

*Exploratory Study: Exploring the Effectiveness of a Literacy-Based Intervention with  
Children with Language Impairments*

*by*

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## **Abstract**

Research points clearly to the need for all concerned stakeholders to adopt a preventative approach while intervening with children who are at-risk for future reading disabilities. Research has indicated also that a particular sub-group of children at-risk for reading impairments include preschool children with language impairments (Catts, 1993). Preschool children with language impairments may have difficulties with emergent literacy skills – important prerequisite skills necessary for successful formal reading. Only in the past decade have researchers begun to study the effects of emergent literacy intervention on preschool children with language impairments. As such, the current study continues this investigation of how to effectively implement an emergent literacy therapy aimed at supporting preschool children with language impairments. In addition to this, the current study explores emergent literacy intervention within an applied clinical setting. The setting, presents a host of methodological and theoretical challenges – challenges that will advance the field of understanding children within naturalistic settings.

This exploratory study included thirty-eight participants who were recruited from Speech Services Niagara, a local preschool speech and language program. Using a between-group pre- and posttest design, this study compared two intervention approaches – an experimental emergent literacy intervention and a traditional language intervention. The experimental intervention was adopted from Read It Again! (Justice, McGinty, Beckman, & Kilday, 2006) and the traditional language intervention was based on the traditional models of language therapy typically used in preschool speech and language models across Ontario.

Results indicated that the emergent literacy intervention was superior to the traditional language therapy in improving the children's alphabet knowledge, print and word awareness and phonological awareness. Moreover, results revealed that children with more severe language impairments require greater support and more explicit instruction than children with moderate language impairments. Another important finding indicated that the effects of the preschool emergent literacy intervention used in this study may not be sustainable as children enter grade one. The implications of this study point to the need to support preschool children with language impairments with intensive emergent literacy intervention that extends beyond preschool into formal educational settings.

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## CHAPTER 1

### INTRODUCTION

Language is a core component in the development of communication, expression, and a vehicle for our thought processes; setting the foundation for many life avenues. Currently in Canada, approximately 2-5% of preschoolers are identified as having language impairments in expressive and/or receptive language (Canadian Association of Speech-Language Pathologists and Audiologists, 2005). For these children, their overall quality of life is threatened by the impact of their language impairment, as they are at increased risk for experiencing a variety of social (such as social withdrawal) and academic difficulties (Zhang & Tomblin, 2000). More specifically, research has demonstrated consistently that children with language impairments may be at a specific risk of developing reading difficulties later in their elementary years (Badian, 1998, 2000; Catts, Fey, Zhang, & Tomblin, 1999, 2001; O'Connor & Jenkins, 1999). A number of retrospective studies have demonstrated that children identified with reading disabilities in their elementary school years often reported a history of speech and language difficulties in their early, emergent years (Bird, Bishop, & Freeman, 1995; Bishop & Adams, 1990; Catts et al., 1999). As a result of these findings, researchers have strived towards two related goals. First, researchers have looked to identify the specific types of language impairments that put young children at more or less risk for reading difficulties. The results of this work indicated that preschool children with specific expressive and/or receptive language impairments are those who may be at the most significant risk for reading difficulties (Catts, 1993; Catts, Fey, Tomblin, & Zhang, 2002; Jenkins, Jewell, Leicester, & O'Connor, 1994; Nathan, Stackhouse, Goulandris, & Snowling, 2004). The second goal has been to develop and assess the efficacy of early emergent literacy

interventions aimed at supporting children with specific language impairments in order to prevent the seemingly inevitable reading difficulties these children will face (Snow, Burns, & Griffins, 1998). Justice and Pullen (2003) write about this current focus and affirm that by providing preschoolers with language delays strong emergent language skills, these children have the tools to develop into healthy readers. Following this, early effective literacy interventions would enable professionals working with preschoolers to limit the advancement of language impairments, and therefore alleviating the inevitable reading difficulties (Justice, Invernizzi, & Meier, 2002; Torgesen, Wagner, Rashotte, 1994).

Although the empirical support for preschool literacy is unequivocal, it is important to take into account that preschoolers are not yet formally reading but instead, acquiring the fundamental prerequisites for learning to read. This period is often referred to as emergent literacy; a developmental stage from birth to age 6 where children are in the process of becoming literate before exposure to formal instruction (Justice & Pullen, 2003). McCardle, Scarborough, and Catts (2001) suggest that young children who are learning to become accurate and efficient readers must first learn and acquire the necessary emergent literacy skills to provide a foundation from which they can build skills in conventional reading and writing. Researchers have demonstrated that children with language impairments often have diminished emergent literacy skills that in turn disfavour that child in comparison to their normally developing peers (Carroll, & Snowling, 2004).

In Ontario, with support from the Ministry of Children and Youth Services many preschool children with language impairments are eligible to receive speech and/or

language therapy services. Such service is often in the form of children attending a publically-funded children's centre where children work with a registered Speech and Language Pathologist. Historically, traditional speech and language therapy has focused primarily on children's speech and language needs; the majority of speech and language interventions have traditionally *not* included components of early literacy such as written language and phonological awareness, nor have these programs typically included the practice of addressing language goals using books and literacy-based activities. Yet with an increasing body of research supporting a link between language and literacy, organizations and governing bodies have recognized the need to reconsider the role of speech-language pathologists in addressing the promotion of literacy needs in preschoolers (Justice, et al., 2002). More specifically, researchers have now suggested that preschool children with language impairments must master two sets of abilities that are foundational to learning to read before formal reading instruction – phonological awareness and written awareness (Boudreau & Hedberg, 1999; Justice et al. 2002; Justice & Pullen, 2003; McCardle et al., 2001). Although the majority of research looks at phonological awareness and written awareness independently, a number of researchers suggest that these two concepts operate and develop interactively, presenting a need for multi-faceted interventions implementing both concepts together (Justice, 2006; Justice & Pullen, 2003).

Responding to the call for the implementation of multi-faceted interventions in emergent years and supporting children who are at-risk for developing reading disorders, this thesis aims to study how best to support preschool children with language impairments. Further, this thesis aims to study how children with language impairments

are supported within an applied, non-laboratory setting – specifically, within the clinical setting of Speech Services Niagara. Methodologically, the aim of the thesis is to compare the treatment efficacy of an emergent literacy therapy compared to a more traditional speech and language-based therapy. I propose that adding an emergent literacy-based component to typical preschool language therapy will enhance the children's post-therapy emergent literacy skills and perhaps reduce the risk of developing reading difficulties in grade one. More specifically, this thesis will evaluate the effectiveness of a multifaceted literacy-based intervention using the READ IT AGAIN! Program; a program developed by Laura Justice and colleagues (2006) in comparison to the standard treatment administered to children with language impairments. Using data from a 3-year longitudinal project that explored children from preschool until grade one, I will study the practical efficacy of early literacy interventions in improving emergent literacy skills (alphabet knowledge, phonological awareness, print and word awareness) and early reading achievement (as measured by grade one report cards). Also, this is my attempt to further the research of reading difficulties by beginning to bridge the gap between research, practice, and policy makers – by evaluating the effectiveness and feasibility of interventions within their 'real world' settings and using practitioners as the implementers. This study will help validate whether an enhanced literacy-based intervention is an effective tool to prevent future reading disabilities from developing in children with language impairments.

## **CHAPTER 2**

### **LITERATURE REVIEW**

Reading is an important skill that is highly valued in well-developed societies. Reading is used for communication, expression, and gaining knowledge. Most children develop adequate reading skills as they are formally exposed to reading instruction in elementary school. However, a subset of children (despite having average or above average levels of intelligence) has significant difficulties with reading acquisition. There are a number of potential causes of such difficulty including the hypothesis that children with reading difficulties have impairments in core language functioning – difficulties that are evident early in life and difficulties that can be seen as important precursors for future reading development (Carroll & Snowling, 2004; Lonigan, Burgess, & Anthony, 2000; Scarborough, 1998). This literature review chapter of my thesis includes four general sections. The first section briefly reviews the current state of learning and language disabilities and identifies the challenges facing current models of service delivery. Second, I review the historical influences and theoretical perspectives that shaped current understanding of language and literacy development. I then review current research focusing on the importance of preschool years as foundational years for future reading acquisition. The fourth section focuses on current prevention and instructional models and the critical components of each of these models.

#### **Importance of Early Identification**

Currently, many provincial and state-level diagnostic criteria for learning disabilities (LD) identifies children as LD when they display a significant unexpected discrepancy between their academic performance in a specific area and their ability,

typically measured by IQ (Learning Disabilities Association of Canada, 2002). However, this diagnostic criterion can often not be established until children reach grade three or four and as such, it fails to recognize that there are precursors to reading disabilities evident early in life – before formal education begins. Consequently, a population of children is denied appropriate intervention and support for their reading difficulties until they reach grade three or four when a two-year discrepancy is evident between the children's academic performance and potential (Siegel, 1992). By this time, children have often been struggling with learning to read for several years (Catts, 1993), potentially impacting their overall motivation and self-esteem (Boudreau & Hedberg, 1999). Further to this, research has demonstrated consistently that children who are significantly lagging behind their peers by grade three often remain behind their peers in reading for their entire academic career (Lyon et al., 2001). This concept is often referred to as the Matthew Effect, in that children who arrive at school with weaker verbal abilities and literacy knowledge are much more likely than their classmates to experience difficulties in reading in the later grades (McCardle et al., 2001). In general, researchers such as Juel (1988) and Scarborough (1998) have demonstrated the long-term stability and impact of reading problems. This well documented difficulty with current diagnostic models has led researchers to look at the possibility of early identification and intervention (Catts et al., 2001; Fey, Catts, & Larrivee, 1995; Snow et al., 1998) – identifying preschool predictors of later reading difficulties (Scarborough, 1998; Spira, Bracken, Fischel, 2005; Torgesen et al., 1999). Subsequently, researchers have demonstrated that children who are poor readers in fourth grade almost invariably have experienced language-based difficulties in preschool, kindergarten, and grade one – difficulties with critical foundational skills such



as phonological skills and the alphabetic principles (Torgesen, 2002). To understand the disconnect between the current diagnostic criterion and current directions towards early identification and intervention, it is important to note that historically, reading development was understood to be a skill reserved for children in formal education. Language and reading were believed to be two distinct components of development that unfolded separately, and progressively one after the other; thus, reading development only began once the children entered formal education. The following section reviews the historical theoretical perspective around ‘reading readiness’ and how this concept progressively emerged into the notion of ‘emergent literacy’, a paradigm emphasizing early identification and intervention.

### **Theoretical Perspectives: Reading Readiness and Emergent Literacy Paradigm**

#### *Reading Readiness Paradigm*

Historically, the ‘reading readiness paradigm’ was the theoretical perspective that suggested learning to read could not begin prior to formal instruction. Through this perspective it was believed that reading was a product of biological maturation and experience (Teale & Sulzby, 1986). As such, children in early years were considered to not yet be equipped with the mental capacities to effectively and efficiently learn the new complex skill of reading. In essence, prior to formal instruction, children were considered to be waiting to acquire the appropriate precursors for learning to read. Parents were advised to postpone the teaching of reading until children reached a certain age (Teale & Sulzby, 1986; also see Justice, 2006 for discussion). Once children reached maturation and displayed a readiness to learn how to read, teachers would then formally

instruct children to use a set of sequenced skills appropriate to establish the basis for reading. Instruction at this time focused exclusively on the formal aspects of reading, ignoring the essential uses of reading. Furthermore, language development was viewed as developing in a series of sequential, distinct stages; separate from oral or written language development (Justice, 2006). The reading readiness perspective created a boundary between explicit reading that children were taught in school and all the learning and development that occurred prior to formal education; suggesting that the early years from birth to six years of age were essentially unimportant (Whitehurst & Lonigan, 2001).

This viewpoint was problematic because it implied that language development played a limited role in early reading acquisition. For example, the reading readiness perspective held that children with limited language skills could still learn to read effectively through direct instruction in reading-based skills since reading was understood to be separate and independent from oral language skills. However, in the past two decades researchers have come to understand that oral language and reading development are significantly interrelated and that the process of learning to read begins early in life, well before children are exposed to formal reading instruction (Justice, 2006; Lerner & Kline, 2006). It is now well understood that the concept of reading should not be separated from the concept of oral language, as reading is a complex skill that relies and builds upon many of the same strategies and cognitive processes used in oral language tasks (Scarborough, 2001). For example, the English language is governed by the alphabetic principle – the notion that written symbols (letters, graphemes) are used to represent meaningful speech sounds (phonemes) in a predictable and systematic way. If

children do not understand that spoken words are made up of sounds, they will have difficulty understanding what letters stand for (Lieberman, 1973). Therefore, by having strong oral language skills in understanding letter-based sounds children are already demonstrating that they understand the basic concepts of letter-sound correspondence – an important print-based concept. As such, children who develop the ability to consciously analyze and synthesize the sounds of spoken language have acquired an important skill useful for learning to read because reading involves going from written to spoken words. When children are learning a new written word they usually already rely on their existing knowledge about that word from their existing oral vocabulary, allowing them to make a range of guesses as they try to decode the word presented to them. However, a low oral vocabulary restricts the number of guesses that children can make; already placing them at a disadvantage to those with well developed vocabulary skills (Rupley, 2005; Shonkoff & Phillips, 2000). In this way, children who start off with poor language related skills in early stages of reading development most often remain poor readers throughout their lives (Juel, 1988; Torgesen, 2002; Torgesen & Burgess, 1998). The concept of emphasizing early oral language and reading has been referred to as the ‘emergent literacy’ paradigm (Justice, 2006; Teale & Sulzby, 1986).

### *Emergent Literacy Paradigm*

Emergent literacy is a relatively recent approach to understanding reading development initiated from the realization that language development (oral, reading, and writing) does not develop through a set of sequential and separate stages but instead as a set of skills that are interrelated, developing concurrently, and thus continuously influencing one another (Teale & Sulzby, 1986). Mary Clay in 1967 was the pioneer for

studying children's reading and writing in light of language acquisition research (Teale & Sulzby, 1986). Up to this point in research, the developmental stage from birth to age six was seen as a time where oral language and reading readiness were developing; reading acquisition and written language followed this stage once formal instruction began. Clay's main research objectives were to identify children with reading difficulties as early as possible by understanding the early reading behaviours (see Teale & Sulzby, 1986). Clay proposed that the notion of reading preceding writing was a misconception, and that listening, speaking, reading, and writing abilities as aspects of language both oral and written, develop concurrently and interrelatedly rather than sequentially; Teale and Sulzby (1986) suggested adopting the term 'emergent literacy' to summarize a more holistic view of understanding literacy development.

The term "emergent literacy" was first used by Teale and Sulzby (1986) as describing the period of language and literacy development from birth to age six. Within the emergent literacy paradigm, the development and process of learning to read was understood to be a process where the processes of oral language, written text, and comprehension were interwoven into the life trajectory starting from when a child was born. In this light, literacy development should be seen as a continual and ongoing process of learning to read through environmental exposure. Moreover Teale and Sulzby (1986) suggested that the dynamic interactions between oral, reading, and writing must be completely understood to fully capture how children progress from no form of language to oral, written, and reading components of language acquisition and could no longer be studied as separate entities.

As a result of the emergent literacy approach to development, most stakeholders concerned about early childhood education no longer believe that one needs to wait for children to be ‘ready’ for formal reading instruction, but rather that children, from the time they are born, are constantly learning important skills for future language and reading development. However, although many researchers now adopt this perspective, the term “emergent literacy” has been defined rather broadly to explain various literacy related skills and environments. The term has also been complicated by researchers who have used numerous differentiating views in defining the skills that this complex construct of emergent literacy encompasses. All these inconsistencies have made it difficult to operationally define what skills should be included when referring to ‘emergent literacy’. Therefore it is necessary for practitioners to refine this term in order to develop effective emergent literacy interventions and help close the gap between research and practice. The section that follows briefly describes how three groups of researchers have conceptualized emergent literacy, as each strive to understand the skills involved in the interactions between oral and written language.

First, in view of this holistic approach presented by Teale & Sulzby, (1986), Mason and Stewart (1990) suggested emergent literacy encompassing four concepts: 1) *concepts and functions of literacy* (knowledge about the functions of the act of reading and print), 2) *writing and composing* (children’s ability to write words, sentences, and compose stories), 3) *letter and word knowledge* (letter-knowledge, grapheme-phoneme correspondence rules, word recognition skills, and metalinguistic skills), and 4) *comprehension and word understanding* (narrative knowledge/skills). Mason and Stewart suggest that all four of these literacy-related skills develop in the early years of

children's life, before they are exposed to formal reading instruction. In general, this view of emergent literacy was conceptualized as including a broad array of skills and behaviours that ranged from conceptual knowledge about the functions of literacy to more specific skills related to print, language and metalinguistic skills.

A second model of emergent literacy proposed by Whitehurst and Lonigan (1998) suggested understanding emergent literacy as two separate components referred to as the outside-in and the inside-out domains. The outside-in component encompassed skills such as knowledge about print concepts, vocabulary, narrative construction; all skills that help an individual understand the context in which the written material is being read. The inside-in domain included skills such as letter-name and letter-sound knowledge, phonological awareness and syntactic awareness; skills that help children understand the rules for translating the written material being read into sounds. Whitehurst and Lonigan (1998) suggested that aspects of language, literacy, and metalinguistic skills are interspersed across the two components of their classification system.

In contrast to the previous researchers, Sénéchal, Lefevre, Smith-Chant, and Colton (2001) suggested that emergent literacy may not be as holistic as Teale and Sulzby (1986) suggested, but instead should merely be comprised of skills related to written language. Therefore Sénéchal, et al., (2001) suggested that emergent literacy is best understood as a construct that is separate from oral language and metalinguistic skills. More specifically they suggested that it contains two distinct components: print knowledge (also referred to as conceptual knowledge) and alphabetic knowledge (also referred to as procedural knowledge) about literacy. Print knowledge included children's knowledge of the functions of print, their perception of themselves as readers; while

alphabetic knowledge included children's knowledge about the mechanics of reading and writing such as letter-name and letter-sound knowledge. To empirically verify if written awareness was indeed a separate construct from phonological awareness and oral language, Sénéchal, et al., (2001) conducted a longitudinal investigation with 84 emergent readers in kindergarten. They assessed the children's oral language (vocabulary), phonological skills, and written awareness (procedural and conceptual knowledge) at the beginning of kindergarten and grade one. The results revealed complex and changing interrelations between each of the constructs. For example Sénéchal et al. (2001) suggested that children's print knowledge about literacy played a role in the acquisition of alphabetic knowledge about literacy, which in turn was closely related to children's oral language but separate from phonological awareness. In contrast, the alphabetic knowledge played a role in the acquisition of conventional reading and the development of phonological awareness, but not oral language. Some skills were found to have unidirectional influence on the development of other skills, while others developed reciprocally. Therefore, Sénéchal et al. (2001) suggested that specific relations are proposed among oral language, metalinguistic skills, and reading but that emergent literacy (which they described as written language) is something separate from the other constructs.

