The Efficacy of the Talking Tables Program in the Development of Phonological Awareness in Kindergarten Children At Risk for Reading Difficulties

by

Helena Hodgins
BEd, University of Victoria, 1991

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of the Requirements for the Degree of

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in the Educational Psychology and Leadership Studies

Supervisory Committee

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Abstract

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Programs to support early literacy development are implemented regularly in the schools without research on their efficacy. This study examined the efficacy of a commonly used program for struggling readers. Twelve kindergarten children who were at-risk for reading difficulties took part in a 10 week intervention program called Talking Tables. Twelve kindergarten children, also at-risk for reading difficulties were the control group, and received no intervention. The children in the intervention group made significant gains in phonological awareness. The results suggest that the Talking Tables is effective as an early intervention in developing phonological awareness skills in kindergarten children that are at-risk for reading difficulties.

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Acknowledgments

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Dedication

To George, Jasper and Piper…. I know there were many times when we should have been outside kicking a ball around or playing or snuggled up reading together. No longer will you hear the words 'I just need a few more minutes of quiet to put my thoughts into words'. Thank you for your patience and support while I headed down the long and windy road to complete this. I love you with all my heart. Now, lets go play together!

Introduction

Literacy development starts long before children enter school. As children start to learn a language they are embarking on the journey to literacy. The ability to read is a complex process. We are not born to read (Wolf 2007). Our brain must change the way it processes information, so that we can be literate. As children become literate they go through many stages and acquire many skills, the first of which is listening to language and learning to communicate. Children's experience with language before learning to read becomes the basis for developing reading and writing skills. Many studies have shown that low levels of pre-school phonological awareness, the ability to distinguish and manipulate units of speech, such as onsets, syllables and phonemes, is prognostic of late reading disability. Moreover, it has been shown that teaching phonological awareness in advance of teaching reading can improve reading outcomes.

The process of reading has been studied for well over a century. The disability in learning to read, called dyslexia, has been studied for more than 120 years. Over the years the definition of dyslexia has changed and progressed from congenital word blindness (the first definition in 1896) to a language based disability (Bradley & Bryant, 1983; Snowling (1981); Ziegler and Goswami, 2006). Developmental dyslexia is defined as having 1) persistent difficulties learning keystone academic skills, such as phonological awareness, 2) literacy skills well below average, 3) learning difficulties apparent in early school years and 4) a difficulty specific to reading, not attributed to an intellectual difficulty or general external factors such as economic disadvantages, lack of education and absenteeism or neurological or motor disorders. (DSM-V). Delayed development of phonological awareness is commonly found in children with dyslexia

(Bradley & Bryant, 1983; Torgesen et al., 2001). Studies of different European languages have also demonstrated that difficulty with phonological awareness influences the incidence of developmental dyslexia (Goswami, Ziegler & Richardson, 2005), (Ziegler and Goswami, 2006). In particular, individual differences in phonological awareness influences the rate at which children acquire early reading skills (Wagner & Torgesen 1987). Children who are relatively strong in phonological awareness in kindergarten, before reading instruction begins, typically learn to read more easily than those with relatively delayed development in this area (Torgeson, Wagner & Rashotte, 1994; Dickinson, Golinkoff & Hirsh-Pasek, 2010). This is the phonological model of dyslexia.

Margaret Snowling (1981) was one of the first researchers to note the importance of phonological awareness to the development of reading by demonstrating that children who had difficulties with reading also demonstrated difficulties with oral language, especially with phonologically complex tasks. Her findings led to extensive studies of the role of phonological awareness as a foundational skill in learning to read. The Phonological Deficit Theory, posits that the underlying root of dyslexia lies in a person's ability to hear and recognize the phonemes in words. It is now accepted that phonological awareness plays an important role in learning to read (Torgesen & Davis, 1996**;** Vandervelden & Siegel, 1995; Bryant, MacLean, Bradley & Crossland 1990).

Bradley and Bryant (1983) demonstrated a causal relationship between phonological awareness and learning to read. In their longitudinal study they determined that pre-reading 4 and 5 year-old children that performed better on sound categorization tests were better readers three years later. Their research also demonstrated that children

that tested lower in sound categorization, who then received intensive training in categorizing sounds, performed significantly better at reading assessments than the lower performing children that had conceptual training or no training. In another longitudinal study, Lundberg, Olofsson, and Wall (1980), assessed 143 Swedish kindergarten students for two years. The results for their study demonstrated that children who were weak in phoneme isolation and rhyme were weak readers in grade one and two.

Beyond reading analysis studies, Shaywitz and colleagues (2004) have shown biological evidence for the Phonological Deficit Theory. These researchers performed MRI imaging of brain function during reading. The results suggest the brain recognizes language hierarchically. The brain first decodes words at the phoneme and phonological level before it analyzes it at the semantic and syntactic level. Before a word can be understood at the higher level, it must be decoded at the phonological level. The phonological model of dyslexia indicates that children and adults with dyslexia have difficulty with written language because they are impaired in their ability to deconstruct written words into phonemes. The lower level phonological deficit prevents words from reaching the higher-level linguistic process. (Shaywitz, Mody & Shaywitz, 2006; Wolf, 2007).

Phonological Awareness

Phonological awareness (PA), is the awareness of the sound structure of language. PA refers to the ability to distinguish and manipulate units of speech, such as onsets, syllables and phonemes. The following phonological awareness tasks are routinely used in determining a person's ability to manipulate speech. Phoneme deletion (e.g., what word would be left if the /s/ sound was taken away from *sit*?), word to word matching

(e.g., do *big* and *bear* begin with the same sound?), blending (e.g., what word would we have if you put these sounds together; /p/, /i/, /g/?), phoneme isolation (e.g., What is the first sound in *boat*?), phoneme segmentation (e.g., what sounds do you hear in the word *sit*?), phoneme counting (eg., how many sounds do you hear in the word *make*?), odd word out (e.g., what word starts with a different sound: *sing*, *two*, *sand*, *sip*?), sound to word matching (e.g., is there a /t/ in *bite*?), rhyme recognition (e.g., do pig, big, wig and dog rhyme?) and syllable counting (e.g., how many claps in the word toothpaste?). (Hoien, Lundberg, Stanovich & Bjaalid, 1995; Stanovich, 1994).

Reading and Phonological Awareness

Instruction in phonological awareness (PA) provides students with the foundational knowledge of the alphabetic system (Sprenger-Charolles et al., 2003; Ehri, Nunes, Willows, Schuster, Yaghoub_Zadeh, & Shanahan, 2001). When children are able to hear the sounds in the words they are saying, it is much easier for them to recognize the sounds in print. Playing with sound helps children discover that words are made of letters that match the sounds. Many children with reading difficulties have a weakness in their ability to hear phonemes and manipulate phonemes (Castles, Wilson, & Coltheart, (2011). 2011; Torgesen & Davis, 1996; Torgesen, 2002). Phonological awareness plays a significant role in decoding words, which is the central task of the beginning reader. A study by Schwanenflugel, et al. (2010), which looked at teaching phonological awareness skills, alphabet knowledge and vocabulary to preschool children, demonstrated that phonemic skills and alphabetic skills were the most important skills for developing decoding skills. Bryant, MacLean and Bradley (1990) also found that PA makes a

distinctive contribution to early reading skills when compared to grammar, vocabulary, comprehension and narrative discourse.

Research suggests that children who have weak PA skills when they start school, will have weak reading skills in grade four (Stanovich, 1994, Gambrell, 2004). In their longitudinal research, Roth, Speece, and Cooper (2002) found that assessing PA skills in early kindergarten is a strong predictor of reading skills in grade one and two, $p < .0001$, $R^2 = .61$. Stanovich (1986) described the impact to literacy development for children with dyslexia. Children who struggle with phonological skills have difficulty matching sounds to letters, which then impacts their ability and motivation to read. Those children will struggle through the first few years of school where they are learning to read, and often choose not to read, resulting in less practice and exposure to written texts. When those children enter grade four, where the classroom focus is not on learning to read, but reading to learn, they are at a disadvantage. These poor readers will read limited amounts of text, or often choose not to read, which, in turn, decreases the learning which comes from print. Good readers, in the early years, will enjoy practicing their reading skills, which means they will read more. When they enter grade four they will be able to read to learn, which will increase their vocabulary and knowledge. The gap between a good reader and a struggling reading will continue to increase as children progress through school. Stanovich termed this phenomenon the "Matthew Effect".

The direction of the relation between PA and learning to read has been the subject of some debate in the literature. For example, some researchers have argued that it is the act of reading that leads to PA, whereas others argue that one must be proficient in PA before they are able to read. Bryant, MacLean, Bradley, and Crossland (1990) examined

the three leading models of the relationship between phonological awareness and reading. Model 1 is that the experience of reading leads to phonemic awareness, Model 2 is that sensitivity to rhyme leads to phonemic awareness, which in turn leads to reading, and Model 3 indicates that rhyme makes a direct contribution to reading that is independent of the connection to reading and phonemic awareness. The results of the study determined that rhyming and alliteration are related to phoneme awareness and they predict reading ability. Thus, a combination of Model 2 and 3, but not Model 1 provided the best explanation of the direction of the relationship between PA and reading development. Most researchers propose that PA develops before reading.

