reading comprehension skills.

5.2 Contributions to Literature

Results from the present study provide unique contributions to the literature. It was found that sentence repetition skills in students as young as 3;11 are effective predictors of reading in early elementary school. Thus far, other studies have not investigated reading outcomes based on language skills at this young of an age. As a result, the current investigation has added novel

information to the field suggesting that sentence repetition, when assessed in the early preschool years, can be a predictor of future reading outcomes.

5.3 Clinical Implications

The current study also contributes to the literature supporting the need for speech language pathology services in the area of prevention. Once more is known about the language skills that predict reading outcomes, speech language pathologists can use this information to identify students at risk for reading disabilities and implement early intervention strategies. One such intervention program that was shown to positively impact future reading abilities is illustrated through the language training module developed by Vellutino, Scanlon, Small and Fanuele (2006). This intervention involved intensive programming for the oral language skills known to be foundational to the acquisition of reading, e.g., phonological awareness. The researchers completed a five-year longitudinal study with a cohort consisting of 1,000 kindergarten students. Preschoolers identified with poor emergent literacy skills and with reading difficulties at grade 1 participated in the early intervention program. The researchers found that implementing an early intervention program was successful for students identified as at risk for reading failure. Thus, the benefits of early intervention programs may contribute to improving the academic success of students at risk for reading disabilities. Through the use of reliable oral language predictors, students at risk for reading impairments have the potential to be placed in focused intervention programs.

5.3 Directions for Future Research

Future studies should attempt to address the limitations discussed earlier in this chapter. Furthermore, it is suggested that future research use phonological awareness skills as a predictor of *DRA* scores. It would be interesting to know what other oral language skills predict reading outcomes on the *DRA*. Moreover, future considerations may involve using alternative measures of reading achievement such as the Education Quality and Accountability Office's (EQAO) Assessment of Reading, Writing and Arithmetic. This test is administered at grades 3 and 6 to all students across the province of Ontario. As such, this alternative reading measure would coincide with the time at which the *DRA* measures were administered in the present study. It would be interesting to compare the predictive value of sentence repetition, story comprehension and story retell skills on the *DRA* against the *EQAO.*

5.4 Conclusions

The present study established kindergarten sentence repetition, story comprehension and retell abilities as predictors of specific reading skills. Furthermore, the study uniquely contributed to literature by demonstrating the reliability of oral language skills in both Junior Kindergarten and Senior Kindergarten students as predictors of reading outcomes in early and late elementary school grades. Finally, the study demonstrated that students with speech and language difficulties in kindergarten more often fell below reading expectations in grades 3 and 6 than students with average speech and language

skills in kindergarten, illustrating the need for early intervention programming for student with speech and language impairments in kindergarten.

It is anticipated that these study results will benefit speech-language pathology clinicians in identifying kindergarten students at risk for future reading difficulties. With effective screening tools in place, students identified at risk for reading difficulties can be placed in early intervention programs designed to improve literacy outcomes.

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APPENDIX A

Kindergarten Speech & Language Screener, 2nd Edition

G. Warr-Leeper, K. Washington, C. Cameron (formerly Dunn), & T. Smith (2006)
First Edition Printed in 1999 (G. Warr-Leeper, C. Dunn, & T. Smith)

Name: _____	School: _____
Current Date: _____ mm/dd/yy	Teacher: _____
Date of Birth: _____ mm/dd/yy	Grade: _____
Age: _____ years _____ months	Postal Code: _____
English Language Learner: Y N	Native Language: _____

Part 1- Sentence Repetition *Stephens Oral Language Screening Test (SOLST)*

Description: This is a sentence repetition task designed to elicit a child's oral productions. Average administration time is four (4) minutes. Both the examiner and the child should be seated comfortably in a quiet and well-lit area.

Administration Instructions: We're going to play a talking game. You say what I say. Let's practice – Trial Items

(1) "I see a blue bird". Now you say that. Let's try another one.
(2) "The girl has pretty hair." Now you say that. Let's try another one.
(3) "Is it raining?"

If the child is having difficulty doing the task, train them on a few more sentences. If the child doesn't wait for you to finish before repeating, train them to do so. The 15 test sentences should be presented one at a time in the order they appear using a regular speaking rate.

Scoring Instructions: Once the child has repeated each sentence, the production is marked for its accuracy.

- ✓ Mark through *omitted* words
- ✓ Write *substituted* words above original word
- ✓ Draw lines to represent *misplaced* words
- ✓ Write in *new* words
- ✓ Write down sentences that are significantly different from the original

A score of zero (0) to seven (7) is assigned to each sentence repetition according to the accuracy of the response. Please see the scoring criteria on page three.