Justice and colleagues (Justice, 2006; Justice & Ezell, 2001; 2004; Justice, Kaderavek, Bowles, & Grimm, 2005) are another group of researchers who have focused on understanding the concept of emergent literacy. In their definition, clear distinctions between oral language, written awareness, and phonological awareness are made. However in contrast to Sénéchal, et al., (2001) they include both written awareness and

phonological awareness in their definition of emergent literacy. Although oral language is not directly included under their definition of the term emergent literacy, Justice and colleagues have recognized that oral language is highly correlated to emergent literacy and literacy development (Justice et al., 2005; Scarborough, 1998).

To Justice and Pullen (2003), emergent literacy is a critical stage in children's life preceding conventional literacy instruction during which children develop a base of knowledge associated with reading and writing – necessary for higher-level literacy. The diverse base of knowledge referred to includes aspects of both phonological awareness and written awareness domains that are understood as “highly interrelated yet theoretically distinct domains of emergent literacy knowledge” (Justice & Pullen, 2003). These two models have been discussed as very important models of identification and intervention (Justice & Ezell, 2001).

Phonological awareness describes the young children's implicit and explicit knowledge concerning the sound structure of spoken language (Justice, Chow, Capellini, Flanigan, & Colton, 2003). Written awareness refers to the implicit and explicit knowledge children acquire concerning the fundamental properties of written language, such as the relationship between print and speech, and the form and function of print (Badian, 2000; Justice & Ezell, 2001). Although much research suggests that children with reading difficulties display the greatest deficits in areas of phonological awareness (as suggested by Toresgen et al., 1994), phonological awareness alone does not provide sufficient skills for reading acquisition (Stanovich, 2000). Justice and Ezell (2002) discuss the importance of written awareness in facilitating the children's development in all three key domains of written awareness: print concept, concept of words, and



alphabetic principle. These three areas teach children the function, connections, forms, and relationships of written language which are all critical for mastery of the alphabetic principle and later reading fluency. Therefore Justice and Ezell (2001) suggest that phonological awareness and written awareness are distinct domains that independently account for significant proportions of variance in later reading ability but at the same time cannot be separated because they emerge reciprocally, are mutually influenced, and uniquely contribute to later reading ability.

To extend Sénéchal's discussion on emergent literacy and reading acquisition, Justice suggests that phonological awareness (phonological processing) and written awareness (print and word concepts, alphabet knowledge, etc.) are skills that directly prepare children for word-level skills such as decoding. However, oral language plays an important role in helping children to comprehend the text presented to them with little direct impact on decoding. As such, although phonological awareness and written awareness most directly impact the decoding of the written words, reading competence requires the interaction of both decoding and comprehension. Although written awareness and phonological awareness define emergent literacy, Justice suggests that all three concepts cannot be separated but instead all are important to the overall development of reading acquisition. Conceptually, children's knowledge in all areas develop through similar contexts and experiences; primarily adult-mediated interactions in oral and written language that are embedded in child-centered, contextualized, and meaningful early childhood experiences (Justice & Pullen, 2003). As children are exposed to literacy rich environments/activities, they require metalinguistic focus (phonological awareness skills), where oral and written language are the object of

attention (Justice, 2006). The more children engage in literacy based activities and the more children are developing their metalinguistic awareness; language thus becomes the vehicle for enhancing language and literacy development. However, Justice proposes that language and literacy development are not part of a unidirectional process, rather it works like a cycle, where language provides a base from which to explore and experience written language, which in return builds children's language competencies (Justice, 2006).

As demonstrated by the various descriptions of the concept of emergent literacy, it remains unclear what skills should be encompassed under the umbrella term 'emergent literacy'. However, while each researcher has introduced different classification approaches to understanding the skills and behaviours involved in the construct of emergent literacy, they have each suggested that emergent literacy is related to four main domains; phonological awareness, written awareness (print knowledge and alphabetic knowledge), and oral language (Justice, 2006; Justice & Ezell, 2001; Torgesen et al., 1999; 2001). Although some research still focuses on these constructs independently while studying interventions or predictors, it is broadly understood that each of these constructs is interrelated and impact the overall area of language acquisition. For the purpose of this thesis research, emergent literacy will be understood as a concept involving both written awareness and phonological awareness; with the understanding that each of these components is highly correlated to oral language of children.

## **Specific Language Impairments and Future Reading Difficulties**

### *Specific Language Impairments*

Although most children acquire oral, written, and phonological skills relatively early in life there is a subset of children who experience great difficulty in acquiring these critical skills. Research clearly suggests that among those who have difficulty, one population of children at-risk for future literacy difficulties are those who have been identified as having speech and language impairments (Catts, 1993; Catts & Kamhi, 1999; Nathan et al., 2004; Scarborough, 2002). As suggested previously, reading is a language-based skill, and thus difficulties in language development can negatively affect reading achievement. Numerous studies have supported the relationship between speech and language impairments and future reading problems (Bishop & Adams, 1990; Rescorla, 1999; Stothard, Snowling, Bishop, Chipchase, & Kaplan, 1998); however, much research is needed to identify the nature of this association and furthermore, to understand how to best support children with specific needs in emergent literacy.

Among children who are referred to speech and language services, two broad profiles of children can often be identified; those with speech or articulation difficulties and those with specific language impairments. A caveat to this distinction is that children can certainly experience both types of impairments comorbidly. Children with speech difficulties may be characterized by difficulties with articulation or speech intelligibility (Catts 1993). For example children with speech difficulties may make a wide range of errors such as substituting a “w” for an “r” (wug for rug), omitting sounds, or sound distortions (such as a lisp). With speech difficulties children may stutter, use immature

patterns, or lack the motor skills to correctly pronounce certain sounds of the spoken words being expressed. On the other hand, language impairments are characterized by difficulties with the content, form, or use of spoken language. Therefore children with language impairments may have difficulty: understanding the information that is spoken, expressing their thoughts, with grammar and sentence structure, and the uses of spoken language. Throughout the research exploring the relationship between early speech and language and later reading, it is often found that children with language impairments, with or without speech impairments, are most at-risk for developing later reading difficulties. This relationship may be founded on the notion that oral language is integral to reading development and children impaired with language are lacking the critical prerequisite skills for healthy reading. To be good readers children must have functional knowledge about the principles of the alphabetic system. Children gain functional knowledge of the parts, products, and uses of written language through their ability to attend to and analyze the external sound structure of spoken words (Lieberman, 1973; Scarborough, 1998; Snow, Burns, & Griffin, 1998). Based on this important distinction between children with speech and language impairments, the current research will focus on children with language impairments, with and without speech impairments. The current design emerged from a specific interest in supporting children with specific language impairments who are at-risk for future reading difficulties.

However, although research often speaks broadly about children with specific language impairments, there is a within-group heterogeneity that needs to be explored before setting the parameters of this research. Language impairments can be divided into two types -- non-specific language impairments and specific language impairments. The

primary distinction between these two types of language impairments is that specific language impairments refer to otherwise typically developing individuals who have impoverished language such as their expressive and receptive language skills. In this way, children with specific language impairments have a pure language impairment that cannot be attributed to neurological damage, autism, psychiatric disorder, hearing loss, or cognitive delays (Schuele 2004; Catts et al., 2002). In other words, the language delays cannot be explained by any other disorder that may limit the children's capability of developing language acquisition to its fullest potential. On the other hand, non-specific language impairments are distinguished from specific language impairments when children display both verbal and nonverbal abilities below normal limits (Catts et al., 2002). This distinction is clinically relevant because of the assumption that children identified as having nonspecific language impairments will not respond to or benefit from intervention in the same way as those children with specific impairments (Stark & Tallal, 1981); this may be due to possible cognitive limitations of children with nonspecific language impairments. Therefore, this distinction may serve to alert professionals to the differences in the degree of risk for reading disabilities and assist them in formulating appropriate interventions (Catts et al., 2002). My thesis research will focus specifically on children identified with specific language impairments.

To define this study's sample even further, it is important to note the variability within the population of children who have specific language impairments. Within this subgroup of children there remains considerable variability which has led to debates among researchers about the precise relationship between specific language skills and future reading and writing abilities (Nathan et al., 2004). Children with specific language

impairments can be understood by dividing the concept into receptive and/or expressive language impairments. Receptive language refers to one's ability to attend to, process, comprehend, retain, and integrate spoken language (Lerner & Kline, 2006). As a result, children with receptive language impairments often have difficulty listening to and/or simply do not understand the language they are presented with. These difficulties may be at the word level or the sentence level. For example, children may have difficulty processing the information presented to them; affecting their ability to follow instructions, retain concepts, and store verbally presented information into their memory. On the other hand, children who have expressive language difficulties most often understand language better than they are able to produce spoken language. Thus, children showing deficits in expressive language often have diminished expressive vocabulary, relying on gestures or facial expression to communicate, or may even lack the verbal output to make their needs and wants known. Expressive language difficulties may include problems retrieving words, using words appropriately, and formulating sentences. Research has shown that both expressive and receptive language impairments can impact school-aged reading by specifically impacting phonological awareness (Gillon, 2000) and written awareness (Gillam & Johnston, 1985; Scarborough, 2002). A sensitivity or awareness of the sound structure in words requires skills such as verbal short-term memory, word retrieval skills, and good speech production; important skills that children with specific language impairments often are particularly weak at. Moreover, these skills are closely related to children's ability to learn to recognize printed words. Therefore lacking an awareness of the sounds in words, and having difficulties storing and

retrieving phonological information may impact children's ability to learn sound-letter associations and its use in decoding printed words (Stanovich, 1998).

### *Specific Language Impairments and Future Reading Difficulties*

The relationship between specific language impairments and future reading difficulties may be in part due to the notion that reading and writing requires an individual to apply pre-literacy skills associated with oral language (acquired primarily in preschool years) to more difficult tasks such as understanding written words and text (Catts et al., 2002). Catts and colleagues (2002) attempted to understand the connection between early preschool language skills and future reading achievement by examining reading outcomes of children with language impairments in second and fourth grade. The results revealed that once the children with language difficulties had undergone intervention and began formal reading instruction in school, their initial levels of reading attainment were particularly predictive of subsequent success or failure. These studies confirmed that those individuals who get off to a good start in reading generally maintain that success whereas those who have initial difficulties often continue to have reading problems (Scarborough, 1998). These results have led to the assumption that children with language impairments may lack the skills needed to benefit from formal reading instruction when they begin school (Schuele, 2004). Furthermore, Schuele (2004) suggested that it is the children who have difficulty coding and understanding spoken language (i.e. receptive language impairment) who will most often demonstrate difficulties in later reading and writing. Validating this assumption, Catts (1991, 1993) found that by the time children with language impairments entered grade one, they were already falling behind their non-impaired peers. This is not surprising given that such

children had limited awareness of the sound segments in words, had difficulties with word finding, retrieving phonological information, and deficits in verbal short-term memory (Catts 1991); furthermore children with specific language impairments demonstrated weaknesses in narratives abilities (Paul & Smith, 1993) and vocabulary (Lonigan et al., 2000) – both skills strongly related to literacy acquisition. Yet it has also been suggested that preschoolers with language impairments may also develop reading problems not as a direct outcome of their language impairments, but rather from their difficulties acquiring emergent literacy skills (Snow et al., 1998). In this way, emergent literacy may be seen as a mediating variable between early language impairments and later formal reading difficulties.

The association between emergent literacy skills, language impairments and reading development was particularly evident through the work of Catts and colleagues (2001), who strived to understand whether children with language impairments in kindergarten were already displaying difficulties predictive of future achievement. Catts et al. (2001) assessed written awareness, phonological awareness, and oral language of children in kindergarten and followed them into grade two and four. Their results indicated that a set of four variables encompassing both early literacy and oral language skills in kindergarten uniquely predicted the probability of later reading difficulties with 93% accuracy. The four variables were: letter identification (also see Torgesen, et al., 1994) – this task measured children's ability to name letters of the alphabet that are presented in upper or lower case; vocabulary and grammar (also see Blatchford et al., 1987; Lonigan et al., 2000)– tasks such as picture and oral vocabulary, grammatical understanding and completion, and sentence imitation assessed the children's expressive



and receptive vocabulary and grammar skills; phonological awareness (also see Torgesen, et al., 1994; Yopp, 1988) – assessed the children’s phonological awareness by using syllable/phoneme deletion tasks; and rapid automatized naming (also see Denckla & Rudel, 1976; Scarborough, 1998) – children were required to rapidly name a series of coloured animals that they were presented with. It is not surprising that the four most predictive variables in Catts et al’s (2001) study were tasks related to written awareness, phonological awareness, and oral language; as discussed earlier in this section these three constructs are interrelated and influence each other in development. For example, if children have difficulty with oral language skills (such as vocabulary, grammar, expressive and receptive skills), children may fail to transfer comprehension skills of spoken language to reading, limiting their ability to understand the alphabetic principle that is specifically needed for reading. If children fail to understand that written symbols are associated to spoken language, they will constantly struggle with comprehension as they laboriously try to decode written text. A likely result of these difficulties is decreased motivation for reading, which may in turn lead to decreased exposure to print (Snowling et al., 2000).

Assuming the importance of reading for navigating through current elementary education, failure to support struggling readers early in their academic careers could have particularly devastating effects on the overall well-being of children (Schuele, Spencer, Barako-Arndt, & Guillot, 2007). To counteract such potential negative effects and help children transition from pre-readers to skilled, fluent readers, effective and efficient early literacy interventions are essential and may be a powerful vehicle for reducing the risk of later reading problems for children with specific language impairments (Justice, et al.,

2003; Whitehurst & Lonigan, 2001). Justice and colleagues (2003) have been pivotal in exploring the effectiveness of various emergent literacy interventions; exploring different techniques, activities, and approaches to support children with literacy development (Justice & Ezell, 2000; Justice, et al., 2003; Justice, Kaderavek, Bowles, & Grimm, 2005; Justice & Pullen, 2003; Justice & Kaderavek, 2004; Kaderavek & Justice, 2002). Two approaches, implicit and explicit, are often used as theoretical perspective in emergent literacy interventions (Justice & Kaderavek, 2004). The implicit approach is understood as an indirect and child-initiated approach. It suggests that children learn best through natural and contextualized interactions with their environment. In contrast the explicit approach takes more of a direct approach to intervention, suggesting that for the most successful learning, children need adult-directed and structured instruction. Although each approach to intervention has value and has been successful in enhancing emergent literacy skills, Justice and Kaderavek (2004) suggest that an integration of both techniques seems to be the most effective options for children with language impairments. The section below discussed the various principles of such interventions in more detail.

### **Emergent Literacy Interventions**

The implicit, or sometimes referred to as the embedded approach to instruction, emphasizes the unique value of children's self-initiated, naturalistic and contextualized interactions with oral and written language that are embedded throughout the day. Through this perspective, literacy growth in children is fostered through and grounded within socially embedded literacy experiences and interactions (Justice et al, 2003). Thus

to facilitate the children's emergent literacy knowledge, children must be exposed to adult-mediated play involving literacy rich artefacts (i.e. crayons, lists, signs), interactions with contextualized print in the environment, and scaffolded exchanges with the oral and written language of storybooks. As mentioned by Justice and Kaderavek (2004), through this approach children are exposed to literacy as a 'whole' through interactions with literacy rich environments and adult-child readings which subsequently may facilitate their comprehension of specific literacy 'parts'.

One particular implicit intervention that has received a great deal of attention is the adult-child storybook reading. This implicit technique has been effective as it provides an interactive context that is authentic, meaningful, and motivating to the involved preschooler (Watkins & Bunce, 1996). Frequent exposure to storybooks and adult interaction allows children to gain considerable knowledge about literacy from the adult who provide a context of meaningful interactions. In a study looking at the effects of having access to literacy-rich environments, Neuman (1999) examined the impact of an intervention that provided children with high-quality children's books and trained staff. The results revealed that by simply providing children with increased access to story books, substantial gains in emergent literacy skills were evident; including gains in alphabet knowledge, narrative concepts, and print concepts – all emergent skills strongly associated to reading development (Boudreau & Hedberg, 1999; Dickinson & McCabe, 2001). The results indicated that it was the physical proximity of books; especially attractive and high quality books easily accessible to young children that seemed to have an impact on children's literacy development. Since children like to be involved in fun and meaningful situations, the adult-child storybook reading approach to literacy

development allowed the children to be active agents in their development. The children's ability to explore, discover and make free choices, helped motivate them to use and learn more about literacy (Neuman, 1999). However as discussed earlier, children with language impairments may have great difficulty understanding the content, use, and form of spoken and written language, thus they may have lost all motivation or incentive to take part in literacy based activities. Children who are already struggling with language may have less initiative to participate in this environment. In fact, the gains of the implicit intervention were not limited to the accessibility of the physical literacy-rich environments. For children to show the most significant results the quality of instruction was an influential factor. Therefore gains from the intervention relied on outstanding instructors to help motivate and capture children's interest (Justice & Kaderavek 2004; Neuman, 1999; Whitehurst & Lonigan, 1998). When childcare providers received training in the development of literacy, reading aloud to children, techniques to enhance children's responses to stories, and book maintenance, Neuman (1999) then found that children showed meaningful gains in emergent literacy skills such as print concepts, letter-name knowledge, concepts of writing, and concepts of narrative. Although there have been significant gains in emergent literacy skills as a result of implicit techniques, research has suggested that children with high levels of difficulty such as those with language impairments may benefit from more direct instruction. Therefore, the section that follows discusses other intervention techniques that have been implemented while working at enhancing emergent literacy skills in children, using more structured and direct instruction.

The explicit approach to emergent literacy intervention emphasizes the need for and importance of structured, systematic, and clinician-directed instruction for the development of distinct skills (Justice et al, 2003). The explicit intervention approach takes a more decontextualized approach and direct route to enhance these basic skills. Using the explicit approach children are taught specific learning goals through a less naturalistic context with more adult control compared to the implicit approach; using directive instructional opportunities that occur regularly, systematically and repetitively. During each session, particular skills are targeted using a certain sequence of exposure to the set objectives, using particular materials to reach such objectives.