Phonological awareness plays an important role in developing reading skills, specifically decoding skills (e.g., the application of letter-sound rules to read unfamiliar words). As children gain experience hearing and manipulating the sounds in language, they will be better able to recognize the sounds first when they are exposed to the written alphabet and then when they are exposed to various letter-sounds in written words. The acquisition of phonological awareness requires direct teaching through literacy instruction. Up to 15% of children require varying degrees of assistance and intervention to promote its development (Adams, and Bruck 1993).

Explicit Instruction and Phonological Awareness

The concept of explicit, instruction is central to the acquisition of PA. Denton and colleagues (2006) studied a group of struggling readers, who, despite extra support in the classroom, were still having difficulties. They discovered that when these children received explicit training in PA, in a small group setting (one teacher to two students), these children were able to improve their scores on standardized reading assessments.

Explicit instruction was also the topic of a Shaywitz and colleagues' (2004) study. The children who received explicit instruction, during individual tutoring, showed improvement in their reading scores. This study also used the results from fMRI scans to look into the neurological changes of explicit phonological awareness instruction, and notable changes in the language areas of the brain were evident. The children who were struggling with reading were using the left side of the brain (specifically the areas responsible for language processing and production) in a way that was atypical of good readers, in addition to the right side of the brain, which the authors suggests demonstrates how the brain compensates. After the training, the fMRI scans were more typical of good readers. In fact, one year after the post-test, fMRI scans of the struggling readers did not show any activity in the right side of the brain. These studies suggest that when students have explicit instruction in phonological awareness, their reading can improve with notable changes in the involvement of areas of the brain responsible for skilled reading.

Castles and colleagues (2011) demonstrated that children who received training in both phonemic awareness and letter awareness were able to learn more letters than those trained in just letter awareness. This finding is consistent with the theory that PA is a metalinguistic skill, that once taught, can be applied generally across a range of sounds (Castles, et al., 2011; Torgesen and Davis, 1996). Since children who experience difficulties acquiring early reading skills are often delayed in the development of PA, instruction that enhances their awareness of the phonological structure of words may make it easier for them to acquire reading skills (Torgesen & Davis, 1996; Shaywitz et al., 2004).

The National Reading Panel Report (2000) indicated that large effect sizes were possible when instruction was directed systematically and explicitly at one or two types of phonemic awareness activities (one skill taught, $d = 1.16$, two skills taught $d = 1.03$) provided to small groups ($d = 1.38$). Interventions that are delivered in a small group, with overall instruction time lasting under 20 hours, produced larger effect sizes than individual instruction and longer duration, with each session lasting about 25 minutes. The panel also suggested that in the past it has been thought that teaching PA to kindergarten children was not in the children's best interest in terms of literacy development, but the research evidence suggests otherwise. This view is consistent with the group of researchers who believe PA skills develop only as children learn to read. To be able to make use of letter-sound information, children need phonological awareness. That is, they need to be able to blend sounds together to decode words, and they need to break spoken words into their sounds in order to write words. Programs that focus too much on the teaching of the letter-sound relationship and not enough on phonemes and sounds are unlikely to be very effective. The panel recommends teaching a systematic program for both kindergarten and grade one. The intervention program in the proposed study, Talking Tables, is a program that uses explicit instruction to teach PA. The following section will review some of the key research on systematic programs for teaching PA.

Intervention Studies

In a study by Bailet and colleagues (2009), 220 pre-kindergarten children, who had been deemed at-risk for reading problems, received either immediate or delayed intervention. The intervention consisted of 30-minute sessions, twice a week for 9

weeks. The focus of the intervention was on rhyming, alliteration, picture naming, print and letter knowledge skills. Each lesson was designed to explicitly teach specific literacy skills, and all of the lessons were standardized. The children who received the intervention demonstrated increased gains in emergent literacy skills.

In another study by Pokorni, Worthington and Jamison (2004), 60 students with language and reading deficits were assigned randomly to one of three interventions, Fast ForWord (an auditory based program), Earobics (an auditory and phonemic awareness based program) or LiPS (a phonemic awareness based program). The first two interventions were computer based. The last intervention was provided by a speech and language pathologist, a special education teacher, or a general education teacher, in a room with 3-4 students. The students received three 1-hour interventions for a period of 20 days. The results demonstrated that the Earobics and the LiPS interventions improved the PA skills in the children measured six weeks after the intervention. Although these intervention sessions were longer than the recommended by the NRPR, the effects sizes were large; Earobics (Cohen's d =1.80), LiPS (Cohen's d = 2.43).

Ryder, Tunmer and Greaney (2008) provided partially scripted instruction in phonemic awareness and phonemically based decoding skills to 6- and 7-year old children who were struggling with reading, 12 students received the intervention and 12 were assigned to the control group. The results showed that the children who received the intervention outperformed the control group on measures of phonological awareness.

In 2008, Yeh and Connell conducted an experiment to determine if pre-kindergarten children in Head Start could be taught how to blend and segment sounds, as this was not part of their curriculum. It was thought instruction in rhyming and

vocabulary was enough to promote PA. All the children were from low-income families. Their research demonstrated that pre-kindergarten children trained in phonological awareness, specifically blending and segmenting, performed better on pre-reading assessments than children trained in rhyming or vocabulary activities.

Finally, in another study that looks at the importance of phonemic awareness Torgesen and colleagues (1999) studied 180 kindergarten students who had been screened for reading difficulties by a battery of standardized assessments. The children then received support in either the Embedded Phonics program (EP), the Phonological Awareness plus Synthetic Phonics Program (PASP), regular classroom support (RCS) or no-treatment control group (NTC). The results of this study showed that the children who took part in the PASP program performed significantly better on normative reading assessments than the control group (which received no extra support).

Knowing that explicit instruction in PA can improve the reading ability of kindergarten children who are deemed at-risk, educators need to determine which programs are based on strong evidence and how they can most effectively use these programs in their own classrooms. It is therefore important that programs be researched and tested in order to determine whether they provide PA instruction effectively, and ultimately whether such instruction improves PA skills in children at-risk for reading disabilities. Teachers do not usually research the efficacy of programs that are available. In fact, many programs which claim to be successful have never had independent studies conducted. This study evaluated the efficacy of a commonly used intervention to build children's PA skills in the Greater Victoria area. There is currently no research on

whether this program actually is effective in developing children's PA and early literacy skills.

Significance of Study

Assessing phonological awareness skills in kindergarten children provides a means to accurately identify children at-risk for reading disabilities before reading instruction begins (Denton, Fletcher, Anthony & Francis, 2006). This assessment allows preventive work to begin earlier in school and to focus accurately on children who are most in need of preventive intervention. These findings have important implications for the idea that phonological awareness training prior to reading instruction may be one way to significantly reduce the incidence of reading disabilities among young children. (Torgesen, Wagner, Rashotte, 1994). Due to the causal link between PA and learning to read, it is possible to predict who will need extra support with reading. Many educational companies have programs or are developing programs to help young children improve their phonological skills. Some currently marketed programs include: Fast ForWord, Talking Tables, Singing English, Jolly Phonics, to name only a few. It is important that teachers, including learning assistant teachers and special education teachers, are able to select the most effective programs that have evidence from well-designed research studies supporting their use in the schools. Additionally, as school budgets in BC are very limited, it is important that teachers are using programs that are going to make a difference to developing readers. The Talking Tables is a program that is widely used, but to date, has yet to be researched.

Research Question

The purpose of this study was to determine whether an early intervention in phonological awareness (PA) using Talking Tables can improve PA and early reading scores in children that are at-risk for reading difficulties. Specifically, will the Talking Tables program improve phonological awareness in Kindergarten children that are at-risk for reading difficulties. It was hypothesized, given the extant research reviewed and theory describing the causal relationship between PA and learning to read, that explicit instruction in phonological awareness improves reading skills, therefore there should be an improvement in phonological and reading fluency assessments post-test due to the implementation of this intervention.

Method

Participants

Schools. Four schools located in the Greater Victoria area were used. The sites selected were in middle class areas, but each site contained pockets of lower socio-economic areas. As well, the schools chosen had not provided any extra literacy support for the children in kindergarten before or during commencement of this study. Both groups had schools above and below the median family income for Saanich (the municipality in which the research took place). See Table 3 for more information.

Participants. A total of 28 Kindergarten students were selected. All 28 children completed the study, but data for 24 is included, as shown in Table 1. Four children were absent during the week of post testing. All children were selected by their teachers based on screening using the Dynamic Indicators of Basic Early Learning Skills (DIBELS) Phonemic Awareness assessments (Good & Kaminski, 2002). The Initial Sound Fluency assessment, which assesses a child's skill at identifying and producing the initial sound of a given word was used to determine each child's PA ability. The children are ranked in their class, and any child who scores in the at-risk zone (less than 8 correct per minute, or the bottom 25th percentile) is deemed at-risk. All children taking part in the study fell within the at-risk level. Students who were English language learners were excluded. Fourteen children at two schools received the intervention and 14 children at the other two schools were the control group. The control group was comprised of students at-risk who were waitlisted to receive the intervention at another time. Due to the limited resources of the researcher, students were not randomly selected to the groups. The

students were placed into intervention or control group based on their schools. The children in two schools received the intervention, and the children in the other two schools acted as the control group.