Norms

Grade Level	Average	Borderline	Requires Further Assessment
JK	<25 errors	26-34 errors	>35 errors
SK	<20 errors	21-29 errors	>30 errors
Grade 1	<15 errors	16-24 errors	>25 errors

SOLST Test Sentences

Score	Test Sentence
_____	1. Robert found a shiny penny.
_____	2. He wants to wash himself.
_____	3. Someone burned a hole in the rug.
_____	4. Why didn't they tell another story?
_____	5. She put the cover on the jar very tightly.
_____	6. There's no reason for fighting with him.
_____	7. Is Ralph playing a different game?
_____	8. After Jack fixed my bike, I rode it around a lot.
_____	9. My Aunt who fell can't walk.
_____	10. Let him go to the store because we need some milk.
_____	11. Where will they sing for the children?
_____	12. If you eat too much candy, you'll be sick.
_____	13. We thought the baby could say thank-you.
_____	14. Joe should have bought three oranges.
_____	15. It's not for me but I would like to look at it.

Total Score: _____

Overall performance: (see norms on page 1)	Average	Borderline	Requires Further Assessment
	☐	☐	☐

SOLST Scoring Criteria

Score	Description	Example
0	An exact repetition	1. Robert found a shiny penny.
1	Minor changes	14. Joe should've bought three oranges. 12. If you eat too much candy, you will be sick. 3. Somebody burned a hole in the rug
2	Grammatical Paraphrase but retains basic form and meaning	12. You'll be sick if you eat too much candy 6. There's no reason to fight with him. 1. Bobby found a shiny penny. 8. After Jack fixed my bike, I rode around a lot.
3	Grammatical, but changed significantly	4. Didn't they tell another story? 9. My aunt fell down and she can't walk. 15. Why didn't they tell other stories? 10. Let him go to the store; we'd like milk. 5. She out the cover on the jar real tight.
4	Agrammatical, but retains most sentence elements	14. Joe have should bought three oranges. 1. Ralph playing game.
5	Agrammatical or grammatical, and greatly reduced	(agrammatical) 13. We say baby say thank-you. (grammatical) 6. Don't fight him.
6	Significantly changed	8. After jack..... 10. ...need some milk. 15. It not...(mmm) me...I look at it.
7	Unintelligible or No Response	

Part 2- Story Retell *The Renfrew Bus Story Test*

Description: This oral language test is designed to evaluate a child's ability to reproduce a coherent story. Ten comprehension questions are also included.

Administration Instructions:

➢ Open the story booklet to page one and say, "I'm going to tell you a story about a bus." (Ensure that you point to each of the three pictures from first to last).

o Then say, "When I am finished reading the story, I want **you** to tell **me** the same story".

➢ Read the story to the child. Only use the text provided. You may adjust how fast or slow you read to match the child's ability. Point to each of the pictures as you tell the story.

➢ After you have read the story, turn back to page 1 of the picture book.

➢ Tell the child, "Now **you** tell **me** the story. Once upon a time there was a.....?"

o Turn the pages as the child retells the story, pointing to the pictures as s/he tells the story.

o If the child appears to be struggling during retell, you may provide minimal prompting (e.g., "And then...? or " So....?")

➢ After the child has retold the story ask him/her the 10 comprehension questions.

Scoring Instructions:

a) Story Retell – Events Included:

✓ Place a check mark in the appropriate box

✓ Scores vary according to accuracy of response

o 2 points = Correct

o 1 point = Partially correct

o 0 points = Incorrect or no response

✓ Norms are provided on page 7

b) Comprehension Questions:

✓ Place a check mark in the box provided if the child's answer is correct

✓ Write any incorrect responses on the line provided

Norms for Comprehension Questions

Grade Level	Average	Requires Further Assessment
JK	**7-10 correct**	**0-6 correct**
SK	**8-10 correct**	**0-7 correct**

Renfrew Bus Story

1. Once upon a time there was a very naughty bus.
While his driver was trying to fix him, the bus decided to run away.

2. He ran along the road beside a train.
They made funny faces at each other and raced each other.
But the bus had to go on alone, because the train went into a tunnel.
He hurried into the city where he met a policeman who blew his whistle and shouted, "Stop, bus".

3. But the naughty bus paid no attention and ran on into the country.
He said, "I'm tired of going on the road".So he jumped over a fence.
He met a cow who said, "Moo, I can't believe my eyes".

4. The bus raced down the hill.
As soon as he saw there was water at the bottom, he tried to stop.
But he didn't know how to put on his brakes.
So he fell in the pond with a splash and stuck in the mud.
When the driver found where the bus was, he telephoned for a crane to pull him out and put him back on the road again.