The explicit approach helps to bring language and literacy to a meta-cognitive level (Catts, 1993; Snow, Scarborough, & Burns, 1999). Teaching the individual a level of thinking that involves active control over the process of thinking that is used in learning situations assists children to connect and manipulate the important skills needed for later reading for example, understanding the connections between the smaller (phonemes, syllables) parts and the larger (words) parts of the alphabetic code; strategies important for later reading as children try to decipher new text. Most interventions using the explicit approach focus on single targeted skills such as print concepts (Badian, 2000; Chaney, 1998), alphabet knowledge (Justice & Ezell, 2004), narrative discourse (Kaderavek & Sulzby, 2000), phonological awareness (Lonigan, Burgess, Anthony, & Barker, 1998). Examples of explicit interventions targeting phonological awareness and print concepts are discussed in further detail.

Since children with language difficulties or those who experience reading difficulties have often demonstrated difficulty in phonological awareness, a number of

explicit interventions working with children at-risk for reading failure have concentrated on enhancing phonological awareness skills (Gillon, 2000). Since intentionally engaging in phonemic exercises is not a naturalistic or meaningful activity that children typically participate in, it becomes necessary to target these skills using more explicit approaches (Gillon, 2000). Gillon (2004) supported children with expressive language difficulties using phonological awareness as one of the main targets in the intervention. Various activities such as phoneme matching, phoneme segmentation and blending were used to help children develop phonological awareness skills. Such phonemic skills needed to be targeted using explicit instruction because in comparison to typically developing children who acquire these skills indirectly, children with language difficulty had not acquired the strategies necessary to unconsciously manipulate or understand the connection between various components of the alphabetic principle (for example letter- sound associations). Therefore explicit strategies were used to teach the children conscious awareness of the structures of language, using specific activities in orderly sequences.

Another type of explicit intervention technique often used when working with children with language impairments is print referencing. Print referencing is a storybook reading strategy that can be used to encourage emergent literacy (Justice & Ezell, 2004). Using this strategy, adults use techniques that maximize the children's learning opportunities by explicitly bringing the children's attention to specific aspects of oral and written language. Often in print referencing techniques such as asking the children questions about the print, making comments about the text, pointing to print as you read, tracking print when reading among others – are all techniques used to bring awareness to

different aspects involved in written language (Justice & Ezell, 2000; Lovelace & Stewart, 2007).

All intervention techniques whether using implicit or explicit strategies have proved to be effective in supporting both at-risk and typically developing children (Justice & Ezell, 2000; 2002). For instruction to be most effective and efficient, McCardle et al. (2002) suggest that using the explicit instruction strategies may be necessary when working with children who are experiencing difficulties, because these children for whatever reason are not developing skills in the same manner or rate as their typically achieving peers. To this end, the argument is such that a more direct goal-oriented approach is required to encourage skill development in critical areas; especially for those at-risk for future difficulties.

Although both explicit and implicit approaches have demonstrated promising results, when working with children with language impairments it is important to remember that the children are often experiencing much difficulty with the targeted tasks – often demonstrating low levels of motivation and self-esteem (Kaderavek & Justice, 2002). Kaderavek and Sulzby (1998) have studied literacy orientation in children with language difficulties. They reported that preschool children with language difficulties were more likely to have lower levels of literacy interest and thus lacked motivation to engage in the literacy related activities. Concurrently, Justice et al. (2003) discovered that although the participation in explicit skill-building activities was effective for enhancing emergent literacy growth, children's engagement and interest in literacy activities were a critical component to successful literacy achievement. As such, those children with language impairments concomitantly lacking motivation and interest were less likely to

respond to intervention, elevating their risk for developing future reading problems.

Therefore to most effectively support at-risk children undergoing treatment, perhaps use of an integrated approach using both the implicit and explicit aspects in intervention may be necessary (Justice & Kaderavek, 2004).

Using an integrated perspective to intervention would allow children to participate in high-quality opportunities in meaningful, intentional, and contextualized interactions with oral and written language, but also benefiting from the use of focused therapeutic clinician-oriented instruction to explicitly target the specific developmental precursors that are putting children at-risk for developing future reading problems (Justice & Kaderavek, 2004). Therefore, a combination of the most successful techniques used in both the implicit and explicit approaches may be needed to maximize the effectiveness and efficiency of intervention for those who are at-risk for future reading difficulties; addressing the widespread aims of emergent literacy. By synthesizing these two approaches to intervention, the integrated perspective to intervention not only ensures the children develop the skills highly associated with later reading (including phonological awareness, print concepts, alphabet knowledge and narrative abilities) but also helps children develop a positive orientation toward literacy learning (Lovelace & Stewart, 2007)

### **Emergent Literacy Skills**

To implement an effective intervention it is also important to design programs to consider the most critical emergent literacy skills – those directly related to future reading skills. Phonological awareness, print knowledge, narrative abilities, vocabulary, are



specific emergent literacy domains that have repeatedly been shown to be critically linked with later literacy achievements (Bourdreau & Hedberg, 1999; Whitehurst & Lonigan, 2001; Justice, 2006; Scarborough, 1998; 2001)

### *Vocabulary*

Vocabulary occupies a central position in learning to read. It describes children's receptive and expressive repertoire of words. To be a successful reader, children must be able to identify and understand the meaning of the written words; thus research illustrates that the size of a preschoolers' vocabulary has been directly linked to later skills in reading comprehension and reading fluency (McCardle et al. 2001; National Reading Panel, 2000). For example, a child who encounters an unfamiliar word in the written text will have to stop to decode the word to spoken language. If the word is in the child's oral vocabulary, the child will be able to understand the meaning of the word and comprehend the message conveyed through the written material. However if the word is not a part of the reader's vocabulary lexicon, the child will have to try to determine the meaning through other means if possible. As such the greater the child's vocabulary the easier it will be to make sense of the text. Through the intervention used in this thesis, vocabulary will be addressed by explicitly teaching preschoolers to understand and use new words such as object names, action words, color and number words, and talking about the meanings of words.

### *Print knowledge*

A meta-analysis of early predictors of later reading achievement shows children's knowledge of print to be the most important predictor of later reading achievement, overruling both oral language and phonological awareness (Hammill, 2004 in Justice,

Pence, Bowles, & Wiggins, 2006). Print knowledge is a term that describes children's maturing knowledge about the rule-governed system of orthography and written language. As such, print knowledge includes both alphabet knowledge and print-concept knowledge (Justice, Bowles, & Skibbe, 2006). Alphabet knowledge is one of the strongest predictors of later reading success (Snow et al. 1998). Children should be taught letter recognition and letter-sound relationships early on and therefore these are crucial foundational skills that are needed to fully understand how to form more complex task such as formulating words and sentences to communicate information or represent a real-life event. Print-concepts on the other hand refers to children's understanding of the form and function of print in meaningful daily context; thus that writing and reading are ways of communication, that books reflect life experiences, and that written text can take different forms depending on the nature of the task (Kaderavek & Justice 2004). Children may be taught specifically that print carries meaning, that print moves from left to right and top to bottom of a page, and how books are handled and organized...etc (Justice & Ezell, 2004). The intervention used in this study will address this skill by teaching children the ruled governed properties of print (left to right directionality, combinatorial properties of letters to make words) and alphabet knowledge (letter names, and letter-sound combinations).

### *Phonological Awareness*

Phonological awareness refers to the children's ability to attend to and manipulate the sound units of speech (Gillon, 2000). To date phonological awareness is the emergent literacy skill that has been given the most attention, as it is a very successful predictor of future reading achievement (Ehri, et al, 2001). These are particularly important skills

needed to make sense of the alphabetic principle and further benefit from reading instruction. To fully develop an awareness of the sound units of language, children should progressively become aware of larger units (such as words and syllables) and subsequently the smaller units (onsets/rimes, phonemes; Justice & Schuele, 2004). Therefore children who are at-risk for future reading difficulties are often explicitly and intensively exposed to phonological awareness techniques in intervention using activities that target skills such as blending (to combine smaller oral language units into larger units), segmenting (breaking words into smaller units such as phonemes, onset/rime, syllables) and recognizing word or syllable boundaries in spoken language (Justice & Pullen, 2003). In this study, phonological awareness will be developed by teaching preschoolers to identify rhymes, segment words into syllables, blend syllables into words, and identify sounds in words.

### *Narrative Abilities*

Narrative abilities describe children's ability to understand and produce extended discourse that describes real or fictional events occurring in the past, present, and future (Justice & Kaderavek, 2004). Children who have narrative skills understand that a story follows sequences (beginning, middle, and end), describes an event or is communicating information. Since narratives require the full integration of all aspects of language ability, early narrative abilities predict children's later abilities in reading comprehension (Kaderavek & Justice 2004). To develop this skill, children will engage in shared story telling time where children will be encouraged to recall and describe major events in the story, and share their thoughts.

## **Role of Speech and Language Pathologists**

Research points to the important interrelationship between oral language and literacy development (Catts & Kamhi, 2005; Justice, 2006; Snowling, 2005; Whitehurst & Lonigan, 1998). Following this, children with language impairments are at-risk for later reading acquisition (Schuele, 2004), and intervention for such children is an important vehicle to promote future literacy skills (Justice, 2006; Scarborough 1998; Snow et al., 1998). In line with this relationship, speech and language pathologists (SLP) are well-positioned individuals who should play an important role in oral language and literacy development (Justice, et al., 2002; Schuele & Boudreau, 2008; Snow, et al., 1999). Historically, SLPs in general have offered traditional therapeutic approaches to pre-school children that have focused primarily on their language and speech needs with no direct assessment of facilitation of their emergent literacy skills. In response to the research of the last decade suggesting a link between language and literacy, there has been a movement by SLPs to incorporate the facilitation of literacy skills into their sessions. In 2001, the American Speech and Hearing Association in the United States included pre-literacy and language based literacy skills to the SLP's scope of practice (ASHA, 2001). However to date there is no consistent, proven model adopted by SLPs that outlines the most effective methods of facilitating literacy development while simultaneously focusing on child's language skills. Currently although the majority of practices do include a focus on oral comprehension, vocabulary, and morphological development, many do not include early literacy components such as phonological and print awareness or teach literacy skills using books and literacy-based activities. Researchers have now identified that children with language impairments often lack

phonological awareness skills and print awareness skills, which are key predictors of future reading (Badian, 2000; Bird et al., 1995; Catts, 1993; Catts et al., 2001). Therefore, given the large number of children requiring speech and language services, it is essential that these services extend their goals to include helping children develop the foundational skills associated with successful reading development; this can help in the advancement of knowledge in areas of identification, prevention, assessment, and intervention efforts (Justice & Kaderavek, 2004; Justice, et al., 2002). Acknowledging their expertise and altering the services administered would perhaps begin narrowing the gap between research and practice by directly impacting the speech and language services children who are at-risk for future reading disabilities (Fey et al., 1995).

### **Summary**

Current classification criteria used for identifying children with reading difficulties is problematic. Research has demonstrated a need for a focus on prevention that includes identification initiatives that support children who are at-risk for literacy difficulties early, rather than waiting until children are in grade 3 or 4 before they are identified with reading problems. Therefore interventions should target children in preschool years before conventional reading is expected. It is now understood that children with specific language impairments often experience difficulties acquiring emergent literacy skills and are therefore among the group of children who are at-risk for developing reading difficulties later in life.

Emergent literacy skills are critical skills that set the foundation for future reading and writing development and must therefore be acquired prior to exposure to conventional literacy instruction. Research has demonstrated that difficulties in emergent

literacy skills are predicative of later reading difficulties. Furthermore, children with specific language impairments in preschool tend to have difficulties acquiring emergent literacy skills and often are the ones to develop reading difficulties.

In response to the literature presented, intervention is key in preventing literacy-related difficulties and should be available as early as possible. Therefore, children with specific language impairments need support during the emergent literacy developmental stages targeting specific emergent literacy skills in addition to language skills. Speech and language services supporting children with speech and language difficulties should extend their goals to include helping children develop the foundational skills associated with successful reading development. As such, early intervention should combine embedded literacy activities where skills are developed through informal and naturalistic activities such as shared book-reading as well as explicit instruction where skills are targeted in structured and systematic ways. Research has identified four main domains of fundamental literacy skills: phonological awareness, written awareness (alphabet knowledge and print awareness), and vocabulary and narrative abilities. Most research studies have focused on targeting one area of emergent literacy skills (such as phonological awareness) separately from other areas (such as print and word awareness), in highly controlled environments. However there are very limited investigations of interventions that have been done in 'natural environments', targeting multiple domains of emergent literacy, and following preschool children until they are required to read in grade one. There is a need for such interventions.

### *The Present Study*

The present exploratory longitudinal study is aimed at examining the effectiveness of a multi-faceted emergent literacy intervention designed to enhance emergent literacy skills of preschool children with specific language impairments. More specifically, this thesis poses a set of questions intended to explore the effectiveness of the emergent literacy enhanced intervention in comparison to the traditional language therapy.

#### *Research Questions:*

Broadly, this thesis investigated whether an emergent-literacy enhanced language intervention will result in more significant improvements in emergent literacy and language skills compared to a more traditional language therapy for children with specific language impairments overtime a three year time period. Specifically, I asked four related research questions:

1. Will there be group differences in emergent literacy and language skills at Time 1, Time 2, and Time 3?
2. Will the intervention impact children with severe and non-severe language impairments differently?
3. If there are gains observed in children's emergent literacy and language skills after participating in language therapy, are these gains clinically significant?
4. Will any potential gains be sustained as children progress through grade one as measured by children's grade one report cards?

In general, research has indicated the need for preventative models of intervention to support children who are at-risk for later reading difficulties. Although previous findings have been equivocal in regards to generalizing a pattern of positive results, most studies have indicated that early intervention programs designed to increase specific skills have been successful in promoting emergent literacy skills in preschool children with specific language impairments. Therefore, in the current thesis I hypothesized that a multi-faceted intervention that broadly targets multiple emergent literacy and language skills will be more successful than the more traditional language therapy that does not address emergent literacy skills.

To fully understand the effectiveness of the intervention, it was also interesting to compare how children with severe and less-severe language impairments responded to the two intervention approaches. Previous research in this area has indicated that children with more severe language impairments are at greater risk for reading difficulties and experience greater difficulties acquiring emergent literacy in comparison to children with less severe language impairments (Justice, et al., 2003). It is important, therefore, to explore whether the experimental intervention being investigated in the current study had an impact on the emergent literacy development of children with the most severe language impairments over time.

It was also important to recognize the applied nature of this study. The study was undertaken within a real-world clinical setting. This presented the study with a number of challenges but also opportunities. It was expected that the results of this study would impact how preschool children are receiving services at Speech Services Niagara. As this work was embedded within a clinical setting it was important to move beyond simply



investigating the statistical significance of the data to investigate the clinical significance (how well children were doing in comparison to typically developing children) of these data. To do this, I have dedicated a large portion of my results section to investigating any clinically significant gains made by participating children. More specifically, I was interested in whether any possible gains achieved by children after the first and/or the second block of therapy were significant enough to deem that children were achieving at or within the developmental norm ranges on alphabet knowledge, phonological awareness, print and word awareness, and language skills. Finally, to address the relations between emergent literacy and reading development, I explored whether receiving two blocks of an emergent literacy approach to language intervention targeting the foundational literacy skills will be intense enough to transfer to children with language impairments' reading development in grade one.

## CHAPTER 3

### METHODS

#### Overview

The current study had two objectives. The first was to explore the effects of a multi-faceted intervention designed to promote a broad range of skills that contribute to the development of emergent literacy abilities. More specifically, the study compared two intervention approaches – an experimental literacy-enhanced intervention and a standard intervention based on the traditional models of speech and language therapy. This study also investigated whether the language characteristics of the children (severe or non-severe language impairments) affected how children responded to therapy. From the results of the research presented in Chapter 2 it was expected that the emergent literacy approach would result in greater gains in written language and phonological awareness skills, as well as oral language skills relative to a less structured standard intervention approach. The second objective of this study was to investigate the effect of therapy on the nature of the relationship between children's language and emergent literacy skills and later reading outcomes. It was hypothesized that children with greater emergent literacy skills would have better reading abilities than the children receiving the standard intervention once children reached grade one.

#### Participants.

The children who participated in this study were from a population of approximately 1200 2- to 5- year old children who were referred to Speech Services Niagara and the Niagara Preschool Speech, Language and Literacy System by their parents, teachers, pre-school caregivers or physician because of concerns about their

speech and/or language development. After being referred to Speech Services Niagara, children underwent a screening assessment by a speech-language pathologist to determine whether they had a delay in speech and language, which qualified them as eligible for speech and language therapy. Preschool children who were between the ages of 3 to 4.75 years of age and who were deemed eligible for speech and language therapy by the speech-language pathologist because of a significant delay in language development were invited to participate in a larger longitudinal study which investigated aspects of children's language and literacy development over the course of three years. From the eligible population of preschoolers, thirty-eight (38) children served as the sample in the current study (described fully below). Children with speech impairments (i.e. stuttering, etc.), low incidence disabilities such as autism or intellectual disabilities, and children with significant English as a Second Language difficulties were not included as participants. Participating children were from a primarily middle-class suburban area in Southern Ontario.

### *Present Study*

While evaluating the effectiveness of the two approaches to therapy, thirty-eight children (20 in an experimental group and 18 in a control group) born in 2002 participated in this study (see Table 1 for summary of characteristics). Of the thirty-eight (38) children participating in the current study, there were 28 boys and 10 girls. Participants were between ages 37 and 56 months at the first assessment session with a sample mean of 48 months. All the children participating in the study were identified as language impaired as defined by their performance on the Clinical Evaluation of Language Fundamentals – Preschool – Second Edition (CELF-P2), while also taking into

consideration clinical judgement and additional testing. The CELF-P2 is a clinical tool for identifying and diagnosing language deficits in children ages 3-6 years (Wigg, Secord, & Semel, 2004). Children who scored at or below the 34<sup>th</sup> percentile on the CELF-P2 and who were deemed eligible for language therapy by their speech-language pathologist were considered to have language impairments and were included in this study. According to the CELF-P2, children who fall below the 16<sup>th</sup> percentile on the Core Language Index are considered to have below-average language abilities (Wigg, et al., 2004). Although children who score above the 16<sup>th</sup> percentile may sometimes be considered to have average language abilities, if other factors – such as clinical judgement – suggest a reason for concern, a child may still be considered to have deficient language abilities that require intervention. In our sample, we included children who scored above the 16<sup>th</sup> percentile on the CELF-P2 if, based on clinical judgement and additional testing with Speech Services Niagara measures, they were deemed eligible for language therapy.