Table 1. Age and Gender of Participants

	Intervention Group (n = 12)	Control Group (n = 12)
Mean age in months (SD)	70.25 (3.5)	68.25 (4.6)
Gender		
male	8	9
female	4	3

Measures

Two standardized assessments were used to measure each participant's phonological skills, the Comprehensive Test of Phonological Processing 2 (CTOPP 2) and the DIBELS, assessments.

CTOPP 2. The CTOPP 2 measures phonological awareness The 3 subtests of the Comprehensive Test of Phonological Processing were administered pre- and post-intervention. The Elision subtest measures the ability to remove phonological segments from spoken words to form other words. The Blending Words subtest measures the ability to synthesize sounds to form words. The Sound Matching subtest measures the ability to select words with the same initial and final sounds. These subtests comprise the standard scores of Phonological Awareness Composite Score of 4 through 6 year olds. Internal consistency estimates based on coefficient alphas for children aged 5 to 7 years as reported in the test manual are high and range from .90 to.92 for Elision, .86 to .89 for

Blending Words, .92 to .93 for Sound Matching, and .92 to .96 for the overall Phonological Awareness composite. The test/retest coefficients range from 0.70 to 0.92.

DIBELS. Two assessments using the DIBELS were administered to all children. The Phoneme Segmentation Fluency (PSF) and Nonsense Word Fluency (NWF). The PSF assesses a child's skill at producing the individual sounds within a given word. The NWF assesses letter sound correspondence and the ability to blend letters into nonsense words. The NWF is also a measure of early reading fluency. Explicit instruction in PA improves reading skills, therefore, there should be an improvement in reading fluency assessments post-test. These tasks have been found to be both valid and reliable for measuring phonemic awareness and early readiness skills in Kindergarten children (Hintze, Ryan & Stoner, 2003). The DIBELS assessment offers forms for re-testing, therefore, different forms were used for pre-test/post-test.

Intervention

Talking Tables was developed in the Prince Rupert School District. It was developed by three teachers who were trying to meet the needs of their diverse population of students, which included both aboriginal and non-aboriginal children. Kristi Clifton was the English Language Development program coodinator, Susan Crowley was a kindergarten teacher and Kathy McCubbin was the First Nations literacy teacher for the district. These teachers noticed many of their students had weak oral language skills, which included limited vocabulary, lack of complete sentences and weak PA skills. They developed the program based on the premise that oral language is central to learning in kindergarten, and through oral language, phonological awareness can be explicitly taught. The goals of the program are to help children in Kindergarten in the following ways: gain

confidence using academic school knowledge, develop oral fluency at the sentence level and the simple narrative stage, build phonological skills, practice social language skills, strengthen auditory skills and gain knowledge of vocabulary related to common kindergarten themes (Clifton, Crowley, McCubbin, 2006). The program comes complete with seven themes; School, Halloween, Body Parts, Fruits and Vegetables, Transportation and Animals and Their Babies. All supplies and materials are provided. For example, the school theme comes with miniature school supplies, rhyming dice, guessing bag, game board, markers, rhyme puzzles, and a detailed script for each lesson. The lessons are both auditory and visual, and involve picture cards to help the students learn vocabulary and related PA skills. Each theme has a set amount of lessons, a short pre-assessment and a post-assessment.

Each lesson consists of five activities, a chant, an auditory activity, a vocabulary activity, a phonological awareness activity and a fluency activity. The goal of the chant is to develop vocabulary, practice expressive language and increase memory of longer chains of words. The auditory activities develop listening skills, and the retention and retrieval of verbal information. The vocabulary activities use targeted vocabulary to teach new words and their meanings and to use them in sentences. The phonological awareness activities develop phoneme discrimination, segmenting and blending, rhyme generation, and segmenting, blending and deleting syllables. The fluency activities practice the targeted language used in the vocabulary activities. The program also teaches more formal language that contains longer sentences and descriptive language. Each lesson is 20-30 minutes long. This research only examined the last theme, Animals and Their Babies.

Procedure

Before the intervention began, each child in the study was assessed using both the CTOPP 2 and the DIBELS assessments in order to gather baseline data. Once this assessment was completed, the children in the intervention group started receiving the intervention. The intervention consisted of the researcher working with small groups of up to four students. The sessions took place three times a week and lasted 20 to 30 minutes a session in a quiet area in the school. Attendance was recorded at each intervention lesson. Only one child in the intervention group missed a lesson. The children in one school missed one session due to class photos, but an extra session was added on at the end so that each group in the intervention received the same amount of instructional time. Attendance was not collected for any of the children in the control group. The teachers reported that all of the children in the control group were present for the majority of the days in which the research took place. All intervention lessons took place at a time that did not interfere with regular classroom literacy instruction.

Results

Analysis of Covariance (ANCOVA) is used in studies in which the researcher examines the relation between variables and how the variables change over the course of the experiment. ANCOVA was used to test for group differences. With nonrandomized designs, such as this current study, the main purpose of ANCOVA is to reduce the error variance, eliminate systematic bias and adjust the posttest means for differences among groups on the pretests (Dimitrov, & Rumrill, 2003). Before ANCOVA was calculated all data were investigated for outliers, which may confound the results. There were no outliers for any of the CTOPP 2 or DIBELS scores. An analysis of the relationship of the dependent variable and the covariate (the pretest scores) was performed on all the subtests from both groups. ANOVA of the covariate across the CTOPP 2 and DIBELS assessments demonstrated no significant interaction between the covariate and treatment group.

The pre- and post-test means of the intervention and control groups on all measures are shown in Table 2. The PA composite score is the sum of the three phonological awareness subtest scores of the CTOPP 2. Although both groups made gains, the intervention group outperformed the control group on all posttest measures of the CTOPP 2 (see Figures 1 and 2). The significant main effect for the PA composite scores were $F(1, 22) = 14.075, p < 0.001$. Cohen's effect size value ($d = 0.77$) suggested a moderate to high practical significance. Further analyses were completed to determine which subtest of the CTOPP 2 showed the most effect post-test. Students' post-test performance on the Elision subtest (see Figure 3) did not demonstrate statistical

significance, $F(1, 22) = 0.03, p < .874$, nor did performance on the Blending subtest, (see Figure 4) $F(1, 22) = 3.20, p < .088$. Although moderate effect sizes ($d = 0.46$ and $d = 0.42$) for Elision and Blending respectively, were found. While post-test performance on the Elision and Blending subtests did not demonstrate statistical significance, students' post-test performance on the Sound Matching subtest was significant (see Figure 4), $F(1, 22) = 8.27, p < .009$. Cohen's effect size value for Sound Matching was large ($d = 1.04$) indicative of a strong effect.

Figures 6 and 7 illustrate the growth of students in the intervention group on the fluency measure of the DIBELS assessment. The results indicate that both groups made gains from pre to post assessment, although the intervention group made greater gains. The intervention group demonstrated statistical significance on Phoneme Segmentation Fluency, $F(1, 22) = 13.51, p < .001$, while Nonsense Word Fluency did not show significance, $F(1, 22) = .313\ p < .582$. Cohen's effect size value for Phoneme Segmentation Fluency was ($d = 1.29$), suggesting a large practical significance. Cohen's effect size for Nonsense Word Fluency was ($d = .15$), suggesting a small practical significance.

Table 2. Means and SD for CTOPP 2 PA subtests, composite score and DIBELS Phoneme Segmentation and Nonword Reading Fluency tests.

Measure	Intervention Group (n = 12)				Control Group (n = 12)			
	Pretest		Posttest		Pretest		Posttest	
	M	SD	M	SD	M	SD	M	SD
Mean age in months	70.25	3.5	__	__	68.25	4.6	__	__
Elision	8.33	1.55	9.25	1.36	7.17	2.94	8.58	1.72
Blending	6.08	1.83	7.25	2.22	6.08	2.06	6.25	2.53
Sound Matching	6.42	1.38	8.92	1.17	7.50	1.31	7.67	1.23
PA Composite	81.25	6.51	90.92	6.97	81.08	10.4	84.75	8.40
Dibels PSF	4.08	4.14	23.17	12.63	5.50	6.03	9.75	7.46
Dibels NWF	2.42	3.40	8.0	5.20	3.50	4.81	7.08	7.50

Note. Scores for Elision, Blending and Sound Matching are Scaled scores (M = 10, SD = 3). Scores for PA Composite are Standard Scores (M = 100, SD = 15). Scores for DIBELS are raw scores.