Story Retell-Events Included:

Event	2-points	1-point	0-points
1. ran/drove/hurried-away/off didn't stop.	□	1. naughty/bad bus □	□
2. saw/met/ran with/beside train	□	2. fixing train (w/out met/saw) made faces, raced □	□
3. alone/on his own/by himself	□	3. lonely □	□
4. into/through-city/town/streets	□	4. in/down-street □	□
5. saw/met/came to-policeman	□	5. policeman (w/out saw) □	□
6. policeman saw/met/came	□	6. blew whistle □	□
7. said/shouted/told to-stop	□	7. stop (w/out said) □	□
8. ran/carried-on; didn't stop	□	8. no attention/notice; didn't listen □	□
9. into/through-country	□	..... □	□
10. tired of/fed up with/bored with road	□	10. didn't like/didn't want go on road □	□
11. jumped over fence/gate	□	11. drove/climbed/went/ ran over-gate/fence □	□
12. saw/met cow; cow saw/met	□	12. cow (w/out saw/met) □	□
13. went/ran downhill	□	.....□	□
14. saw water	□	.....□	□
15. tried to stop/brake	□	.....□	□
16. couldn't/didn't know how to brake	□	.....□	□
17. went/fell/ran/jumped-into water/river/pond	□	.....□	□
18. found/seen-by driver/bus man	□	.....□	□
19. driver-got/sent for/called for/ phoned for-crane	□	.....□	□

20. lifted/pulled/picked/got-out/up ☐ .....☐ ☐

Total: _____

Overall Performance: (see norms on pages 8&9)	Average ☐	Requires Further Assessment ☐

Comprehension Questions:

	Child's Response	
	Correct	**Incorrect**
1. What did the bus do when his driver was trying to fix him?	☐	☐
2. What did the bus run beside?	☐	☐
3. Where did the train go?	☐	☐
4. Who did the bus see in the city?	☐	☐
5. What did the policeman do when he saw the bus?	☐	☐
6. What did the bus jump over in the country?	☐	☐
7. What did the cow say when he saw the bus?	☐	☐
8. Why couldn't the bus stop when he was at the bottom of the hill?	☐	☐
9. Where did the bus fall?	☐	☐
10. What did the driver do when he found the bus?	☐	☐

Total Correct: _____

Overall Performance:	Average	Requires Further Assessment
(see norms on page 4)	☐	☐

Norms for Story Retell

JK & SK

Age	Mean	Standard Deviation
3^{9} 3^{10} 3^{11}	10 12 ⇨12.61 13	6.58
4^{0} 4^{1} 4^{2} 4^{3} 4^{4} 4^{5}	14 15 16 17 ⇨18.29 18 18	6.99
4^{6} 4^{7} 4^{8} 4^{9} 4^{10} 4^{11}	19 20 21 21 ⇨22.11 22 22	5.65
5^{0} 5^{1} 5^{2} 5^{3} 5^{4} 5^{5}	23 23 24 24 ⇨24.57 25 25	6.21
5^{6} 5^{7} 5^{8} 5^{9} 5^{10} 5^{11}	26 26 26 27 ⇨26.79 27 27	6.48
6^{0} 6^{1} 6^{2} 6^{3} 6^{4} 6^{5}	28 28 28 29 ⇨28.66 29 29	6.77
6^{6} 6^{7} 6^{8} 6^{9} 6^{10} 6^{11}	30 30 30 31 ⇨30.42 31 31	6.66

Norms for Story Retell

Grades 1 to 3

Age	Mean	Standard Deviation
7^0	32	
7^1	32	
7^2	32	
7^3	33 ⇨ 32.60	6.87
7^4	33	
7^5	33	
7^6	34	
7^7	34	
7^8	34	
7^9	35 ⇨ 35.33	7.31
7^{10}	35	
7^{11}	35	
8^0	36	
8^1	36	
8^2	36	
8^3	36 ⇨ 37.20	5.92
8^4	37	
8^5	38	

Part 3- Speech & Social Communication *Teacher Observations*

Pronunciation

- ❑ No concerns
- ❑ Concerns – sound pronunciations make the child
  - ○ Sounds too young
  - ○ Sounds atypical

Stuttering

- ❑ No concerns
- ❑ Concerns (e.g., blocks or repeats with obvious struggle)

Voice

- ❑ No concerns
- ❑ Concerns
  - ○ Sounds hoarse
  - ○ Sounds like child has a stuffy nose
  - ○ Too much air coming out of the child's nose during speech

Social Communication

- ❑ No concerns
- ❑ Concerns (e.g., difficulty interacting with peers and/or adults)

Part 4- Conclusion

Overall Screening Performance

Average	Requires Further Assessment
☐	☐

Other comments or concerns

_____

_____

_____

_____

_____

_____