Table 1

*Characteristics of the Participants in this Study (n=38)*

|  | Severity of Language Impairment |          | Sex   |      | Age          |
|--|---------------------------------|----------|-------|------|--------------|
|  | Severe                          | Moderate | Girls | Boys | <i>M(SD)</i> |
| Experimental Group<br>( <i>n</i> = 20) | 7                               | 13       | 4     | 16   | 48.39(3.13)  |
| Control Group ( <i>n</i> =18)          | 10                              | 8        | 6     | 12   | 48.11(5.11)  |

## Measures

### *Language Measures*

Assessments of children's oral language were used to determine eligibility for participation in the study and also acted as a dependent variable in order to measure the effectiveness of the interventions on children's language ability. Children's performance on the CELF-P2 was used as a measurement of their oral language ability. The CELF-P2 was administered individually to all children by a registered speech-language pathologist. Language impairments were defined by a Core Language Score corresponding to the 34<sup>th</sup> percentile or below on the CELF-P2. The Core Language Score is a measure of general language ability that quantifies a child's overall language performance. It is calculated by summing the Sentence Structure, Word Structure, and Expressive Vocabulary scaled subtests scores of the CELF-P2, which are described below. Using Cronbach's coefficient alpha, the internal consistency of the Core Language Score ranges from  $\alpha = .90$  to  $\alpha = .93$  for the age groups included within our sample (Wiig et al., 2004). Norm-referenced data was obtained through the standardization of the CELF-P2 with a sample of over 1150 children in United States.

*Sentence Structure Subtest.* The Sentence Structure subtest measures children's ability to interpret spoken sentences that increase in length and complexity.

*Word Structure Subtest.* The Word Sentence task measures children's morphological skills. These skills are demonstrated through the child's ability to apply word structure rules to extend word meanings by adding suffixes; to derive new words from base words; and to correctly use referential pronouns.

*Expressive Vocabulary Subtest.* The Expressive Vocabulary subtest evaluates the child's ability to use nouns and verbs for referential naming of people, objects and actions depicted in illustrations.

#### *Early Literacy Measures*

A primary objective of the current study was to determine the effectiveness of the experimental literacy-enhanced language intervention in improving children's early literacy abilities. As such, several measures of children's pre-reading skills served as dependent variables; these skills were assessed with four subtests of the PALS-Pre-K. Based on previous literature, Justice et al. (2002) recommended several areas of emergent literacy which – according to their demonstrated value in predicting later reading achievement – should be targeted in an early literacy screening protocol for children with speech and/or language impairments: letter-name knowledge; written awareness, and phonological awareness. In the present study, the PALS Pre-K instrument (Invernizzi, Sullivan, & Meier, 2001) was selected as a measure of children's early literacy because it is comprised of subtests which measure children's abilities in each of these areas, and because it is one of very few instruments that have been designed specifically for screening early literacy skills (Justice et al., 2002).

The PALS-Pre-K instrument (Invernizzi, et al., 2001) is a screening tool that measures preschoolers' developing knowledge of important literacy fundamentals and offers guidelines to teachers for tailoring instruction to children's specific needs. The assessment reflects skills that are predictive of future reading success and difficulties (Invernizzi et al., 2001). The specific subtests of the PALS-Pre-K used in this study include the Upper-Case Letter Identification, the Print & Word Awareness task, the

Beginning Sounds Awareness task, and the Rhyme Awareness task; these are described below. For the purpose of this study, the Upper-Case Letter Identification and Print & Word Awareness tasks are treated as measures of the skill termed ‘written language awareness’, as these tasks assess children’s knowledge of the alphabet and important print concepts (Invernizzi et al., 2001); these abilities are thought to be important components of written language awareness (e.g. Sénéchal et al., 2001). The Beginning Sound and Rhyme Awareness tasks are classified as measures of ‘phonological awareness’, as these tasks assess children’s ability to understand and manipulate words at the phoneme level (Invernizzi et al., 2001), which is an important component of children’s phonological awareness (e.g., Invernizzi et al., 2001; Sénéchal, et al., 2001).

*Upper-Case Letter Identification.* This subtest is a measure of alphabet knowledge, a component of written language awareness. In this subtest children were shown all twenty-six upper-case letters of the English alphabet in random order and asked to give the letter name. Responses were scored as correct if they corresponded with the appropriate letter name.

*Print and Word Awareness.* This subtest is a measure of print knowledge, a component of written language awareness. In this subtest the examiner read a familiar nursery rhyme printed in a book format and asked the child to point to different components. In this natural book-reading context children demonstrated their awareness of print concepts such as directionality and the difference between pictures, letters, and words. This subtest consisted of 10 test items.

*Beginning Sound Awareness.* This subtest measures skills in phonological awareness. In this subtest the examiner said the name of a picture and asked the child to

produce the beginning sounds (phonemes) for words that start with /s/, /m/, and /b/.

There were 10 test items.

*Rhyme Awareness.* This subtest is another measure of phonological awareness. In this subtest, the examiner showed the child pictures and named each picture. The examiner then asked the child to point to the picture that rhymes with the first one. This subtest consisted of 10 test items.

The PALS-Pre-K measure was piloted with 663 preschoolers in Virginia over the course of 4 years. Cronbach's alpha for internal consistency range from  $\alpha = .75$  to  $\alpha = .93$  on the subtests selected for use in this study (Invernizzi et al., 2001).

To further assess whether the experimental literacy-enhanced intervention had sustained effects in the children's reading experiences in grade one, the PALS-1-3 assessment were used as dependent measures to assess the children's literacy skills, phonological awareness, and reading achievement once they reached grade one. Eight subtests were used: blending subtest, and sound-to-letter subtest were used to assess phonological awareness; alphabet recognition subtest, letter sounds subtest, and concept of word subtest were used to assess the children's literacy skills; and reading achievement was assessed using the word recognition in isolation subtest, spelling inventory subtest, and the oral reading in context subtest.

*Blending Subtest.* The blending subtest measures phonological processing. This task requires the child to use information from the sound structure of speech to retrieve words. In this subtest, the examiner said specific sounds and asked the child to put them together and identify the word. This subtest consisted of 20 test items.



*Sound-to-Letter Subtest.* This subtest measures the child's ability to segment spoken words into their constituent phonemes. In this subtest the examiner said a word orally and the child was required to identify the beginning phoneme, final phoneme, or middle phoneme.

*Alphabet Recognition Subtest.* This subtest is a measure of alphabet knowledge, a component of written language awareness. In this subtest, children were shown all twenty-six upper-case letters of the English alphabet in random order and asked to give the letter name. Responses were scored as correct if they corresponded with the appropriate letter name.

*Letter Sounds Subtest.* This subtest is a measure of the child's knowledge of grapheme-phoneme correspondences. In this subtest, the examiner asked the child to touch each letter and say the sound it represents.

*Concept of Word Subtest.* This subtest measures the child's ability to match spoken words to written words as he or she reads. In this subtest, children were required to accurately point to the individual written words as they were spoken by the examiner.

*Word Recognition Subtest.* This subtest measures children's capacity to recognize words accurately and automatically. In this subtest, the examiner presented each child with a list of high frequency words. The child was asked to read aloud each word.

*Spelling Subtest.* This subtest measures the child's application of letter-sound knowledge such as basic phonics features within one syllable words to spelling. Examiners in this subtest read out one word at a time to the child, the child was then asked to spell the word on a piece of paper. This subtest included a total of 16 test items.

*Oral Reading in Context Subtest.* This subtest is a measure of reading level achievement. In this subtest, the examiner listened to the child read aloud from a graded passage.

## **Procedures**

### *Design*

A between-groups pre- and posttest design exploring two intervention programs served as the framework for this study. After being identified with a language impairment according to their performance on the CELF-P2, children were invited to participate in the study (see Appendix A for the information/consent form used in recruitment). As children entered the study, they were randomly assigned to either the experimental or standard intervention group. Before receiving their respective interventions, all children were assessed with pre-test measures from the PALS-PreK.

Following group assignment and pre-testing, children completed a 12-week intervention period. Children participated in this intervention for 45 minutes each week over the course of 12 weeks. Children worked individually with their assigned speech-language pathologist. A total of 10 speech-language pathologists participated in the study and each was assigned approximately an equal number of children receiving the experimental and standard intervention. For example, one speech-language pathologist worked individually with two children who received the standard therapy regime and two children who received the experimental intervention. It was important therefore that each participating speech-language pathologist was knowledgeable of both intervention approaches. To ensure this, all speech-language pathologists participated in intensive

training for each of the intervention approaches. Furthermore, as suggested by Triola (1999), therapy sessions were randomly videotaped and evaluated by the primary investigators to ensure continuity within each approach (e.g., experimental sessions included two literacy targets per session and one book per session; control sessions did not include print, books, or explicit teaching of literacy targets).

After completing this first 12-week block of therapy, children took a 12-week rest, where no formal intervention was provided by their speech-language pathologist. During this time, families continued a personalized home program designed to address the child's individual language goals in a similar manner to the weekly homework sessions described later. After this rest period, all children returned to Speech Services Niagara, at which time their language and emergent literacy skills were again assessed with the CELF-P2 and the PALS-PreK by a speech-language pathologist who was blind to the child's group assignment (experimental or control). Assessments of children's oral language were again used to determine eligibility for further intervention. Therefore once again the child's performance on the CELF-P2 was used to distinguish whether or not children still met criteria for having language impairment. Children who were no longer considered language impaired did not receive a second block of therapy. Those children who were still considered as having a language impairment began a second 12-week block of therapy in continuation to the previous block of therapy.

Following the second 12-week block of therapy, all children were transferred to school, discharged from Speech Services Niagara, and no formal intervention was provided by their speech-language pathologist at the speech-language centre. In the fall of 2008 when children had reached grade 1, all children involved in the study (including

those children who did not take part in the second block of therapy) returned to Speech Services Niagara for the administration of the follow-up assessments. The follow-up assessments involved assessing their language skills (using the CELF-P2), literacy skills (PALS-1-3), and reading achievement (PALS-1-3) by a speech-language pathologist who was blind to the child's group assignment (experimental or control).

### **Intervention**

Both the experimental and standard intervention program consisted of 12 sessions held once per week for approximately 45 minutes. All sessions were held in small private rooms at one of six Speech Services Niagara sites and were conducted by a registered speech-language pathologist. Each speech-language pathologist had graduate level training in intervention principles for working with children with speech and language impairments, and is regulated by the College of Audiologists and Speech-Language Pathologists of Ontario. For the duration of the intervention period, children's parents, caregivers, and educators were blind to the study's design. Regardless of the type of intervention received, it is important to note that each intervention session was designed to address children's individual language needs, as identified by the child's speech-language pathologist through initial language assessments.

#### *Experimental Intervention Program*

The experiment intervention program used in the study included an adaptation of a published program called *Read It Again!* Language and Literacy Supplement for Preschool Programs, designed by Justice et al., (2006). *Read It Again!* was designed to build children's language and literacy competencies in four areas transcending both emergent literacy and oral language. This program encompasses both the code-related

and meaning-related skills that were previously discussed to be important in providing a foundation for later reading proficiency. Justice et al. (2006) suggest that early difficulties in any one of these areas can undermine this early foundation and set the stage for a host of ongoing challenges that become more difficult to remediate over time. The current study's experimental intervention included the four areas of focus from the *Read It Again!* Program (Justice et al., 2006): print knowledge (otherwise referred to as 'written language awareness'), phonological awareness, vocabulary, and narrative; as well as the activities and books involved in their facilitation (Please refer to the *Read It Again!* manual for complete details).

For the purpose of this study, the print knowledge component of the intervention was aimed at facilitating children's understanding of the purpose of print; their understanding of left-to-right directionality; and their ability to name the various units of print (letter, word, sentence) and identify general book concepts (author, title, front). In addition, contained within the print knowledge component of the intervention was the second important aspect of written language awareness: alphabet knowledge. Specifically, speech-language pathologists worked with children to develop their ability to identify upper-case letters, particularly those letters in the child's own name. In the intervention, print knowledge was often facilitated with the use of books (i.e. having the child identify a word or a sentence on a page).

In the current study, multiple aspects of phonological awareness were addressed by speech-language pathologists through the experimental intervention. Through a combination of explicit teaching and a variety of games and activities which provided ample opportunity for practice (i.e. rhyming games, clapping out syllables, etc.), children

developed skills in rhyming, segmenting and blending syllables, elision, and letter-sound correspondence.

Several main aspects of vocabulary were targeted in the experimental intervention: developing children's understanding of, and ability to use new nouns and verbs; descriptive words; colour names and number words; and prepositions and sequencing words. New words came out of storybooks that were shared during the session. Children were explicitly taught the meanings of the words, and then were encouraged to use the new words while participating in a variety of games and activities.

For the purpose of this study, narrative skills were usually developed within the context of a shared storybook. During and after a story, children's narrative abilities were facilitated by the speech-language pathologist who prompted the child to discuss the story's characters, setting and plot in a clear, precise manner.

During each therapy session, the speech-language pathologist focused on two of these four objectives for the first 15 minutes of the 45 minute session. During this time, the speech-language pathologist read a book with the child and engaged the child in various exercises designed to meet the literacy objectives. These exercises were standardized across all children participating in the experimental group, and were explicitly outlined in the intervention manual provided to each speech-language pathologist (see Appendix B for a sample lesson plan that was followed for one therapy session). The remaining 30 minutes were spent focusing on the child's specific language goals as identified in the intake screening session (see Appendix C for an example of a typical language therapy session for both the experimental and control groups, where the child's language goals are the same in both instances). However, to remain consistent

with the broad objective of the experimental intervention design, the focus on language goals was embedded within an emergent literacy framework. For instance, the material used to elicit language targets was embedded within print. Furthermore, activities used to address the language goals were typically focused around a theme relevant to the literacy activities worked on at the start of the session (i.e. if Chicka Chicka Boom Boom was the story being used in the literacy regime on a particular day, that day's language activities may have been based around a coconut theme, since there is a coconut tree in the story). See Appendix D for an outline of the book titles, learning domains, and literacy objectives focused on during each session of the 12-weeks of therapy.

### *Standard Intervention Program*

Traditionally, preschool language interventions provided to children with language impairments at Speech Services Niagara have been based on eclectic approaches that included repetition-and-practice activities aimed at improving children's receptive and expressive language needs. However, standard interventions have not typically been embedded within literacy-based activities but rather the focus has been on eliciting the targets within a communicative interaction with no explicit emergent literacy targets. Within the standard intervention approach, a speech-language pathologist responded to specific language-based needs of children (e.g., using negation correctly; using plurality correctly; following one- and two-step directions; improving children's mean length of utterance (MLU, etc.) and structured therapy activities accordingly. For instance, to meet a child's specific need with expressive vocabulary, a speech-language pathologist may have explicitly modeled the correct use of auxiliary verbs (e.g., using "is"/"are" with verbs). The therapist may have modeled the sentence by emphasizing the

auxiliary verb (e.g., “he is eating”) and showing a corresponding picture or object. The therapist may have then involved the child in a game or activity where the child could practice using the auxiliary verb while playing the game or describing components of the game. Unlike in the experimental intervention, written language and phonological awareness skills were not targeted either explicitly through direct teaching or indirectly through any of the games or activities. (See Appendix E for a checklist of activities that might be selected for a traditional therapy session for a child in the control group; see Appendix C for an example of a typical language therapy session for both the experimental and control groups, where the child’s language goals are the same in both instances.)

Weekly homework was assigned to both groups. Homework for the experimental intervention group included a standardized literacy component (e.g., see Appendix F for examples) which targeted one of the two literacy objectives that were the focus of that language day’s session, as well as individualized activities designed to target the child’s personal language goals. For these families, books, puzzles, games, etc. were offered for loan from Speech Services Niagara so that the families could complete the homework. Families in the control group also received individualized homework assignments that were particular to the child’s language targets; however, the homework for these children did not include any emergent literacy concepts. Puzzles and games were offered for loan from Speech Services Niagara so that the families could complete the homework. See Appendix C for an example of typical homework that might be assigned to children in the experimental or control groups after their language therapy session.



## CHAPTER 4

### RESULTS

This chapter reports the results of the various analyses used to address the research questions of interest in this study. The chapter is separated into two sets of analyses. The first set of analyses include several ANOVAs designed to address the first research question; to explore the effect of the emergent literacy-enhanced intervention in comparison to the traditional language therapy on three emergent literacy skills according to the children's language abilities. To address whether the effects of the literacy-enhanced intervention impacted literacy skills over time, a regression analysis was conducted to assess whether the approach to therapy children with language impairments received was related to later reading abilities.

#### *Part 1 – Exploring the Effects of the Experimental Intervention*

The first objective of this thesis was to examine the effectiveness of a literacy-enhanced language intervention in improving children's emergent literacy abilities. Specifically, I was interested in comparing the experimental intervention with traditional language intervention typically received by children with moderate to severe language impairment at SSN, and whether the effects of intervention were sustained over time.

Figure 1 illustrates a visual representation of the study's design as was previously described in more detail in the methods section of this thesis.

#### *Independent variables*

##### *Group Status*

As explained in detail in the methods section of this thesis, children were randomly assigned to two groups: the experimental group (those children receiving the

|  |                                |                |  |  |                                      |  |  |                                      |   |
|--|--------------------------------|----------------|--|--|--------------------------------------|--|--|--------------------------------------|---|
| <b>Referral to SSN</b><br><b>N= 38</b> | Control Group<br>(n =18 )      | Severe (n=10)  | <b>Pre-test (T1)</b><br><br>CELF – P2<br>PALS-PreK | <b>Therapy Block 1</b><br><br>12-weeks | <b>Rest Period 1</b><br><br>12-weeks | <b>Posttest 1 (T2)</b><br><br>CELF-P2<br>PALS-PreK | <b>Therapy Block 2</b><br><br>12-weeks | <b>Rest Period 2</b><br><br>12-weeks | <b>Posttest 2 (T3)</b><br><br>CELF-P2<br>PALS-1-3<br>Report Cards |
|  |                                | Moderate (n=8) |  |  |                                      |  |  |                                      |   |
|  | Experimental Group<br>(n = 20) | Severe (n=7)   |  |  |                                      |  |  |                                      |   |
|  |                                | Moderate(n=13) |  |  |                                      |  |  |                                      |   |

SSN refers to Speech Services Niagara

T1 refers to Assessment Time 1

T2 refers to Assessment Time 2

T3 refers to Assessment Time 3

*Figure 1. Study Design.*

enhanced literacy intervention) and the control group (children receiving traditional language therapy). Group status was used as an independent variable for the analysis.