Figure 1. Graph of CTOPP 2 Composite score means Pre- and Post-Test

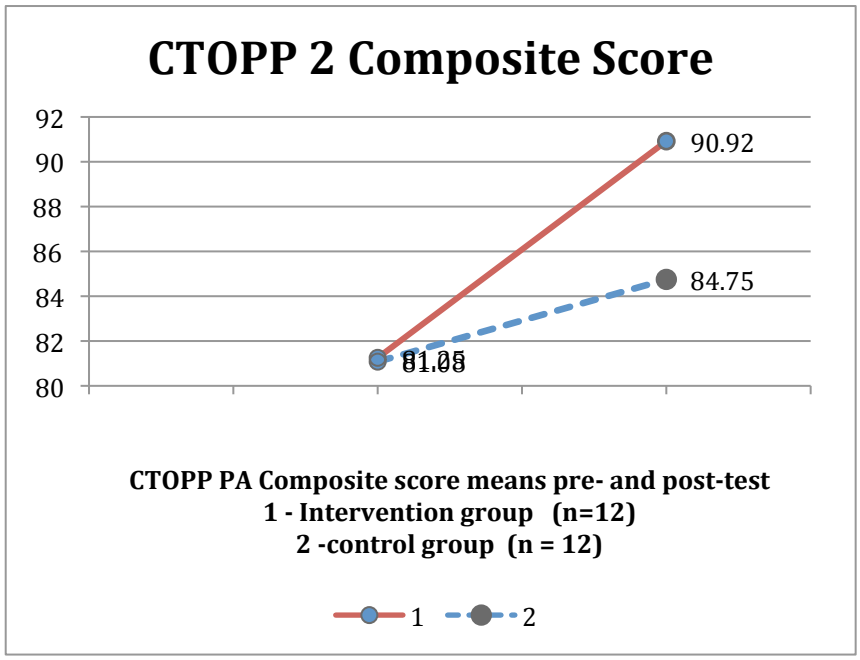
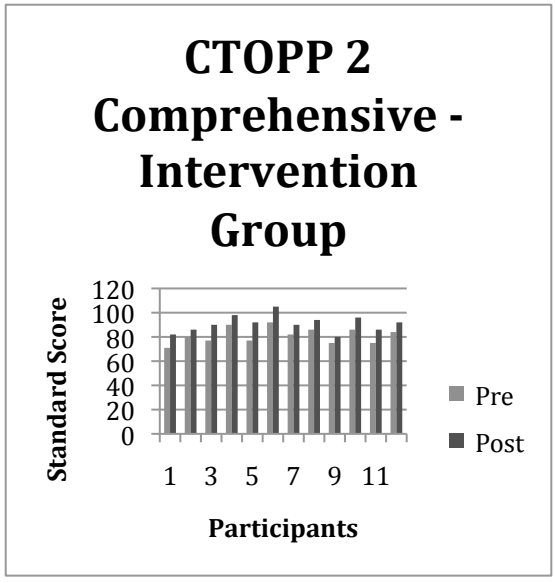
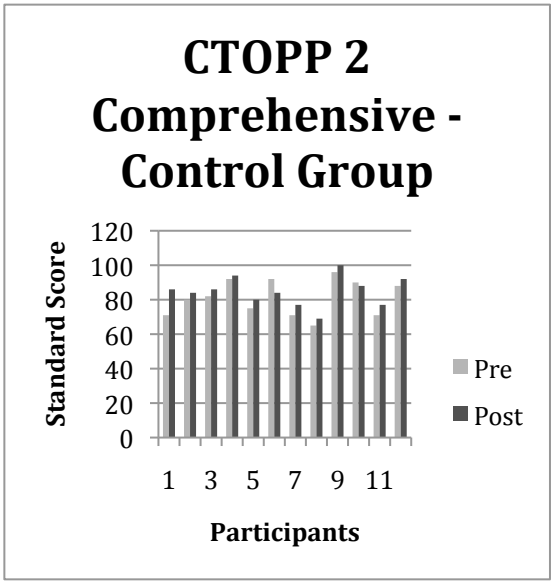


Figure 2. Change in Scores for CTOPP 2 Assessment Pre- and Post-Test *(n = 12)*

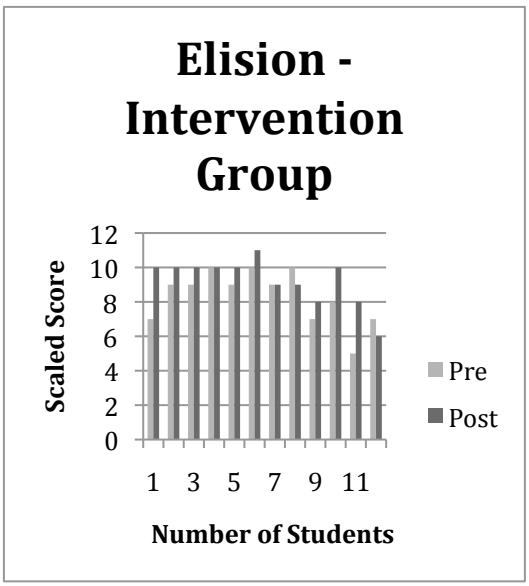




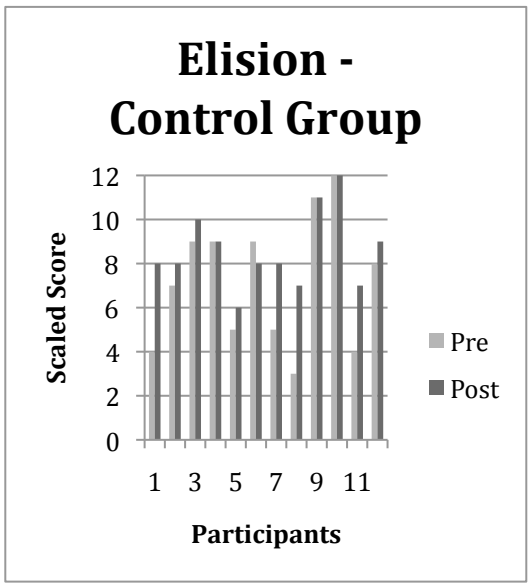
Pre-test, $M = 81.25$, $SD = 6.51$
Post-test, $M = 90.91$, $SD = 6.97$

Pre-test, $M = 81.08$, $SD = 10.40$
Post-test, $M = 84.75$, $SD = 8.40$

Figure 3. Change in Scores for Elision Assessment Pre- and Post-Test. (n = 12)

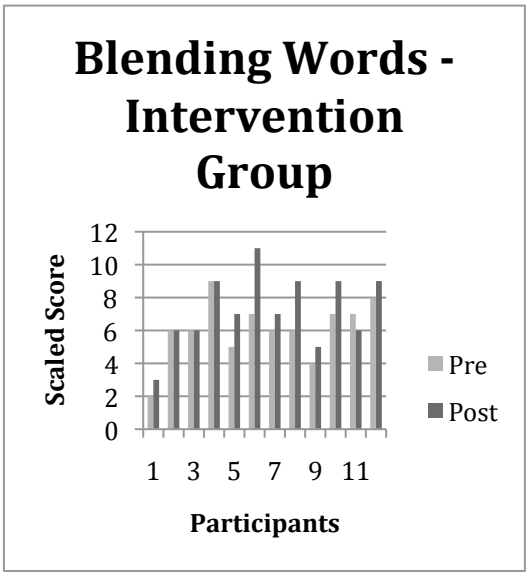


Pre-test, M = 8.3, SD = 1.55
Post-test, M = 9.25, SD = 1.36

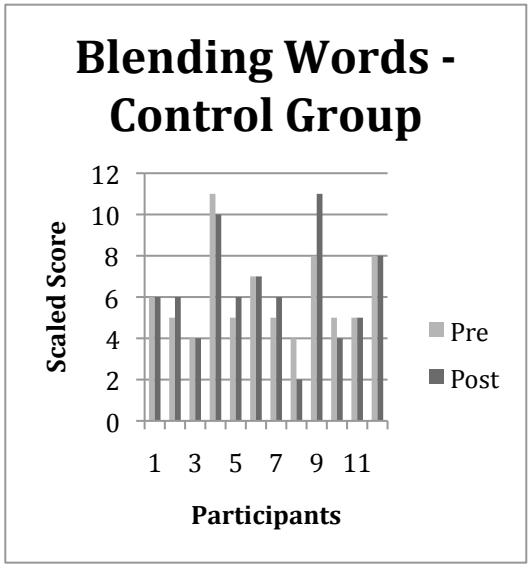


Pre-test, M = 7.16, SD = 2.94
Post-test, M = 8.58, SD = 1.72

Figure 4. Change in Scores for Blending Words Assessment Pre- and Post-Test (n = 12)

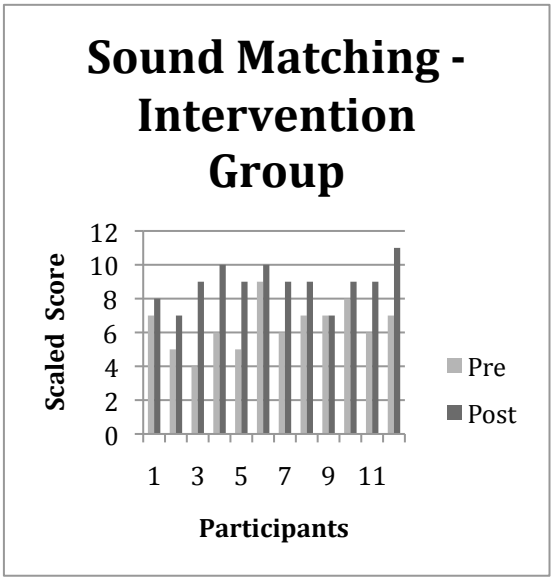


Pre-test, M = 6.08, SD = 1.83
Post-test, M = 7.25, SD = 2.22

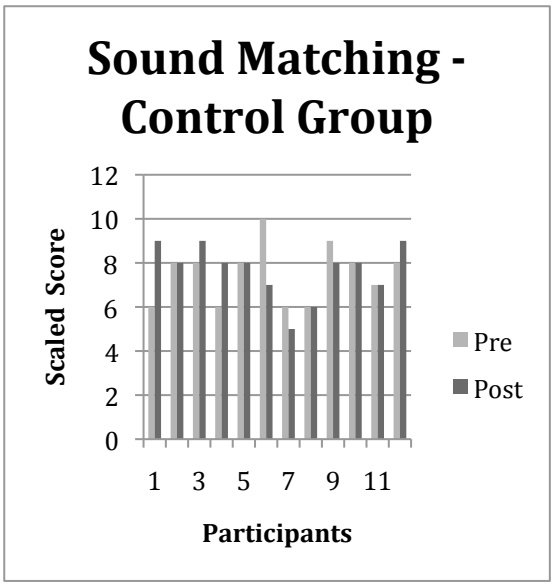


Pre-test M = 6.08, SD 2.06
Post-test M = 6.25, SD 2.52

Figure 5. Change in Scores for Sound Matching Assessment Pre- and Post-Test. (n = 12)

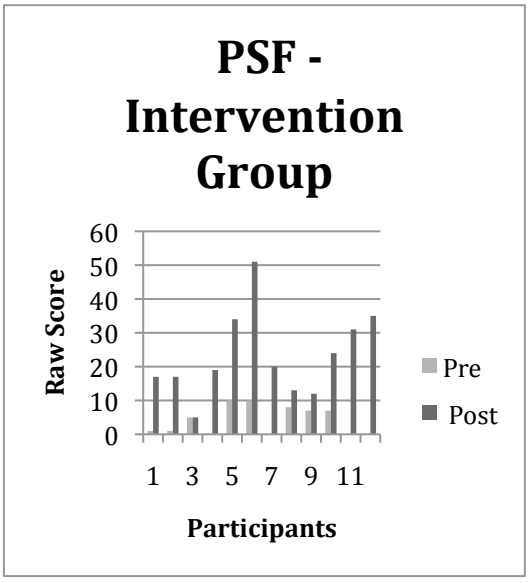


Pre-test $M = 6.41$ $SD = 1.37$
Post-test, $M = 8.91$, $SD = 1.16$

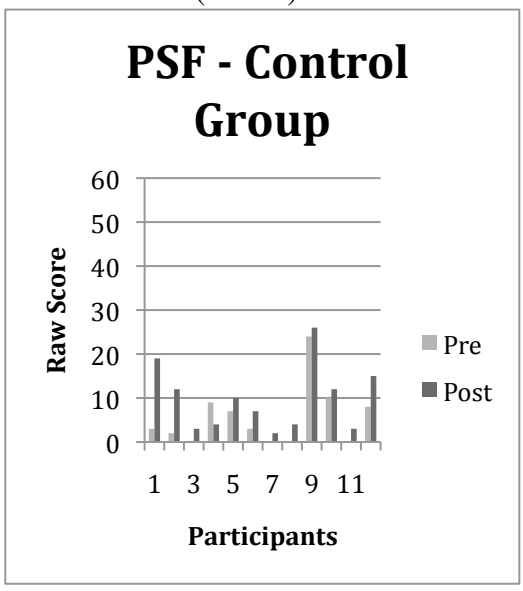


Pre-test $M = 7.5$, $SD = 1.31$
Post-test $M = 7.66$, $SD = 1.23$

Figure 6. Change in Scores for DIBELS PSF Assessment. ($n = 12$)

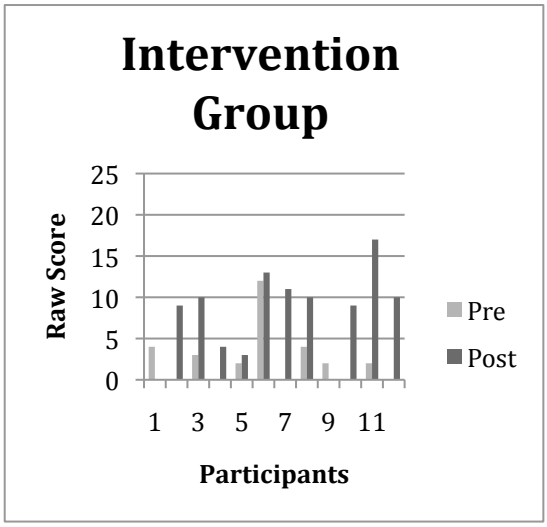


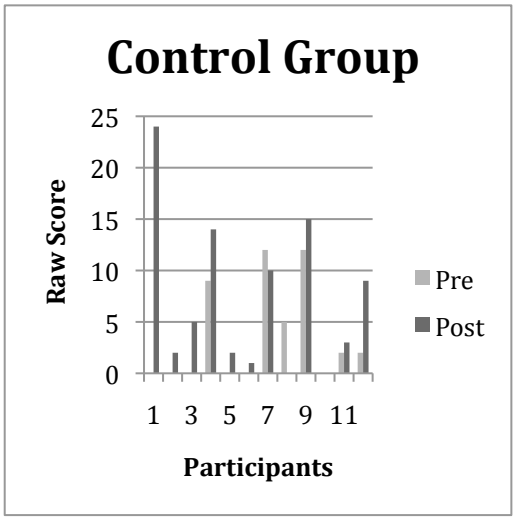
Pre-test $M = 4.08$, $SD = 4.14$
Post-test, $M = 23.16$, $SD = 12.63$.
Scores not shown are 0.



Pre-test $M = 5.5$, $SD = 6.93$
Post-test M = 9.75, $SD = 7.46$

Figure 7. Change in Scores for DIBELS NWF Assessment. (n = 12)





Pre-test, M = 2.41, SD = 3.39
Post-test, M = 8, SD = 5.20.
Scores not shown are 0.

Pre-test, M = 3.5, SD = 4.81
Post-test, M = 7.08, SD = 7.5.

Discussion

This study examined whether the Talking Tables Oral Language program improved the PA of kindergarten children that are at-risk for reading difficulties. Phonological awareness is a critical component skill of reading acquisition. The results of this study demonstrate that the PA skills of the students in the intervention group, as captured by most of the PA measures, improved significantly when compared to the children in the control group.

The intervention group made greater gains on all the post-test scores, except Elision, than the control group, but only the PA composite score and the DIBELS Phoneme Segmentation Fluency (PSF) improved significantly from pre- to post-test. The intervention group demonstrated an increased improvement in PA, which brought them up to the average range for the CTOPP 2 PA Composite standard score; whereas, the control group continued to perform in the below average range. These findings are consistent with what has been shown in other research, specifically, that intensive instruction in PA will improve PA skills (e.g., Bailet, Repper, Piasta & Murphy, 2009; Cooper, Roth, Speece & Schatschneider, 2002; Yeh and Connell, 2008).

A possible reason for greater gains made by the intervention group on all post-test scores, except Elision, may be due to the mean standard pre-test score of 8.3 for the intervention group. This score is already in the average range. The mean post-test score was 9.25, demonstrating that the intervention group did improve on the Elision measure. Four children in the intervention group achieved scores in the poor to below average range before the intervention. At post test, only one child was at the below average range. The control group's mean standard pre-test score was 7.1, in the below average

range, which changed to 8.5, in the average in post-testing. Six children tested in the poor to below average range at pre-test. At post-test 3 children were still at the below average range. This suggests the children in the intervention group made gains in elision. The effect size for the intervention group ($d = 0.46$), suggests a moderate effect size.

The Phonological Deficit Theory posits that the underlying root of dyslexia lies in an individual's difficulty in recognizing and manipulating the sounds in words, particularly at the phoneme level. Numerous studies have been conducted to demonstrate the causal relationship between phonological awareness and learning to read. (Bryant, MacLean, Bradley & Crossland 1990; Torgesen & Davis, 1996**;** Vandervelden & Siegel, 1995;). The results of the current study indicate that children who are struggling with PA, which is an early reading skill, can improve their PA skills through intervention. The DIBELS PSF assessment demonstrated that the children in the intervention group made significant improvements in their ability to break words up into sounds, a skill they struggled with before the intervention. Not only could they break the words up into sounds, they improved the speed in which they were able to do this. The DIBELS PSF requires the student to produce verbally the individual phonemes for each word given. For example, the examiner says, "mop," and the student says, "/m/ /o/ /p/" to receive three possible points for the word. The number of correct phonemes produced in one minute determines the final score. At pre-test, the mean score for the intervention group was 4.14 phonemes per minute. At post-test, the mean score was 23.16 phonemes per minute. Four children from the intervention group moved from at-risk to average, where as none of the children in the control group moved from the at-risk range. This suggests

the Talking Tables intervention improves both phonological awareness and fluency, as demonstrated by both a large practical ($d = 1.29$) and statistical ($p < 0.001$) significance.

The ability to break words accurately and fluently into their sounds is an important skill in learning to read. As children learn to read, more attention and cognitive resources can be focused on comprehending the word as opposed to thinking about where the sounds are in the word. If children are not able to hear and comprehend where the sounds are, they will not be able to use this fundamental approach to word identification. Being able process the sounds in spoken words (phonemic segmentation) is related to being able to blend sounds together to form oral words. (Adams & Bruck, 1993; National Reading Panel, 2000). This is fundamental in developing decoding skills. Castles, et al. suggest that PA tasks place a heavy demand on phonological and working memory. If a child is able to segment the sounds fluently, less demand is made on the memory system and more energy can be put into other literacy skills such as decoding. Future research would need to be conducted to determine if the children in the intervention group would continue to improve in the segmentation fluency, and thus improve in their decoding ability. When comparing the DIBELS PSF and NWF, it would appear that the children who scored the highest in the PSF post-test also scored relatively high in the NWF post-test. Effect size ($d = 0.15$) was small for NWF, as was statistical significance ($p < .582$), therefore no conclusion can be made about the relationship between the phonological fluency and decoding skills of the intervention group.