### *Severity of Language Impairment*

Previous research suggests a link between the severity of children's language impairments and their response to the emergent literacy interventions (Vervaeke, 2008) and later reading outcomes (Catts et al. 2002); therefore in this case it made sense to explore the interaction between the type of intervention and the severity of children's language impairments. To determine the general language ability that quantifies a child's overall language performance, the Core Language Score from the CELF Preschool-2 was used. This measure is a norm referenced standardized score found in the CELF manual that is used to make decisions about the presence or absence of a language disorder. The Core Language Score was derived by summing the scaled scores from the three subtests that best discriminate performances of children with typical language development from performances of children with impaired language (Wigg, et al., 2004). Using the CELF-P2 Examiner's Manual, the three scaled scores of the Sentence Structure subtest, the Word Structure Subtest, and the Expressive Vocabulary Subtest were summed to create a total CELF Language score. This total score was then converted to the norm referenced standardized index score percentile rank using the Core Language and Index Standard Score Tables in Appendix C of the CELF Manual (Wigg, et al., 2004; p.166). To be identified as having language impairment, a child must score at or below the 34<sup>th</sup> percentile as mentioned in the previous chapter. To further categorize down the children identified as having language impairment according to severity, children with CELF Core Language Scores corresponding the to 16<sup>th</sup> percentile or below were identified as having

severe language impairments, while those with scores corresponding to the 17<sup>th</sup>-34<sup>th</sup> percentiles were classified as having a moderate language impairment. As such, using the Standardized index scores, two additional groups were formed based on severity of language impairment: a group of children with severe language impairments (a CELF Core Language Score corresponding to the 16<sup>th</sup> percentile or below), and a group with moderate language impairments (those with CELF Core Language Scores corresponding to the 17<sup>th</sup>-34<sup>th</sup> percentiles).

### *Dependent Variables*

To answer the first research question four dependent measures were used; letter identification, phonological awareness, print and word awareness, and oral language. For each dependent variable, between-group analyses were calculated to measure the possible mean score differences between the experimental and control groups. Further to this, the severity of language impairments variable was entered into each analysis to assess how the intervention affected children with severe versus moderate language impairments.

Prior to each analysis, data was screened using various SPSS procedures for missing data and possible outliers, and to ensure the assumptions of linearity, normality, and homogeneity of variance were met. Two variables (PALS –Pre-K Letter Identification and PALS-Pre-K Phonological Awareness) were found to be positively skewed. This was not surprising given the clinical nature of the sample and the expectation that preschoolers with language impairments may be lacking knowledge of important emergent literacy concepts.

#### *Dependent variable 1 – Letter Identification*

Early literacy research has suggested that letter identification is the single best

predictor of early reading achievement (Adams, 1990; Snow et al., 1998). Therefore alphabet knowledge using PALS Letter Identification subtest at time one (T1), time two (T2), and time three (T3) were used as a measure to assess the effectiveness of the experimental intervention. Each child was individually asked to name a series of 26 randomly presented letters. The number of correct answers out of 26 was recorded.

A set of between-groups analyses of variance was computed with Group Status entered as the independent variable and PALS Letter Identification at each assessment point entered as dependent variables. Raw score means and standard deviations are illustrated in Table 2.

Table 2

*Means and ANOVA Results Comparing Group Status on PALS Letter Identification*

|                                     | Control<br>Group<br>( <i>n</i> = 18) | Experimental<br>Group<br>( <i>n</i> = 20) |          |            |          |
|-------------------------------------|--------------------------------------|---|----------|------------|----------|
|                                     | <i>M</i> ( <i>SD</i> )               | <i>M</i> ( <i>SD</i> )                    | <i>F</i> | $\eta_p^2$ | <i>p</i> |
| T1 PALS<br>Letter<br>Identification | 4.06 (4.78)                          | 5.95 (7.49)                               | 0.84     | 0.02       | 0.37     |
| T2 PALS<br>Letter<br>Identification | 10.61 (8.64)                         | 17.10 (8.37)                              | 5.53     | 0.13       | 0.02     |
| T3 PALS<br>Letter<br>Identification | 23.06 (4.98)                         | 23.35 (4.15)                              | 0.04     | 0.00       | 0.83     |

Between-group analyses of variance at T1 indicated no statistically significant differences between the control group and the experimental group in alphabet knowledge,  $F(1, 36) = .841, p = .37, \eta^2 = .02$ . This result is not overly surprising as T1 assessments

were pre-test measures administered prior to any therapy. Results of this analysis are illustrated in Figure 2.

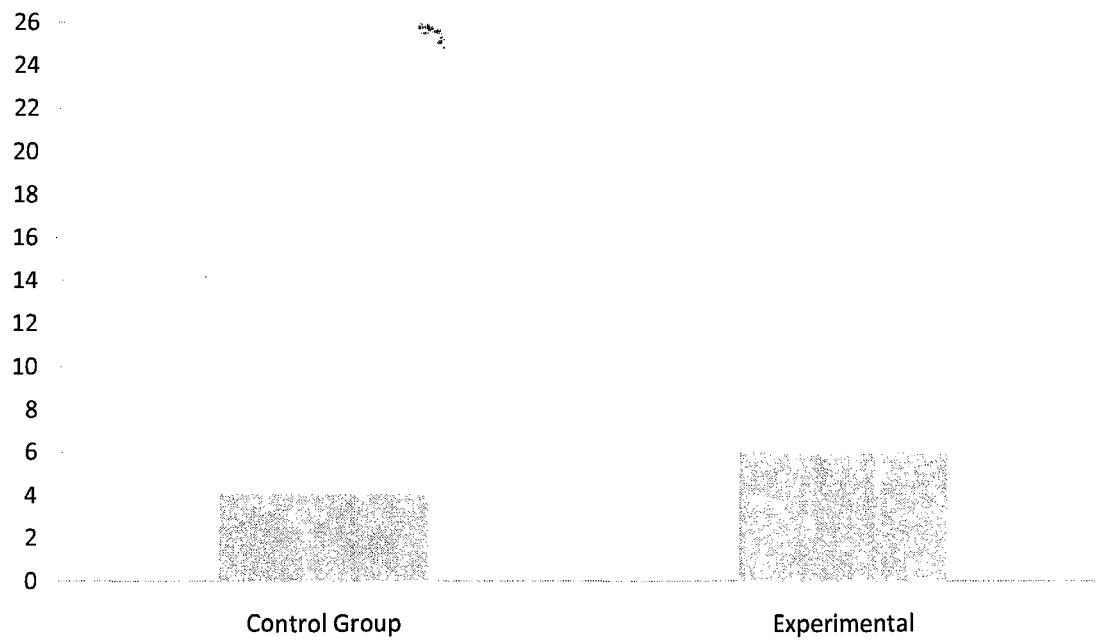
Group differences were then measured at T2, after one block of therapy and a 12-week rest period. At T2 a statistically significant between-group difference emerged for group therapy status,  $F(1, 36) = 5.53, p < .05, \eta^2 = .13$ . This result suggests that the experimental group ( $M = 17.10$ ) identified significantly more letters compared to the control group ( $M = 10.61$ ) after receiving the first block of therapy and a 12-week rest period. This result is illustrated in Figure 3.

In order to assess the T2 results on severity of language impairment, the experiment and control groups were then internally divided further using a severe versus moderate language impairment criteria (as explained previously under the independent variable section). This division resulted in four groups (Severe-Control; Severe-Experimental; Moderate-Control; Moderate-Experimental - see Table 3). A between-group analysis of variance was computed with therapy group and severity of language impairment status as independent variables and T2 PALS Letter Identification as the dependent variable. At T2, no statistically significant difference emerged for group by severity of language status,  $F(1, 34) = .330, p = .57, \eta^2 = .01$ . This result is illustrated in Figure 4 and may be explained by the notion that after one block of therapy, children in the experimental group, regardless of level of language impairment, benefited in their letter identification knowledge compared to children who did not receive the emergent literacy-enhanced therapy.

Table 3.

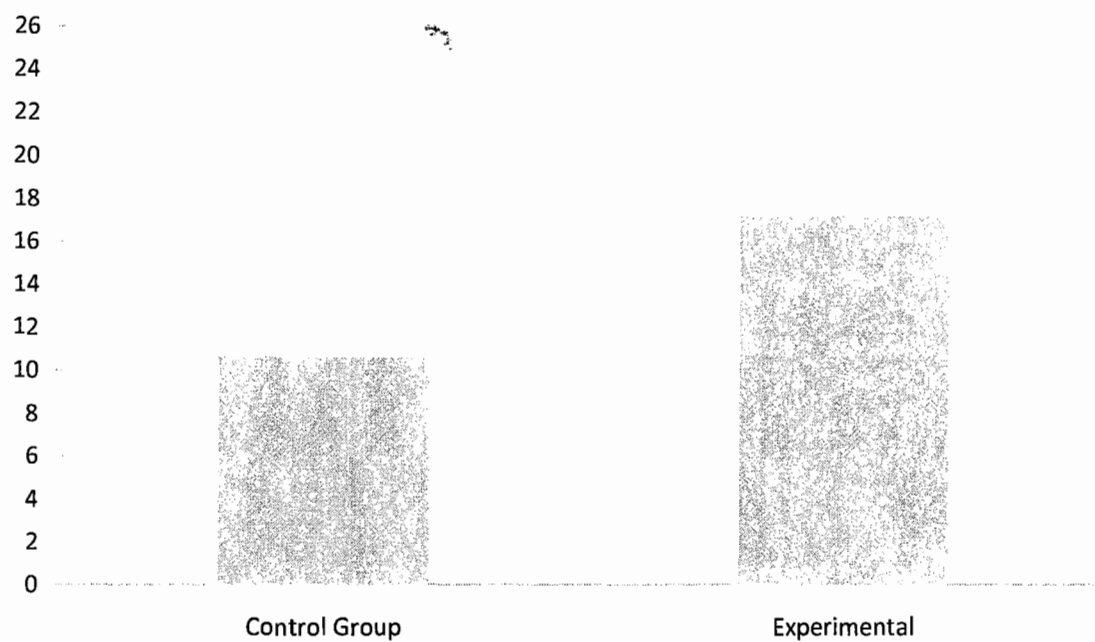
*Means and ANOVA Results Comparing Control and Experimental Groups and Severity of Language Impairment on PALS Letter Identification*

|                               | Severe Language Impairment<br>(0-16 <sup>th</sup> Percentile) |                                       | Moderate Language Impairment<br>(17-34 <sup>th</sup> Percentile) |  |
|-------------------------------|---|---------------------------------------|--|--|
|                               | Control Group<br>( <i>n</i> = 10)                             | Experimental Group<br>( <i>n</i> = 7) | Control Group<br>( <i>n</i> = 8)                                 | Experimental Group<br>( <i>n</i> = 13) |
|                               | <i>M</i> ( <i>SD</i> )  | <i>M</i> ( <i>SD</i> )                | <i>M</i> ( <i>SD</i> )   | <i>M</i> ( <i>SD</i> )                 |
| T1 PALS Letter Identification | 2.00 (2.79)   | 1.29 (1.50)                           | 6.62 (5.66)  | 8.46 (8.26)                            |
| T2 PALS Letter Identification | 8.50 (6.85)   | 16.14 (9.79)                          | 13.25 (10.32)  | 17.62 (7.88)                           |
| T3 PALS Letter Identification | 22.20 (6.00)  | 21.86 (4.67)                          | 24.12 (3.40)   | 24.15 (3.78)                           |

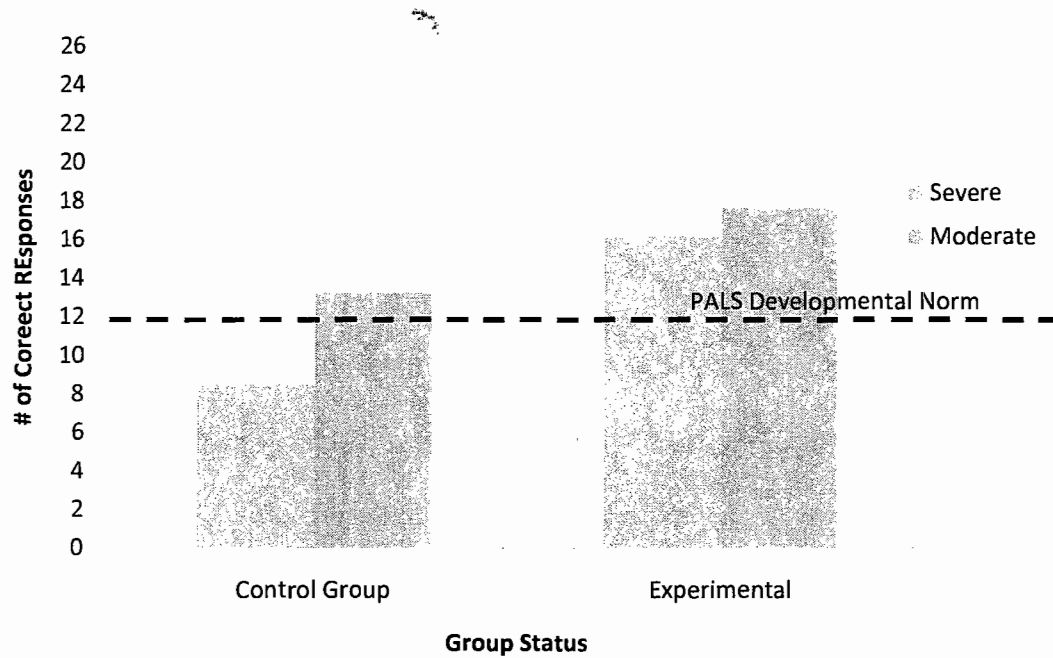


*Figure 2.* Control and experimental group means on PALS Letter Identification at T1





*Figure 3.* Control and experimental group means on PALS Letter Identification at T2



*Figure 4.* Mean scores of control and experimental group for children with severe and moderate language impairments on PALS Letter Identification at T2

Considering the level of language impairment may appear theoretically and statistically insignificant in the above analysis, it is important to consider the clinical significance of this finding. In other words, it was important to ask whether the increase in scores for children, particularly in the emergent literacy group, reflects an increase whereby posttest scores were within achievement levels commensurate with typically-achievement of 4-year old children. To examine the clinical significance of children's gains in alphabet knowledge as a result of therapy, means for each of the four groups were compared to the floor level of the developmental range scores as indicated by Invernizzi et al. (2004). The reported developmental range scores were established by Invernizzi et al. (2001) who examined PALS-PreK scores of approximately 350 children who were identified as successful readers in first grade. These reported range scores were not standard scores but rather scores that reflect the range of scores that could be considered typical for 4-year old children. This norm score is indicated by a dashed line in Figure 4. At T2, children with moderate language impairments in both the control and experimental group demonstrated letter identification skills within normal range limits. However, it is important to note that children with severe language impairments in the experimental group also demonstrated letter identification skills within normal range limits. This was not demonstrated by children with severe language impairments in the control group.

Therapy group differences were then measured at T3, after two blocks of therapy and the corresponding 12-week rest periods. At T3 no statistically significant between-group difference emerged for group therapy status,  $F(1, 36) = .04, p = .84, \eta^2 = .00$ . This result suggests that after two blocks of therapy and the corresponding rest periods the

experimental group ( $M = 23.35$ ) was comparable to the control group ( $M = 22.06$ ).

Results here are illustrated in Figure 5. These results may be explained by the fact that all children were assessed with T3 assessments once they had reached grade one. Therefore, exposure to school may have complicated interpretation of the effects of therapy. This issue is described in more detail within the chapter 5 discussion section.

A statistically significant effect also did not emerge when considering the severity of language impairment in the above analysis, T3 ( $F(1, 34) = .015, p = .90, \eta^2 = .00$  (illustrated in Table 3) Again, this result may also be explained by considering the school effects described above. In general, by the time children are nearing the end of their first term in grade 1, letter identification skills are relatively intact. As with T2 analyses, the PALS Developmental Norm limits are also illustrated in Figure 6. In this figure we see that all children have relatively the same alphabet knowledge whether they are in the control group or the experimental group, identified as having a severe or moderate language impairment.

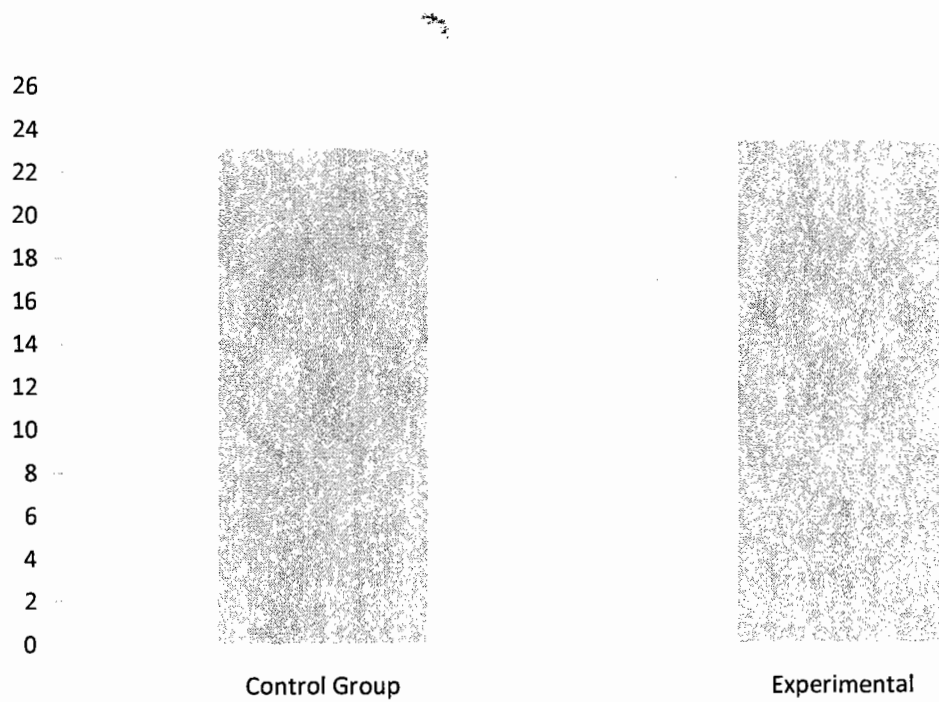


Figure 5. Control and experimental group means on PALS Letter Identification at T3

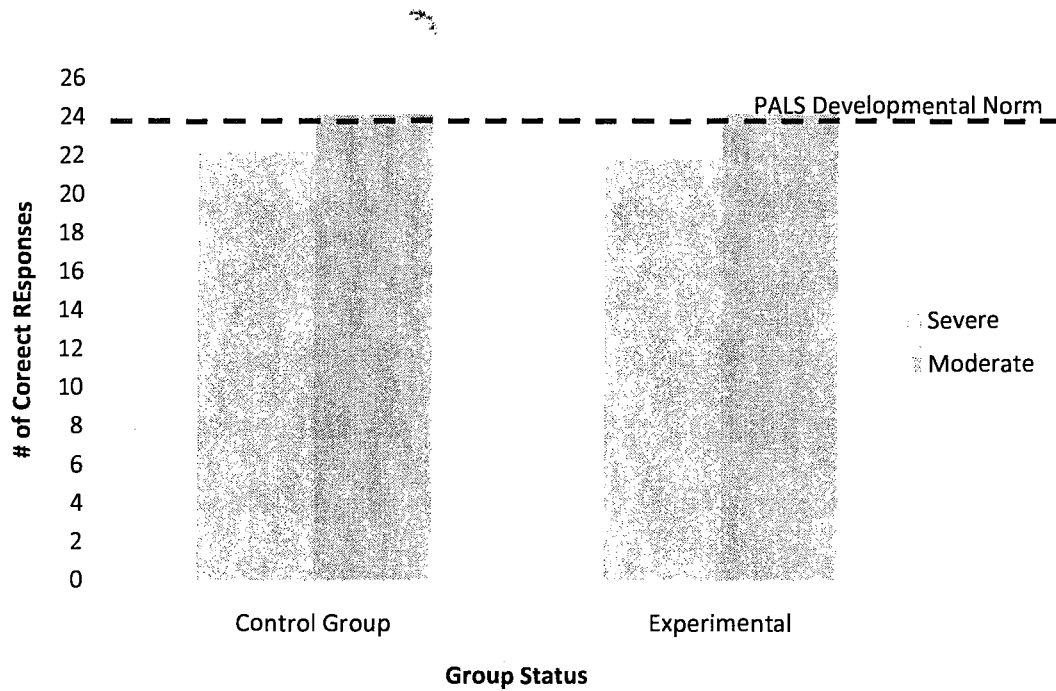


Figure 6. Mean scores of control and experimental group for children with severe and moderate language impairments on PALS Letter Identification at T3

### *Dependent variable 2 – Phonological Awareness*

Phonological awareness is the ability to auditorily distinguish, identify, and manipulate various units of spoken language that correspond to the written language. This awareness develops gradually over time and has a reciprocal relationship to reading development (Invernizzi, et al., 2005). Therefore, using the PALS assessment tool at T1 and T2, phonological awareness was assessed using two phonemic awareness tasks: awareness of rhyme and ability to identify beginning sounds. To represent T1 phonological awareness a composite variable was created by summing each child's T1 scores on the PALS PreK Rhyme Awareness subtest and the PALS PreK Beginning Sound Awareness subtest. A second variable was created summing the children's T2 scores on the PALS PreK Rhyme Awareness subtest and the PALS PreK Beginning Sound Awareness subtest, to represent phonological awareness at T2. At T3 of the study, phonological awareness of the children was assessed using the phoneme blending task and a segmenting task on the PALS 1-3 assessment. Therefore to represent phonological awareness at T3, a new variable was created using a composite score from the PALS Blending subtest and PALS Sound-to-Letter subtest, as suggested by Invernizzi et al. (2005).