Adams & Bruck (1993), suggest up to 15% of children will require some type of intervention to promote PA. This study falls slightly above this number. Twenty-eight

children who were at-risk children were selected from eight kindergarten classes, which was comprised of a population of 158 Kindergarten students. The at-risk population for this study was 17%. From this population, eight children in the intervention group moved from being at-risk to average, whereas only three children in the control group moved from at-risk to average. This improvement in the intervention group demonstrates effect sizes of Cohen's $d = 0.77$, for PA and Cohen's $d = 1.29$ for phoneme segmentation fluency. (However, four children did not complete the post-testing, therefore their numbers are not included in final analysis.) This effect size is not as high as other researchers, such as Pokorni et al. (2004) reported, in which the effect sizes for Earobics and LiPS were (d =1.80), (d = 2.43), respectively. It does compare with the effect sizes found by the National Reading panel, (d = 1.16).

The results from the present study has some similarities with the research reported by Denton et al. (2006) in which there was an improvement in the intervention group, but not all students made significant gains. In this study three of the four children who remained at-risk had the lowest pretest scores. Their scores fell within the 70 to 79 range (where scores ranging from 90 to 110 are average) of the standard composite score. The fourth child scored 80. All of these children made gains after the intervention, scoring within the 80-89 range of the standard composite score, but this is still within the below average range. Denton et al. demonstrated that some students do not make great gains during intervention. These children often need continued support through different types of interventions. Their study suggests that children who received tier 3 intervention (the most intensive and individualized intervention) after having tier 1 and 2, do make gains, although these children continued to read below their grade. More research would

need to be done to determine if the four children in this study, who continued to perform in the below average range, would continue to perform below average after a tier 2 intervention.

Likewise, Torgesen et al. (1999) also demonstrated that although group response to PA intervention improved, individual differences were significant. Both Denton and Torgesen determined that the children who did not respond to intervention often had other special education difficulties, such as attention and behaviour difficulties. This is the case with this present study. The teachers of two out of the four children, who continued to perform in the below average range, reported that these children had difficulty attending during class. They were easily distracted by their peers and often needed extra support to stay on task. (However, during the group intervention activities, the children were able to stay on task and focus on the activities being taught). One of the 4 children was diagnosed with a conductive hearing loss during the last few weeks of the study. It is difficult to determine if this had an effect on his performance. The Talking Tables is an oral language program, so it reasonable to infer that the hearing loss had an impact on this child's performance at post-test.

Davidson & Jenkins (1994) suggests that instruction in one PA task will not generalize to the other PA tasks. The findings from the present study are in-line with this suggestion. The Talking Tables program consists of 6 different themes. The focus of the PA activities in each theme differs. The theme taught to the intervention group had a focus on sound matching. This study demonstrated the intervention group made significant improvement in sound matching, whereas Elision and Blending Words did

show significant improvements. The same pattern of improvements has also been demonstrated in other research in which training in one PA skill, such as blending, only improved blending and did not generalize to other PA skills such as rhyming. (e.g., Torgesen, Morgan, & Davis, 1992). These results suggest that an intervention that includes explicit instruction in variety of PA skills would improve the PA skills taught. The Talking Tables program has 6 different themes, with each theme focusing on a different PA skill. More research needs to be conducted to determine if other PA skills will improve after instruction in the remaining themes.

The DIBELS Phoneme Segmentation Fluency (PSF) measure assesses a student's ability to segment three- and four-phoneme words into their individual phonemes fluently. The PSF measure has been found to be a good predictor of later reading achievement (Kaminski & Good, 1996). Of the 12 children in the intervention group, 4 children moved from the pre-intervention 'at-risk' score into the post-intervention average score. All of the children in the control group continued to perform in the 'at-risk' range.

The DIBELS Nonsense Word Fluency (NWF) assessment was given to determine if the intervention had an effect on future reading skills. The NWF assesses both the alphabetic principle and the ability to blend letters into words in which letters represent their most common sounds. Specifically, it assesses a student's ability to either segment two and three letter nonsense words into the sounds, or to look at the nonsense word and read the word. (For example, bij could be read as b/i/j or /bij/.) Because this is a fluency assessment, students that are able to read the word will score higher than those that take longer to sound out each sound. This assessment asks a child to read unfamiliar words,

not just name letter sounds (Kaminski & Good, 1996). All of the children in the study continued to perform in the 'at-risk' range in the NWF, although the children in the intervention group showed the most improvement. As well, three of the students in the intervention group were able to read 2 or more of the words in the NWF assessment. It is important to note, the Talking Tables intervention is an oral language program, it does not teach letter name, shapes or sounds. The improvement shown by the intervention group is consistent with the current research that demonstrates that PA is a metalinguistic skill.

Metalinguistics is the ability to objectify language and dissect it as an arbitrary linguistic code independent of meaning. It also includes metasyntax, metamorphology and metasemantics (Roth, Speece, Cooper & De Le Paz, 1996). In relationship to PA, metalintuistics is the ability to play with and manipulation the phonemes in language. Phonological awareness, as a metalinguistic skill, has been repeatedly studied in relationship to decoding and reading. Once a student is able to master the concept of phonemes they are then able apply these skills across the range of sounds in the alphabet (Castles, et al., 2011; Torgesen & Davis, 1996). Research by Roth, et al, (1996) suggest that not only metalinguistic awareness, but also narrative discourse, plays an important role in oral language and learning to read. As previously mentioned, 4 students in the intervention group continued to perform in the below average range in the CTOPP 2 assessment. Perhaps future interventions that not only focus on PA, but also on other metalinguistic skills and narrative discourse may help improve the reading ability of these struggling students.

The findings of this study have implications for educational practices in British Columbia. With ever decreasing funding to the public education system, learning support teachers are constantly searching for new and inexpensive methods to help struggling students. The Talking Tables program, which is relatively inexpensive (approximately $300 for the complete kit at the time this was written) can be carried out by a teacher or an educational assistant, as each lesson is scripted.

One anecdotal result of this study was that the teachers of the children who were involved in the experimental group reported that the parents were very happy to have their child receive in extra support at school. Six parents asked how they could support their children at home, and one parent mentioned that their child is now showing interest in letters and reading; whereas, they did not before the start of the study. There are many factors that would explain this. One reason may be that the Talking Tables program is enjoyable. (For example; fishing - with a chop stick and a magnet for picture cards, which the children then name the picture and break the word into phomemes.) All of the children enjoyed going to the sessions. The teachers reported that the children would tell their friends and parents about the activities. This could motivate the parents to take an active part in their child's learning.

Another anecdotal result of this study is that the teachers were curious about the Talking Tables program. One of them asked to borrow the manual for the summer holidays so she could learn about it. This program was originally designed by classrooms teacher to teach to small groups of children. This program could be used by a classroom teacher with any small group, typically-developing children or children at-risk for reading, during the course of literacy instruction. This was the intention of the

teacher that asked to learn more about the program. Future research on the efficacy of this program as a general education classroom activity would need to be conducted to determine if effect sizes are as large.

Limitations

There are several limitations to the present study. First, this study does not take into account gender or socio economical status. The study consisted of mostly boys (17 boys versus 7 girls). These numbers fall within the range expected for children with reading difficulties, which is reported to fall anywhere from 4:1 to 1:1 with boys being more predominantly represented. (Hawke, Olson, Willcut, Wadsworth & DeFries, 2009; Miles, Haslum, & Wheeler, 1998). Hawke, et al, (2009) suggest that the higher prevalence of reading difficulties in males may be due their greater variance in reading performance, compared to females. Their study of twins suggests that the variance for males is significantly larger than females. Of the 4 children that continued to perform in the below average range, 3 of them were boys (including the child with the diagnosed conductive hearing loss). It should also be noted that of the 8 children in the intervention group, that moved into the average range, the highest achiever was a boy. It is interesting to note that in an interview with Shaywitz, (D'Arcangelo, 1999), she indicated that medical imaging has shown that there is a gender difference in how the brain processes nonsense words. Adult males only used the left side of the brain, whereas adult females used both sides. Whether this relates to developing readers and how it affects gender in early reading still needs to be determined.

The schools that took part in the study were in middle class areas of Greater Victoria, but each school catchment area had pockets of low-income housing. Based on

statistics from the 2011 census, the average household income varies for each school. See Table 3. The average median family income for Saanich, the municipality in which all the school are located, is $85 402.