A set of between-groups analyses of variance was computed with Group Status entered as the independent variable and PALS Phonological Awareness at each assessment point entered as dependent variables. Raw score means and standard deviations are illustrated in Table 4.

Between-group analyses of variance at T1 indicated no statistically significant differences between the control group and the experimental group in phonological

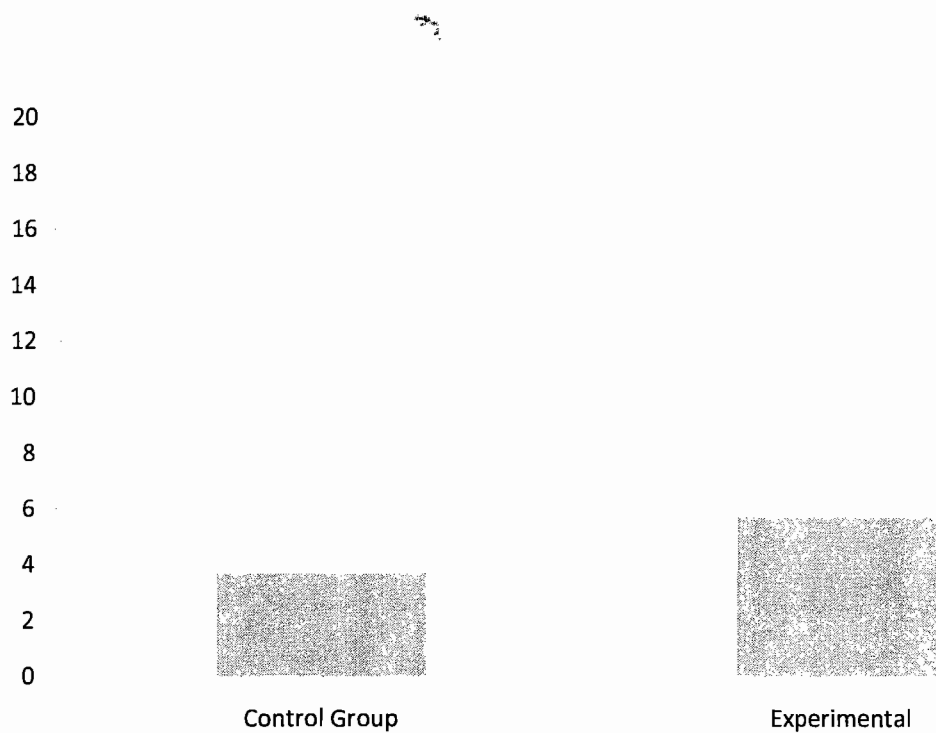
awareness,  $F(1, 36) = 2.30, p = .14, \eta^2 = .06$ . This result was expected as T1 assessments were pre-test measures administered prior to any therapy. Results of this analysis are illustrated in Figure 7.

Table 4  
*Means and ANOVA Results Comparing Group Status on PALS Phonological Awareness*

|                                      | Control<br>Group<br>( $n = 18$ ) | Experimental<br>Group<br>( $n = 20$ ) |      |            |      |
|--------------------------------------|----------------------------------|---------------------------------------|------|------------|------|
|                                      | $M (SD)$                         | $M (SD)$                              | $F$  | $\eta_p^2$ | $p$  |
| T1 PALS<br>Phonological<br>Awareness | 3.67 (3.96)                      | 5.70 (4.28)                           | 2.30 | 0.06       | 0.14 |
| T2 PALS<br>Phonological<br>Awareness | 8.11 (5.63)                      | 12.00 (5.68)                          | 4.48 | 0.11       | 0.04 |
| T3 PALS<br>Phonological<br>Awareness | 33.11<br>(16.69)                 | 35.05 (19.62)                         | 0.11 | 0.00       | 0.75 |

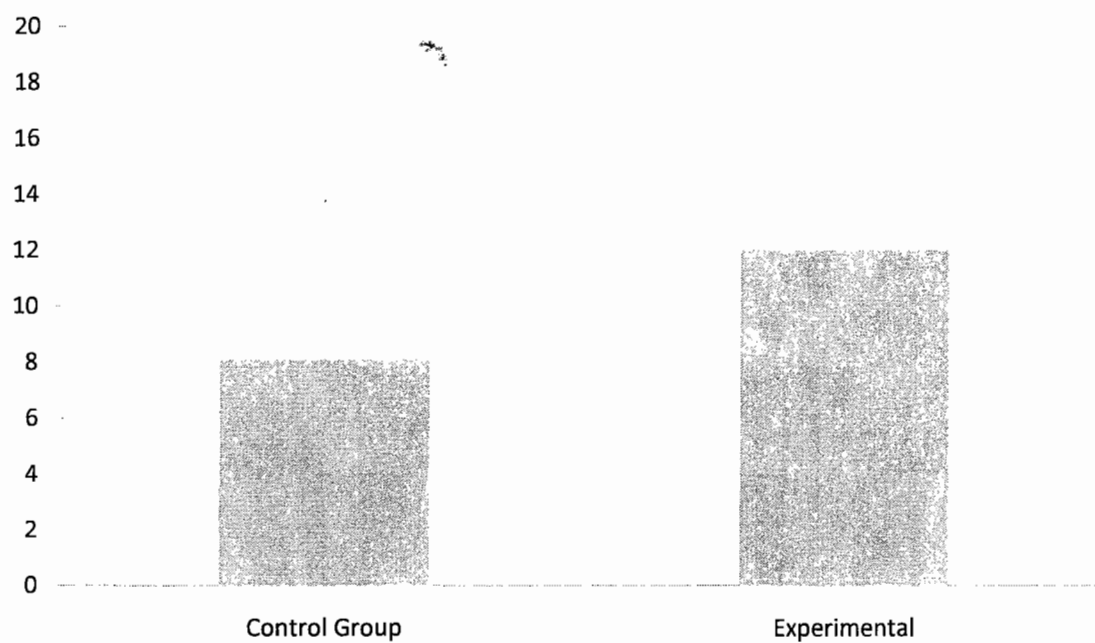
Group differences were then measured at T2, after one block of therapy and a 12-week rest period. At T2 a statistically significant between-group difference emerged for group therapy status,  $F(1, 36) = 4.48, p < .05, \eta^2 = .11$ . This result suggests that the experimental group ( $M = 12.00$ ) did statistically significantly better on the phonological awareness tasks compared to the control group ( $M = 8.11$ ) after the receiving the first block of therapy and a 12-week rest period. This result is illustrated in Figure 8.





*Figure 7.* Control and experimental group means on PALS Phonological Awareness at T1

In order to assess the T2 results on severity of language impairment, the experiment and control groups were then internally divided further using a severe versus moderate language impairment. This division resulted in four groups (Severe-Control; Severe-Experimental; Moderate-Control; Moderate-Experimental - see Table 5). A between-group analysis of variance was computed with therapy group and severity of language impairment status as independent variables and T2 PALS Phonological Awareness as the dependent variable. At T2, no statistically significant difference emerged for group by severity of language status,  $F(1, 34) = 0.12, p = .73, \eta^2 = .00$ . This result is illustrated in Figure 9. This result may be explained by the notion that after one block of therapy, children in the experimental group, regardless of level of language impairment, benefited in phonological awareness skills compared to children who did not receive the emergent literacy therapy.



*Figure 8.* Control and experimental group means on PALS Phonological Awareness at T2

Table 5.  
*Means and ANOVA Results Comparing Control and Experimental Groups and Severity of Language Impairment on PALS Phonological Awareness*

|                                | Severe Language Impairment<br>(0-16 <sup>th</sup> Percentile) |                                       | Moderate Language Impairment<br>(17-34 <sup>th</sup> Percentile) |  |
|--------------------------------|---|---------------------------------------|--|--|
|                                | Control Group<br>( <i>n</i> = 10)                             | Experimental Group<br>( <i>n</i> = 7) | Control Group<br>( <i>n</i> = 8)                                 | Experimental Group<br>( <i>n</i> = 13) |
|                                | <i>M</i> ( <i>SD</i> )  | <i>M</i> ( <i>SD</i> )                | <i>M</i> ( <i>SD</i> )   | <i>M</i> ( <i>SD</i> )                 |
| T1 PALS Phonological Awareness | 2.00 (1.33)   | 2.86 (1.86)                           | 5.75 (5.17)  | 7.23 (4.47)                            |
| T2 PALS Phonological Awareness | 5.8 (4.42)  | 7.86 (5.30)                           | 11.00 (5.90)   | 14.23 (4.64)                           |
| T3 PALS Phonological Awareness | 26.10 (13.22)   | 31.29 (23.94)                         | 41.88 (13.43)  | 37.08 (17.62)                          |

Considering the level of language impairment may appear theoretically and statistically insignificant in the above analysis, however, it is important to consider the clinical significance of this finding. In other words, it was important to ask whether the increase in scores for children, particularly in the emergent literacy group, reflects an increase whereby posttest scores were within achievement levels commensurate with normally achieving 4-year old children. To examine the clinical significance of children's gains in phonological awareness as a result of therapy, means for each of the four groups were compared to the floor level of the developmental range scores as indicated by

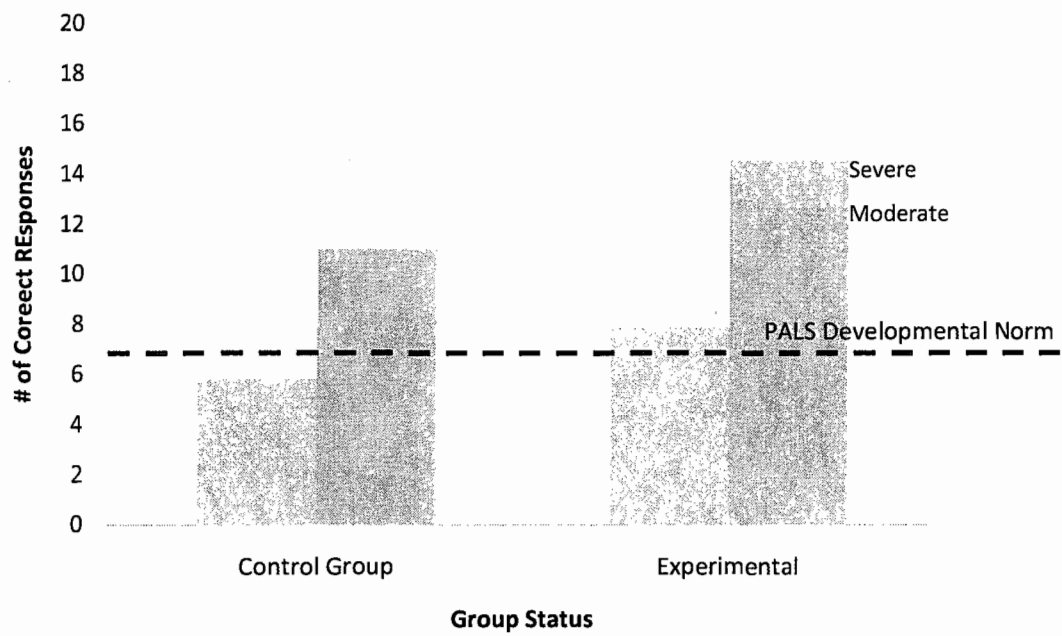
Invernizzi et al. (2004). As explained previously in the letter identification section, the reported developmental range scores were established by Invernizzi et al. (2001) who examined PALS-PreK scores of approximately 350 children who were identified as successful readers in first grade. These reported range scores were not standard scores but rather scores that reflect the range of scores that could be considered typical for 4-year old children. This norm score is indicated by a dashed line in Figure 9. At T2, children with moderate language impairments in both the control and experimental group demonstrated phonological awareness skills within normal range limits. Children with severe language impairments continued to demonstrate phonological awareness skills below normal range limits. However, it is important to note that children with severe language impairments in the experimental group demonstrated more phonological awareness skills than the children with severe language impairments in the control group.

Therapy group differences were then measured at T3, after two blocks of therapy and the corresponding 12-week rest periods. At T3 no statistically significant between-group difference emerged for group therapy status,  $F(1, 36) = .11, p = .75, \eta^2 = .00$ . This result suggests that after two blocks of therapy and the corresponding rest periods the experimental group ( $M=35.05$ ) was comparable to the control group ( $M=33.11$ ). Results here are illustrated in Figure 10. Once more, during this assessment point all children had reached grade one. Therefore (as suggested previously), exposure to school may have complicated interpretation of the effects of therapy at T3. This issue is described in more detail within the chapter 5 discussion section.

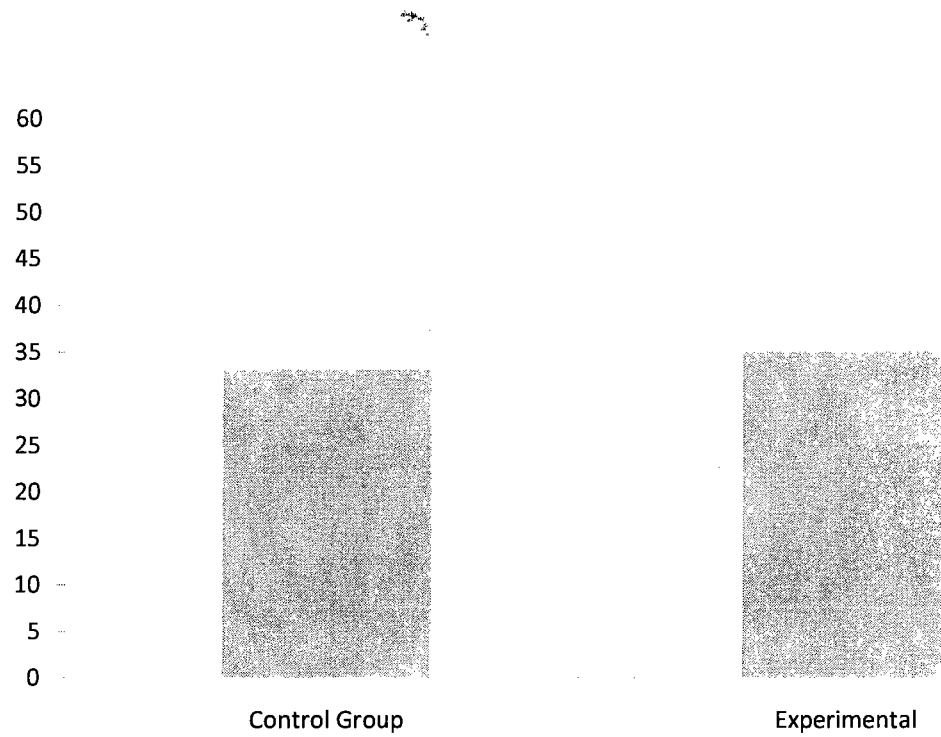
A statistically significant effect also did not emerge when considering the severity of language impairment in the above analysis, T3 ( $F(1, 34) = .71, p = .41, \eta^2 = .02$  (see

Table 5). Again, this result may also be explained by considering the school effects described above. In general, by the time children are nearing the end of their first term in grade one, all children with language impairments may have phonological awareness skills that are relatively at the same level.

However, as with T2 analyses, clinical significance of children's gains in phonological awareness as a result of therapy were examined using the developmental range scores as indicated by Invernizzi et al. (2005). These PALS Developmental Norm limits are also illustrated in Figure 11 by a dashed line. At T3, children with moderate language impairments in both the control and experimental group demonstrated phonological awareness skills within normal range limits. However, it is important to note that children with severe language impairments in the experimental group also demonstrated phonological awareness skills within normal range limits. Children with severe language impairments did not demonstrate this in the control group.