Table 3. Average Median Family Income of Catchment Areas (Information From Stats Canada 2011 Census)

	Intervention Group	Control Group
School 1	$91 799	-
School 2	$66 009	-
School 3	-	$94 826
School 4	-	$77 556

The sample size for each group is relatively low and the groups were not randomly chosen. A larger sample size would have allowed for increased power in the data analyses. Unfortunately the time and resources of the researcher made it impossible to randomly assign the children to groups. One should note that the National Reading Panel reported that the largest effect size were demonstrated when the size of sample was between 9 – 22 students (d =1.37). The present study falls within these parameters. The non-randomized groups allowed for the researcher to use intact groups, which improves the external validity of the design because it does not disrupt the research setting. Internal validity was controlled by using ANCOVA, which controlled for between group means at pre- and post-test. The researcher was unable to control for time on task. As a component of the general curriculum, the control group did receive instruction in PA during regular classroom instruction, but instruction was not explicit or of the intensity of the present intervention content. Time on task could have been controlled for by having

another group receive an intervention that was unrelated to PA, which consisted for the same duration. Unfortunately this was not an option given the limited time and resources of the researcher.

Implications and Directions for Future Research

This study examined the improvement of PA of kindergarten children at-risk. It did not examine whether reading skills improved. Further studies are needed to determine the effects of this intervention on reading ability in grade one. Research suggests that intervention in PA coupled with intervention in the alphabetic principle, is most effective. The Alphabetic Principle is the understanding that letters of the alphabet and their corresponding phonemes can be used to read words, in other words, it is knowledge of the grapheme-phoneme correspondence. Ehri & McCormick 2006, suggests that as children learn to read they move through 5 phases of word learning:(1) the pre-alphabetic phase, (2) the partial-alphabetic phase, (3) the full- alphabetic phase, (4) the consolidated-alphabetic phase, and (5) the automatic-alphabetic phase. The pre-alphabetic stage and partial-alphabetic phase is typical of kindergarten children. Ehri and McCormick suggest that children who are struggling with PA will not be able to progress from phase 1 through to phase 2. It is only when students are proficient at PA, that they can then map the phonemes onto the corresponding letter shapes and sounds, as they learn them. A study by Foorman, Chen, Carlson, Moats, Francis and Fletcher, 2003, demonstrated that kindergarten children who received support in both alphabetic principle and PA increased their reading skills more than those that received only PA or alphabetic knowledge. More research needs to be done to determine what effect the

Talking Tables program, together with an alphabetic teaching program, would have on future reading ability.

This study only focused on the PA skills of kindergarten children. The Talking Tables program also provides activities that build vocabulary, oral fluency and auditory skills. Although PA is a strong predictor of future reading skills in young children, other skills such as vocabulary are good predictors of later reading comprehension. Vocabulary plays an important role in learning to read, in that children must understand individual words in order to comprehend the text. (McCardle, Scarborough, Catts, 2001; Nation, Snowling, 2004; Muter, Hulme, Snowling & Stevenson, 2004). Kim, Petscher, Schatschneider & Foorman (2010) study suggests children who are strong in oral fluency in grade one are strong in comprehension in grade three. Correct pronunciation of individual sounds and words is very important for fluency. The Talking Tables program claims to improve these skills, but more research needs to be conducted to determine the effects of this program on these skills.

As mentioned earlier, the PA skill taught to the intervention group focused on sound matching. Torgesen, Morgon and Davis (1992) suggest that PA skills do not transfer to one another, (e.g., blending does not improve elision). Each theme of the Talking Tables program focuses on a different PA skill. Further studies need to be conducted to determine if this program will improve all the PA skills after all themes are taught. This study also opens up the door for a longitudinal study in which future research on how this intervention improves reading ability in later grades.

This study demonstrates that the Talking Tables is an effective intervention to increase the PA skills of Kindergarten children at-risk for reading difficulties, although did not improve the PA of all children that took part in the intervention group. These students are often more difficult to teach. They often need ongoing support from the teacher in the classroom and from the learning assistance or special education teacher through pull-out intervention programs. Only when these children are carefully assessed, documented and followed are we able to determine if these are the children that exemplify what a true learning disability is (Denton, et al. 2006). The Talking Tables intervention is a good tier 2 intervention that can help determine which children may need to be further assessed for difficulties. This study can lead to further research in which the children that did not respond to this intervention can be followed to determine if tier 3 intervention can improve their PA and their reading ability.

Summary

This study examined the efficacy of the Talking Tables program on PA skills of Kindergarten children at-risk for reading. The Talking Tables program is a widely used program in many schools across British Columbia. At the time this research was conducted, there were no studies on the effects of the program. The public education system in BC, and across Canada, is experiencing a drastic decline in funds for children who need extra support. Teachers are searching for ways to meet the needs of their struggling students. Many times this means using programs that claim to improve student achievement, but often there is no research to back the claim. This research determined that the Talking Tables program improved the PA of the children in the intervention

group. This group made significant gains on sound matching and phoneme segmentation fluency skills. Both skills are linked to improved reading skills.

Teachers are now able to know that the Talking Tables program will help improve the PA of kindergarten children that are at-risk for reading difficulties. More research needs to be conducted to determine if instruction in all the themes of the program will allow students to improve more PA skills and whether this intervention leads to improved reading ability in later grades. Continued research examining the students that do not respond is needed to determine the efficacy of other intensive interventions. As well, future studies on the efficacy of the Talking Tables program in combination with an intervention focusing on the alphabetic principle need to be conducted. Until then, kindergarten teachers and learning assistant teachers can rest easy, knowing that this intervention will help the struggling students in their classes.

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Appenidix A

Human Research Ethics Consent Form - Control Group

Talking Tables Intervention

You are invited to participate in a study entitled **The Efficacy of the Talking Tables Program in the Development of Phonological Awareness in Kindergarten Children At-risk for Reading.**

My name is Helena Hodgins. I am a Graduate Student in the department of Educational Psychology at the University of Victoria. As a graduate student, I am required to conduct research as part of the requirements for a degree in Masters of Arts in Educational Psychology.

The purpose of this research project is to study the effects of the Talking Tables Oral Language program on phonological awareness skills. Phonological Awareness is the ability to hear and manipulate sounds in words. Research of this type is important because it helps in determining the effects of programs that develop early literacy skills. It has been shown that children who struggle with phonological awareness also struggle with reading.

You are being asked to give permission for your child to participate in this study because your child is in Kindergarten and has been screened by your child's Speech and Language Pathologist in the fall.

If you consent to allow your child to participate in this research, your child will participate in Talking Tables program at school. The program would take place in a small group either in your child's classroom or in a quiet area of the school, during school time. The program is a completely scripted program. Each lesson contains a chant, an auditory activity, a vocabulary activity, a phonological activity and a fluency activity. The lesson lasts approximately 20 minutes. I would like to assess your child in February and again in April to determine the effects the Talking Tables program has had on your child's phonological awareness. The assessments will take about 15 minutes and will happen at your child's school. The assessments are standardized assessments, which ask questions, such as, 'Which word is not the same, pig, big, bear, wig? 'Say the word *stand*, now say it without the 't' sound.'

There are no known or anticipated risks to your child by participating in this research. The potential benefits of your child's participation in this research include increased phonological awareness skills, which may lead to increased readiness for reading.

Your child's participation in this research must be completely voluntary. If you decide to let your child participate, you may withdraw your child at any time without any consequences or any explanation. If you do withdraw from the study your child's data will be used only if you give permission. In terms of protecting your child's anonymity, all data will be coded. No name will be attached to the data. Your child's confidentiality and the confidentiality of the data will be stored on one computer and used for this research only.

It is anticipated that the results of this study will be shared with others in my thesis, as a published article, as well as the Greater Victoria School District. Data from this study will be disposed of as soon as my thesis is completed and accepted.

In addition, you may verify the ethical approval of this study, or raise any concerns you might have, by contacting the Human Research Ethics Office at the University of Victoria (250-472-4545 or ethics@uvic.ca).

If you have any questions you may contact me by emailing helenah@uvic.ca. You may also contact my supervisor, Dr. Gina Harrison, at (250) 721-7783.

Your signature on the next page indicates that you understand the above conditions of participation in this study, that you have had the opportunity to have your questions answered by the researchers, and that you consent to participate in this research project.

Permission to Participate in the Talking Tables Research Project

Name of Child _____
(Please Print)

Parent's name _____ Parent's signature _____
(Please Print)

Date _____

A copy of this consent will be left with you, and a copy will be taken by the researcher.

Appendix B

Verbal Assent Script – used with Kindergarten Participants

Talking Tables Intervention

Individual Assessment Assent

"I am from the University of Victoria and I would like you to help me with a project I am working on at the University. I want to know how I can help children learn to be better readers. We will be doing some language games together. If you get tired, let me know, and we can have a short break. If you really feel like stopping, let me know that too, and you can choose to do the activities again another day, or not at all. You can choose not to work on this project now or at any time and it will have no effect on your schoolwork. All of your work will be kept private or secret. No one will know how you did on the activities. Do you have any questions now? [*respond to questions*] Let me know if you have any questions at any time during the activities. Would you like to be in the project?" [*continue with research activities only after receiving verbal assent from child*].

Talking Tables Group Intervention Assent

"I am from the University of Victoria and I would like you to help me with a project I am working on at the University. I want to know how I can help children learn to be better readers. We will be doing some talking and language games and activities together. If you really feel like stopping, let me know. You can choose not to work on this project now or at any time and it will have no effect on your schoolwork. Do you have any questions now? [*respond to questions*] Let me know if you have any questions at any time during the activities. Would you like to be in the project?" [*continue with research activities only after receiving verbal assent from child*].