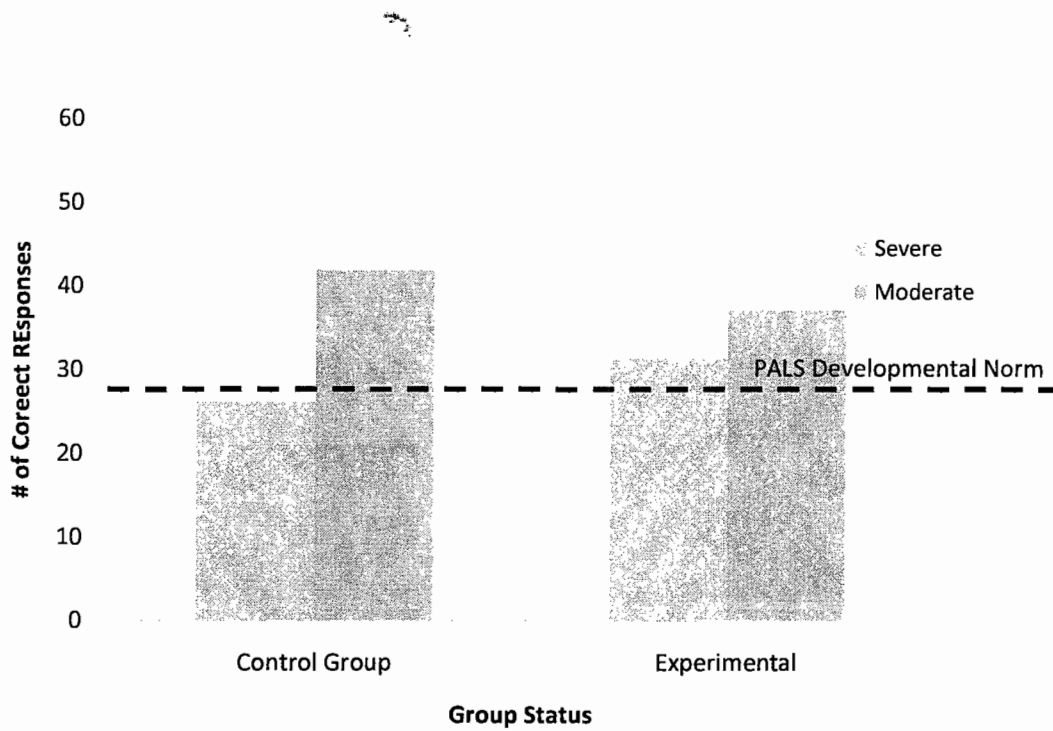


*Figure 9.* Mean scores of control and experimental group for children with severe and moderate language impairments on PALS Phonological Awareness at T2



*Figure 10.* Control and experimental group means on PALS Phonological Awareness at T3





*Figure 11.* Mean scores of control and experimental group for children with severe and moderate language impairments on PALS Phonological Awareness at T3

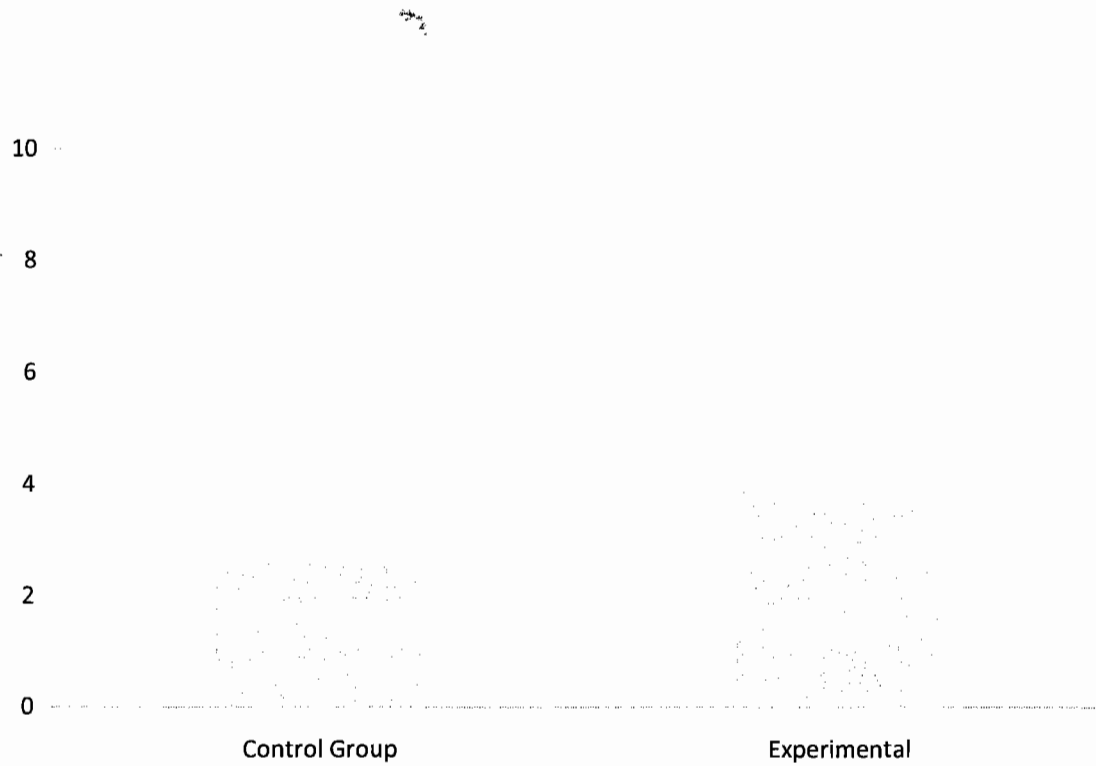
Understanding that writing represents spoken language is an important skill for young children to grasp for later literacy development. In this study, print and word awareness refers to a child's ability to recognize the function and form of print, understand the concepts of words and to distinguish the relationship between written and spoken words (Justice & Ezell, 2001). Therefore print and word awareness was measured using the T1 and T2 PALS Print and Word Awareness subtest from the PALS PreK assessment and the T3 PALS Concept of Word subtest from the PALS 1-3 assessment (Invernizzi, et al., 2005).

A set of between-groups analyses of variance was computed with Group Status entered as the independent variable and PALS Print and Word Awareness at each assessment point entered as dependent variables. Raw score means and standard deviations are illustrated in Table 6.

Between-group analyses of variance at T1 indicated no statistically significant differences between the control group and the experimental group in print and word awareness,  $F(1, 36) = 3.51, p = .07, \eta^2 = .09$ . Considering T1 assessments were pre-test measures administered prior to any therapy, this result is not overly surprising as T1 assessments were pre-test measures administered prior to any therapy. Results of this analysis are illustrated in Figure 12.

Table 6  
*Means and ANOVA Results Comparing Group Status on PALS Print and Word Awareness*

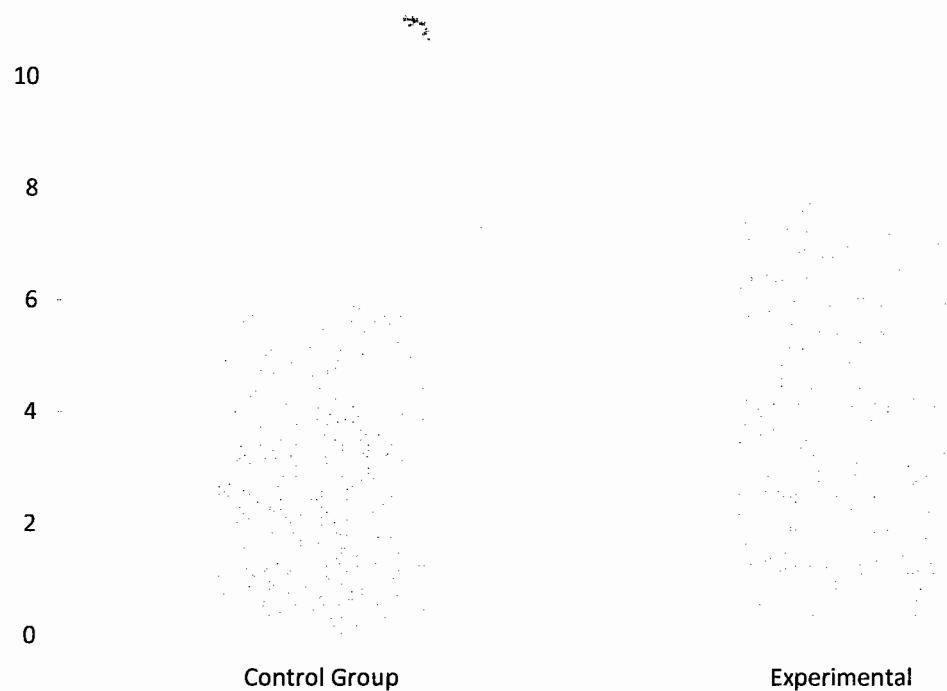
|   | Control<br>Group<br>( <i>n</i> = 18) | Experimental<br>Group<br>( <i>n</i> = 20) |          |            |          |
|---|--------------------------------------|---|----------|------------|----------|
|   | <i>M</i> ( <i>SD</i> )               | <i>M</i> ( <i>SD</i> )                    | <i>F</i> | $\eta_p^2$ | <i>p</i> |
| T1 PALS<br>Print and<br>Word<br>Awareness | 2.67 (1.97)                          | 3.90 (2.08)                               | 3.51     | 0.09       | 0.07     |
| T2 PALS<br>Print and<br>Word<br>Awareness | 5.89 (2.70)                          | 7.80 (1.61)                               | 7.20     | 0.17       | 0.01     |
| T3 PALS<br>Print and<br>Word<br>Awareness | 11.33 (7.05)                         | 12.95 (8.40)                              | 0.41     | 0.01       | 0.53     |



*Figure 12.* Control and experimental group means on PALS Print and Word Awareness at T1

Group differences were then measured at T2, after one block of therapy and a 12-week rest period. At T2 a statistically significant between-group difference emerged for group therapy status,  $F(1, 36) = 7.201, p < .05, \eta^2 = .17$ . This result suggests that the experimental group ( $M = 7.80$ ) did statistically significantly better on the print and word awareness tasks compared to the control group ( $M = 5.89$ ) after the receiving the first block of therapy and a 12-week rest period. This result is illustrated in Figure 13.

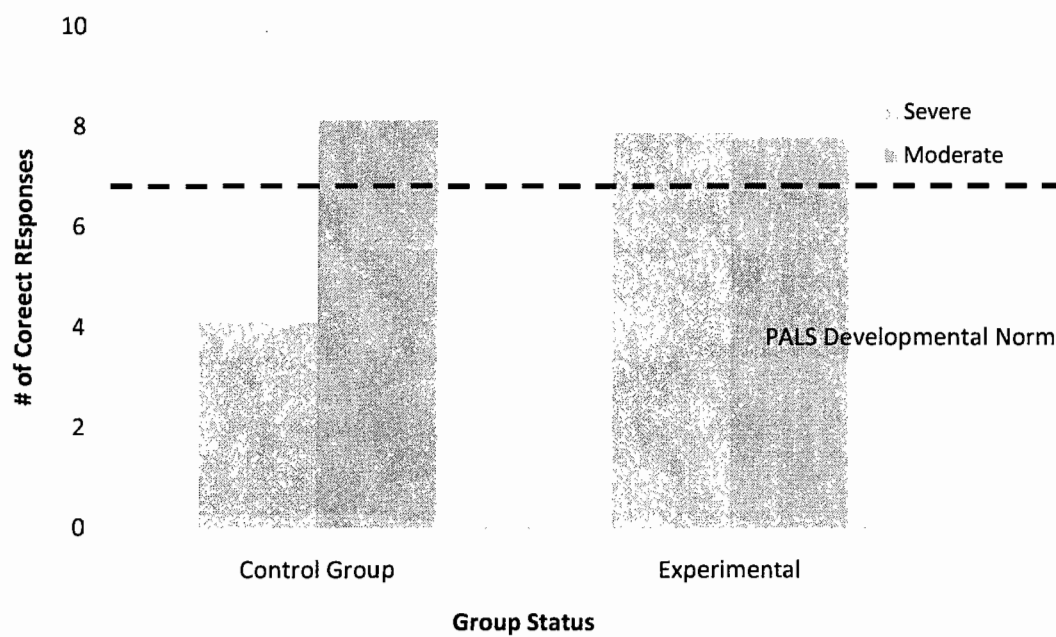
In order to assess the T2 results on severity of language impairment, the experimental and control groups were then internally divided further using a severe versus moderate language impairment. This division resulted in four groups (Severe-Control; Severe-Experimental; Moderate-Control; Moderate-Experimental - see Table 7). A between-group analysis of variance was computed with therapy group and severity of language impairment status as independent variables and T2 PALS Print and Word Awareness as the dependent variable. At T2, a statistically significant difference emerged for group by severity of language status,  $F(1, 34) = 12.81, p < .01, \eta^2 = .27$ . This result is illustrated in Figure 14. This result may be explained by the notion that after one block of therapy, children with moderate language impairments in the experimental group benefited in print and word awareness skills compared to children with moderate language impairments in the control group. The same results applied for children with severe language impairments. Those children with severe language impairments who received the emergent literacy-enhanced therapy benefited in print and word awareness skills compared to the children with severe language impairments in the control group.



*Figure 13.* Control and experimental group means on PALS Print and Word Awareness at T2

Table 7.  
*Means and ANOVA Results Comparing Control and Experimental Groups and Severity of Language Impairment on PALS Print and Word Awareness*

|                                  | Severe Language Impairment<br>(0-16 <sup>th</sup> Percentile) |                                       | Moderate Language Impairment<br>(17-34 <sup>th</sup> Percentile) |  |
|----------------------------------|---|---------------------------------------|--|--|
|                                  | Control Group<br>( <i>n</i> = 10)                             | Experimental Group<br>( <i>n</i> = 7) | Control Group<br>( <i>n</i> = 8)                                 | Experimental Group<br>( <i>n</i> = 13) |
|                                  | <i>M</i> ( <i>SD</i> )  | <i>M</i> ( <i>SD</i> )                | <i>M</i> ( <i>SD</i> )   | <i>M</i> ( <i>SD</i> )                 |
| T1 PALS Print and Word Awareness | 1.60 (1.27)   | 2.43 (1.62)                           | 4.00 (1.93)  | 4.69 (1.89)                            |
| T2 PALS Print and Word Awareness | 4.10 (2.23)   | 7.86 (1.46)                           | 8.12 (0.99)  | 7.77 (1.74)                            |
| T3 PALS Print and Word Awareness | 7.20 (3.88)   | 12.14 (8.51)                          | 16.50 (6.82)   | 13.38 (8.66)                           |



*Figure 14.* Mean scores of control and experimental group for children with severe and moderate language impairments on PALS Print and Word Awareness at T2



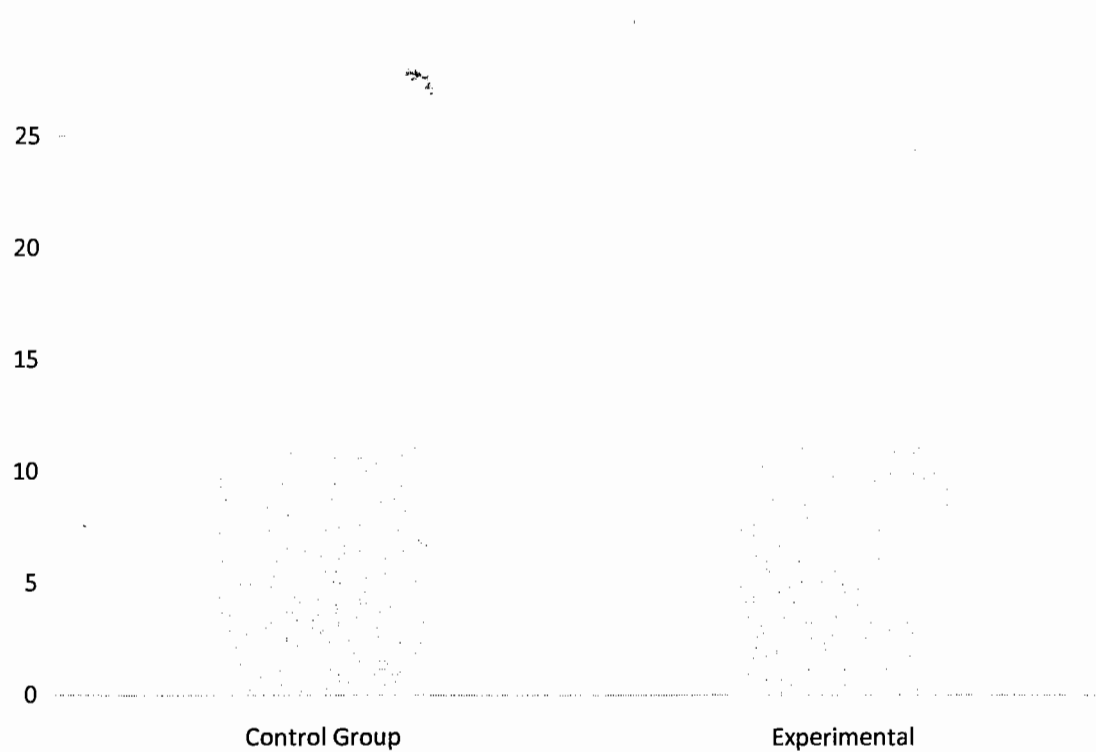
Considering once again the clinical nature of this study, it was important to consider whether the increase in scores for children, particularly in the emergent literacy group, reflects an increase whereby posttest scores were within achievement levels commensurate with normally achieving 4-year old children. To examine the clinical significance of children's gains in print and word awareness skills as a result of therapy, means for each of the four groups were compared to the floor level of the developmental range scores as indicated by Invernizzi et al. (2004). The reported developmental range scores were established by Invernizzi et al. (2001) who examined PALS-PreK scores of approximately 350 children who were identified as successful readers in first grade. These reported range scores were not standard scores but rather scores that reflect the range of scores that could be considered typical for 4-year old children. This norm score is indicated by a dashed line in Figure 14. At T2, children with moderate language impairments in both the control and experimental group demonstrated print and word awareness skills within normal range limits. However, it is important to note that children with severe language impairments in the experimental group also demonstrated print and word awareness skills within normal range limits. This was not demonstrated by children with severe language impairments in the control group.