Appendix C

Human Research Ethics Consent form for Control Group

Talking Tables Intervention

You are invited to participate in a study entitled **The Efficacy of the Talking Tables Program in the Development of Phonological Awareness in Kindergarten Children.**

My name is Helena Hodgins. I am a Graduate Student in the department of Educational Psychology at the University of Victoria. As a graduate student, I am required to conduct research as part of the requirements for a degree in Masters of Arts in Educational Psychology.

The purpose of this research project is to study the effects of the Talking Tables Oral Language program on phonological awareness skills. Phonological Awareness is the ability to hear and manipulate sounds in words. Research of this type is important because it helps in determining the effects of programs that develop early literacy skills. It has been shown that children who struggle with phonological awareness also struggle with reading.

If you consent to allow your child to participate in this research, your child will be assessed in April and again in June to determine their development of phonological awareness. The assessments will take about 20 minutes and will happen at your child's school. The assessments are standardized assessments, which ask questions, such as, 'Which word is not the same, pig, big, bear, wig? 'Say the word *stand*, now say it without the 't' sound.'

There are no known or anticipated risks to your child by participating in this research. Your child's participation in this research must be completely voluntary. If you decide to let your child participate, you may withdraw your child at any time without any consequences or any explanation. If you do withdraw from the study your child's data will be used only if you give permission. In terms of protecting your child's anonymity, all data will be coded. No name will be attached to the data. Your child's confidentiality and the confidentiality of the data will be stored on one computer and used for this research only.

It is anticipated that the results of this study will be shared with others in both my thesis and a published article. Data from this study will be disposed of as soon as my thesis is completed and accepted.

In addition, you may verify the ethical approval of this study, or raise any concerns you might have, by contacting the Human Research Ethics Office at the University of Victoria (250-472-4545 or ethics@uvic.ca).

If you have any questions you may contact me by emailing helenah@uvic.ca. You may also contact my supervisor, Dr. Gina Harrison, at (250) 721-7783.

Your signature on the next page indicates that you understand the above conditions of participation in this study, that you have had the opportunity to have your questions answered by the researchers, and that you consent to participate in this research project.

Permission to Participate in the Talking Tables Research Project

Name of Child _____
(Please Print)

Parent's name _____ Parent's signature
_____
(Please Print)

Date _____

A copy of this consent will be left with you, and a copy will be taken by the researcher.

Appendix D

Information and Request for Participation Letter to Teachers and Principals

The Efficacy of the Talking Tables Program in the Development of Phonological Awareness in Kindergarten Children At-risk for Reading.

About Me

My name is Helena Hodgins. I am a Graduate Student in the department of Educational Psychology at the University of Victoria. As a graduate student, I am required to conduct research as part of the requirements for a degree in Masters of Arts in Educational Psychology. I am also a teacher in the Victoria school district, and have been for the last 25 years. I am currently a grade one teacher at Frank Hobbs Elementary.

About My Project

I would like to use Kindergarten children, who may be 'at risk' for reading difficulties as participants in my research, which looks at the efficacy of the Talking Tables Program in the development of phonological awareness in kindergarten children 'at risk' for reading. The purpose of this research project is to study the effects of the Talking Tables Oral Language program on phonological awareness skills. Phonological Awareness is the ability to hear and manipulate sounds in words. Research of this type is important because it helps in determining the effects of programs that develop early literacy skills. It has been shown that children who struggle with phonological awareness also struggle with reading.

The Details

Approximately 30 students, from 4 or 5 schools across Victoria, who are designated 'at risk' by their classroom teacher, will participate in the research project. All of those 30 students will be assessed using the DIBELS and the CTOPP 2. From the 30 students approximately 15 will be designated the research group (this group will receive the intervention) and the other 15 will be the control group (this group will not receive the intervention). After 5-6 weeks of intervention the research group and the control groups will be assessed again using the DIBELS and the CTOPP 2. The program would take place in a small group either in the child's classroom or in a quiet area of the school, during school time. The program is a completely scripted program. Each lesson contains a chant, an auditory activity, a vocabulary activity, a phonological activity and a fluency activity. The lesson lasts approximately 20 minutes. I would like to assess the children in late March/early April and again in June to determine the effects the Talking Tables program has had the research group's phonological awareness. The assessments will take about 15 minutes. The assessments are standardized assessments, which ask questions, such as, 'Which word is not the same, pig, big, bear, wig? 'Say the word *stand*, now say it without the 't' sound.'

Other Information

There are no known or anticipated risks to the children by participating in this research. The potential benefits of participating in this research may include increased phonological awareness skills, which may lead to increased readiness for reading. The children's participation in this research must be completely voluntary. The parent's will decide whether or not to let their child participate, and they may withdraw their child at any time without any consequences or any explanation. In terms of protecting children's anonymity, all data will be coded. No name will be attached to the data. The confidentiality of the data will be stored on one computer and used for this research only.

It is anticipated that the results of this study will be shared with others in my thesis, the Greater Victoria School District and a published article. Data from this study will be disposed of as soon as my thesis is completed and accepted. In addition, you may verify the ethical approval of this study, or raise any concerns you might have, by contacting the Human Research Ethics Office at the University of Victoria (250-472-4545 or ethics@uvic.ca).

If you have any questions you may contact me by emailing helenah@uvic.ca. You may also contact my supervisor, Dr. Gina Harrison, at (250) 721-7783.

Thank you for your time,
Helena Hodgins

Please see the attached information/consent letter, which will be sent home to parents.

Appendix E

Example of Talking Tables Script

Talking Tables®

THEME: ANIMALS AND THEIR BABIES

UNIT 3 - LESSON 1

PHONOLOGICAL SKILL
blending and segmenting phonemes

Materials:
- Magic Bag
- toy duckling
- Animal Picture Cards (Set B)
- Phoneme Cards (Set B)
- Sound Slider Boxes and bingo chips
- Sequence Cards: Eagles with dialogue sticky notes

1 CHANT ACTIVITY

Mama, mama, can I have a calf?
A calf will get too big for the bath!
Mama, mama, can I have a kid?
A kid will even eat our crib!
Mama, mama, can I have a puppy?
What a great idea – we'll call her Lucky!

Do the chant, or part of the chant, a few times in each session so the students can work on memorizing it.

2 AUDITORY ACTIVITY

Play **Final Sounds** with the following prompts. Say each three-word set slowly. Students listen closely to the three words and then say the final sound that is the same in the set. Ensure that everyone makes the sound rather than saying the letter. The teacher may choose to have a choral response, individual student responses, or a mix of both.

hen - pan - sign /n/	*drum - slim - comb /m/*
flood - hid - sad /d/	*pup - slap - hip /p/*
tree - money - she /e/	*buzz - fizz - whiz /z/*

Now try **What Doesn't Belong** with the following prompts. Say each four-word set slowly and have the students say which word does not **end** with the same sound as the others.

farm - clam - hum - loud	*house - flat - quit - bolt*
wheel - hill - tree - bell	*hide - code - fin - made*

3 VOCABULARY ACTIVITIES

1) Magic Bags: Hide a toy duckling inside a cloth bag and have each student take a turn feeling and guessing what's inside. Ask them to say "I think it's a _____." One student gets to open the bag and reveal the hidden object. This student must say "Tah! Dah! This is a duckling". The object is passed around, and everyone gets a chance to say something about it following a frame sentence the teacher has selected. A sample frame is:

e.g. This duckling has a beak."

3 VOCABULARY ACTIVITIES continued

2) Picture Cards: Before playing any games with the cards, the teacher should review each item so the students have a chance to hear and say the name of each item. Choose 5 or 6 cards from the list below and play:

dog	*eaglet*	*bear*	*foal*
puppy	*cow*	*cub*	*goat*
eagle	*calf*	*horse*	*kid*

Follow the Leader: Arrange the cards, face up, in a grid in the middle of the table. The teacher silently points to two cards, and the student(s) must name the objects in the order indicated. The teacher can point to three or four objects as the students get the hang of the game, but the order indicated by the teacher must be maintained.

Remember It: Select 4 – 6 of the picture cards and place them face up on the table in a grid. Name all the cards, then turn them face down. Ask students to point to a card they can remember and name it. Check their answers by turning the card face up. Play several rounds.

4 PHONOLOGICAL AWARENESS ACTIVITY
(blending and segmenting phonemes)

Sound Slider Boxes: Phoneme Cards – Set B
Place the cards in a pile **face down** in the middle of the table. Distribute the Sound Slider boxes and 3 bingo chips to each student. Reveal one card at a time. Show the picture, say the word and say it again lifting one finger for each sound. For example:
Show the card bat and say *bat*.
Say *bat* again, this time lifting a finger for each of the three sounds: /b/ + /a/ + /t/.
Now say *bat* a third time, this time having the students slide a bingo chip into one of the boxes for each sound. Make sure they work from left to right.
You will notice that this set contains both 2 and 3 phoneme words. Repeat this process for 6 – 12 of the words.

5 FLUENCY ACTIVITY

Storytelling with Sequence Cards: Animals Set (Eagles)
In this activity students are encouraged to create dialogue for the characters in the story. Begin by putting the sequence cards in the middle of the table out of order. Do the sequencing together. Encourage students to give you a basic story line. Then review each card and ask what the characters might say. Write the best suggestions on the dialogue sticky notes and attach them to the story cards. Model the story for the students, inserting the dialogue where it fits. Try asking individual students to tell the story of one card including the dialogue.