Therapy group differences were then measured at T3, after two blocks of therapy and the corresponding 12-week rest periods. At T3 no statistically significant between-group difference emerged for group therapy status,  $F(1, 36) = .41, p = .53, \eta^2 = .01$ . This result suggests that after two blocks of therapy and the corresponding rest periods the experimental group ( $M = 8.40$ ) was comparable to the control group ( $M = 7.05$ ). Results here are illustrated in Figure 15. However, by T3 assessment point, children had reached

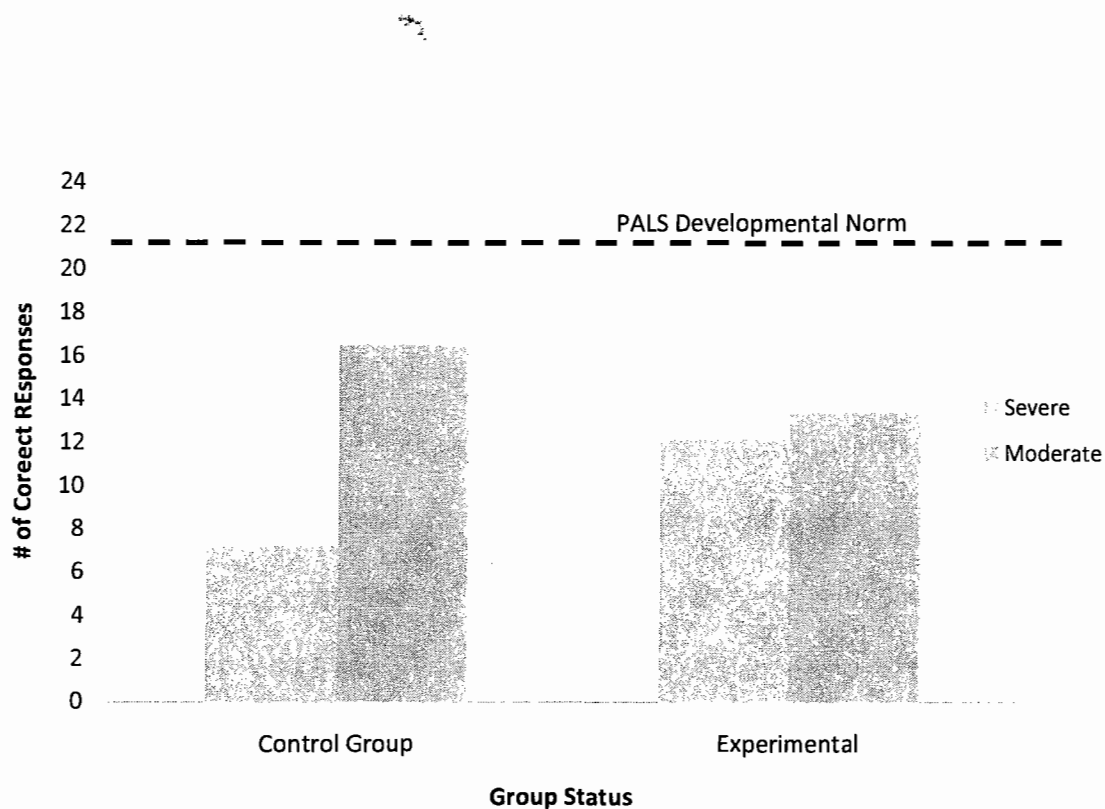
grade one so exposure to school may be complicating the interpretation of the effects of therapy at T3. As mentioned earlier, this issue is described in more detail within the chapter 5 discussion section.

A statistically significant effect also did not emerge when considering the severity of language impairment in the above analysis, T3 ( $F(1, 34) = 2.77, p = .11, \eta^2 = .08$  (illustrated in Figure 16. Again, this result may also be explained by considering the school effects described above. In general, by the time children are nearing the end of their first term in grade one, all children with language impairments may have print and word awareness skills that are relatively at the same level.

However, as with T2 analyses, clinical significance of children's gains in print and word awareness as a result of therapy, were examined using the developmental range scores as indicated by (Invernizzi, et al., 2005). These PALS Developmental Norm limits are also illustrated in Figure 16 by a dashed line. At T3, neither groups whether children had moderate or severe language impairments demonstrated print and word awareness skills within normal range limits. However, it is important to note that by this time children were entering grade one and thus were assessed using the PALS 1-3 assessment. Perhaps the measures in PALS PreK and PALS 1-3 are not comparable.



*Figure 15.* Control and experimental group means on PALS Print and Word Awareness at T3



*Figure 16.* Mean scores of control and experimental group for children with severe and moderate language impairments on PALS Print and Word Awareness at T3

### *Control Variable*

#### *CELF Core Language Score*

Due to the clinical nature of this project, after recognizing that the experimental intervention may in fact have had an impact on some of the early literacy skills for some of the children, it was important to investigate the effect the enhanced literacy-based intervention had on the children's language skills. Since the initial purpose of the study was to enhance the speech services administered to children with language impairments, it was important to ensure that the enhanced literacy intervention still supported the language impairments of the children. Therefore, language skills using the CELF-P2 Core Language Score at T1 and T2 were used as a control measure to assess the effectiveness of the experimental intervention in improving the language skills of children.

A set of between-groups analyses of variance was computed with Group Status entered as the independent variable and CELF-P2 Core Language Score at each assessment point entered as dependent variables. Raw score means, and standard deviations are illustrated in Table 8.

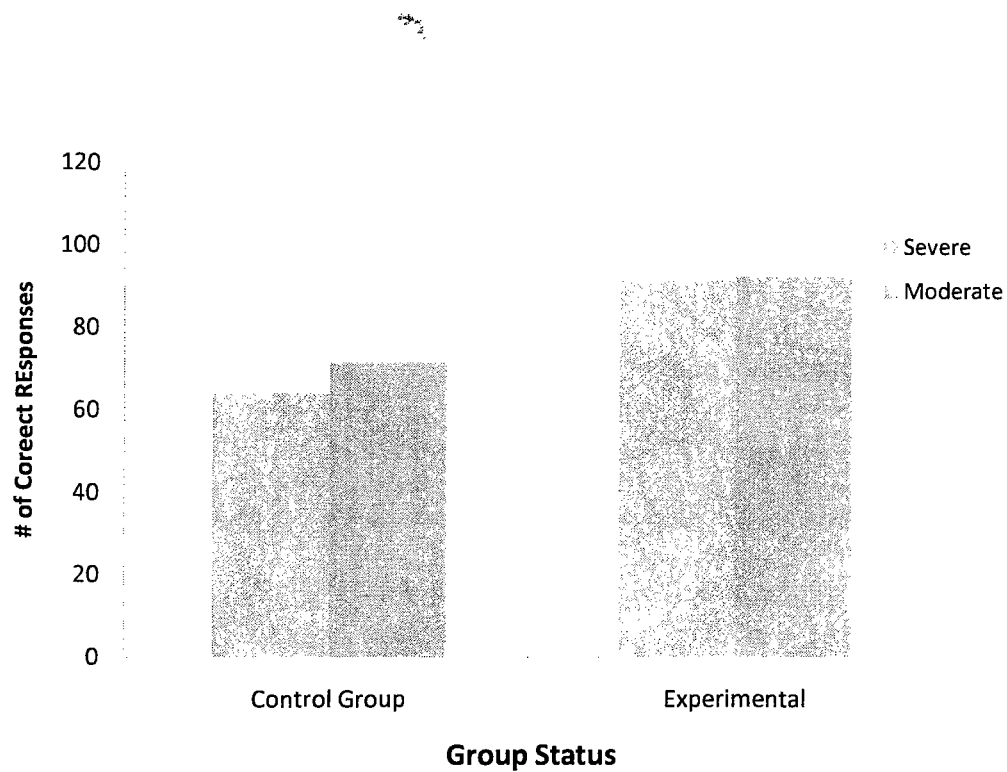
In order to determine the clinical significance of the gains observed in children's language abilities, the mean scores on the CELF Core Language Score achieved at T2 by each of the four groups of children was examined. As shown in Figure 17, at T2 the children identified as having moderate language impairments, whether in the experimental group or the control group, were performing within developmental ranges and therefore were no longer classified as having language impairments. On the other hand, children identified with severe language impairments in the experimental group

made greater gains than the children with severe language impairments in the control group although these differences were negligible. Children with severe language impairments from the experimental group had reached developmental ranges and were no longer classified as having severe language impairments after receiving one block of therapy. In general, children had a mean score above 85 on the Core Language Score. This means that on average, children were functioning with language levels above the 16<sup>th</sup> percentile, regardless of their initial level of language impairment or their assignment to the experimental or control conditions; no group fell within the category of ‘severely impaired’ at T2.

Table 8.

*Means and ANOVA Results Comparing Control and Experimental Groups and Severity of Language Impairment on CELF Core Language Score*

|                          | Severe Language Impairment<br>(0-16 <sup>th</sup> Percentile) |                                       | Moderate Language Impairment<br>(17-34 <sup>th</sup> Percentile) |  |
|--------------------------|---|---------------------------------------|--|--|
|                          | Control Group<br>( <i>n</i> = 10)                             | Experimental Group<br>( <i>n</i> = 7) | Control Group<br>( <i>n</i> = 8)                                 | Experimental Group<br>( <i>n</i> = 13) |
|                          | <i>M</i> ( <i>SD</i> )  | <i>M</i> ( <i>SD</i> )                | <i>M</i> ( <i>SD</i> )   | <i>M</i> ( <i>SD</i> )                 |
| CELF Language Score (T1) | 36.90 (9.12)  | 44.33 (11.79)                         | 63.62 (10.61)  | 71.69 (16.42)                          |
| CELF Language Score (T2) | 64.10 (19.34)   | 71.43 (13.02)                         | 91.13 (9.76)   | 92.15 (13.89)                          |



*Figure 17.* Mean scores of control and experimental group for children with severe and moderate language impairments on CELF Core Language Score at T2

### *Grade One Reading*

A primary objective of this thesis was to examine the relationship between emergent literacy skills and later reading. More specifically, I was interested in examining whether the approach to language therapy impacted later reading achievement for children with language impairments.

To assess grade one reading achievement, children's fall grade one report cards were collected from participating families. Standard Provincial grade one report cards indicated a letter grade for grade one reading and writing. These scores were converted to a scaled score of 1, 2, 3, or 4. Children who received a mark ranging between A- to A+ on their report card were coded as a 1, at this level children's achievements were exceeding the provincial standards - children were demonstrating the knowledge and skills required for grade one level reading. Children who received a mark ranging between B- to B+ on their report card were coded as a 2. Children with a score of 2 were achieving at the provincial standards and thus had acquired most of the knowledge and skills required for grade one reading. Children who received a mark ranging between C- to C+ on their report card were coded as a 3. Children who scored a 3 had acquired some of the necessary knowledge and skills for grade one reading and were performing just below the provincial standards. And finally the children received a D- to R were coded as a 4. These children were performing at a level much below the provincial standards and were identified as requiring extensive remediation.

Prior to a formal regression analyses, visual inspection of group means indicated that children receiving the experimental emergent literacy therapy had a grade one report card reading mean score of 2.73 ( $SD = 0.25$ ) whereas children in the traditional therapy group had a grade one report card reading mean score of 3.09 ( $SD = 0.25$ ). It is important



to note here that the mean scores are essentially equal. Similar findings resulted when exploring the grade one report card writing scores. Children receiving the experimental emergent literacy therapy had a grade one report card writing mean score of 2.93 ( $SD = .25$ ) whereas children in the traditional therapy group had a grade one report card writing mean score of 3.27 ( $SD = 0.19$ ). In general, these results suggest that children in both the experimental and traditional therapy groups had grade one reading and writing achievement that fell just below or at provincial standards indicating that in general, both groups of children were experiencing difficulties with emergent literacy skills. From here, a linear regression was conducted to evaluate the impact of the literacy-enhanced approach and traditional approach to intervention had on reading achievement in grade one. Group status was used as the independent variable and the reading score on the fall report cards was used as the dependent variable. Results indicated that group status did not statistically significantly predict grade one report card reading achievement,  $R^2 = .039$ ,  $F(2, 37) = .981$ ,  $p = .332$ . In general, these results suggest that the approach to therapy did not significantly predict the reading outcome of children with language impairments in grade one.

This result may at first appear surprising; however, these findings may be a result of the complex relationship between emergent literacy skills, language, and later reading abilities. Although it was expected that the children who had received emergent literacy-enhanced intervention would have stronger emergent literacy skills and therefore stronger reading skills than the children who had received the traditional language therapy, the results from T3 emergent literacy assessments revealed that children were not achieving within their developmental norm ranges in phonological awareness and print and word

awareness tasks. Given that in general, children with language impairments were still experiencing difficulties with these foundational skills for reading development, it was not surprising that they were not reading at the provincial standards. Overall, these results suggest that children with language impairments who had received speech services in preschool years need continued support with reading related skills in school. More on this important issue is discussed in the following chapter.

## CHAPTER FIVE

### DISCUSSIONS AND CONCLUSIONS

This final chapter is organized into five broad sections. The first section discusses the importance and challenges associated with conducting applied intervention research within naturalistic settings. The next two sections discuss each of the study's research questions. The fourth section outlines the general theoretical and practical implications of the study, while the final section presents limitations of the study, general conclusions, and areas for future research.

#### **Applied Research**

This study was conducted at Speech Services Niagara. The participants were children who were referred to SSN for speech and language impairments by their parents, paediatricians, or preschool educators. The therapies studied were administered by practicing Speech and Language Pathologists within their natural clinical settings, using natural clinical approaches. In general, the current study was conducted in a completely naturalistic or real-world setting. Although this type of applied project may have limitations and some may argue contains too much variability or perhaps a lack of methodological control, this study also carries with it strengths *because of* its applied nature. In general, this study responds to a specific call from stakeholders who are indicating that there is a need for research to remove itself from the boundaries of the laboratory settings and to couch itself in an applied setting where results can have a direct impact on community-based practices. Although the argument for applied research is made by some researchers, many more traditional researchers have a perception that

applied research, even if it is scientifically based and theoretically motivated, is less valuable in comparison to basic research (Sternberg & Lyon, 2002). However to encourage policy change, basic and applied research need to work together in order to convert the knowledge and use of knowledge into new products that impact current community-based services.

Basic research and applied research are conceptually different. However, each approach is equally as important and compliments one another in the ways that each one impacts society. Basic research seeks primarily to acquire new knowledge, and widen the understandings of phenomena in a scientific field of interest (Stokes, 1997). In the field of intervention, basic research allows researchers to undergo their research in a laboratory setting, where many extraneous variables can be controlled to see the effectiveness of a phenomena/intervention. Likewise, those implementing the intervention are often continually coached and supported throughout the intervention period, which allows the researchers to gain a more complete understanding of the nature of development. However, it is very unlikely that similar levels of support are available to all practitioners in their applied settings. Although there is value to this type of research, it is not typically representative of everyday human condition and therefore may not be completely transferable to the extremely complex and multifaceted environments in which children live. In response to this, applied research extends the knowledge acquired through basic research by focusing on its *use* – converting the ‘possible’ into the ‘actual’ (Stokes, 1997). Therefore, applied research elaborates on the application of the known, to demonstrate its feasibility in achieving practical ends (Stokes, 1997). While doing intervention work, it is important to recognize that practitioners serve a diverse

population; children of different age groups, skill levels, ethnic groups, learning styles, attention skills, socio-emotional needs...etc – from various districts with idiosyncratic characteristics. As such, applied research seeks to ensure that the intervention can be applicable and repeatable across these different settings before policy makers make decisions to implement change.

To continue validating the understanding that emergent literacy skills are critical for future reading it is now important to evaluate the effectiveness of studies within their ‘real world’ settings using practitioners as the implementers; and observe whether or not the results are replicated and intervention feasible in less controlled conditions. From there, interventions can be adapted and upgraded to ensure new theoretical/practical findings work from one place to another – eventually leading to policy change.

Therefore, this exploratory project has aimed to begin this process of unravelling the practical significance of the findings of many research studies that have identified the importance of developing strong emergent literacy skills of children who are at-risk for later reading difficulties. This project has a unique strength as it directly impacted the speech services children were receiving from SSN. Among the group of children with language impairments, it became evident that there were various levels of language impairments: children with moderate language impairments and children with severe language impairments. Although faced with some difficulties with the reliability of measures at each posttest point, in general the intervention was deemed effective at enhancing the literacy skills of children with language impairments –in particular for the children identified as having severe language impairments.

## **Exploring the Effects of the Experimental Intervention on Emergent Literacy Skills**

The first set of research objectives and questions aimed to explore the effectiveness of the experimental emergent literacy-enhanced language therapy in supporting pre-school children referred to Speech Services Niagara for specific language impairments. More specifically, the study compared the emergent literacy enhanced therapy with a more traditional model of language therapy in improving children's emergent literacy skills including alphabet knowledge, print and word awareness, phonological awareness, and oral language. Previous research in this area (reviewed in Chapter 2) suggests that the construct of emergent literacy may be considered to include the four sub-domains of alphabet knowledge, print and word awareness, phonological awareness, and oral language. Following this previously established theoretical hypothesis, I designed four related dependent variables designed to assess the impact of the experimental and control-based therapies. Specifically, dependent measures included the Letter identification, Phonological Awareness and Print and Word Awareness subtests from the Phonological Awareness Literacy Screening tool (PALS). The oral language measure was the Core Language Score measure taken from the Clinical Evaluation of Language Fundamentals (CELF-P2). Children in both the experimental and control groups were assessed with each of these measures three times over the course of the study (see study design illustration – Figure 1). Between-group differences were measured at each assessment point during the study.

*Effects on Written Language and Phonological Awareness Skills at T2.*

The first posttest analyses examined between-group differences after 12 weeks of therapy and a 12-week rest period. The purpose of this testing point was to explore the effects of the emergent literacy-enhanced intervention after one block of therapy combined with a rest period to assess the sustainability of the therapy intervention. Results at this point indicated that the experimental group achieved higher scores on all PALS-Pre-K tasks in comparison to the children in the control group. Statistically significant differences were found on Letter Identification, Phonological Awareness, and Print and Word Awareness. In general, these results suggest that the emergent literacy enhanced therapy had a positive impact on the emergent literacy skills of preschool children – skills that are important predictors of later reading (Justice et al., 2003). Further to this, it is important to note that the increase was evident after the 12-week rest period suggesting that the effects of the therapy were maintained after therapy ceased.

To further understand the specific effects of emergent literacy intervention, both the experimental and control groups were divided into two subgroups – children with severe and less severe (moderate) language impairments as indicated by their norm-referenced percentile scores on the CELF-P2 (the severity division criteria is described fully in Chapter 3). The decision to explore group difference in consideration of severity of language impairment was based on Justice et al. (2003) discussion of the importance of severity as an influencing factor on children's future literacy outcomes. Therefore, a second component to the first research objective was to explore whether or not the severity of children's language impairment played a significant role in determining how children responded to the experimental and traditional interventions. Results at T2 - the

first posttest assessment point (after 12 weeks of therapy and 12-week rest period) - indicated that for each dependent measure children with severe language impairments in the experimental group consistently outperformed children in the control group. Visual inspection of the means in Tables 2, 4, and 6 illustrated higher mean scores, however, these differences were not statistically significantly different. Similarly, children with moderate language impairments in the experimental intervention group outperformed children in the control group on two of the three PALS-Pre-K tasks. On the Print and Word Awareness task, the control group scored slightly better than the experimental group, but statistically, these results were not significant. At the same time, it was important to consider the Mean score gains within a clinical framework and as such, for each analysis children mean scores were plotted against developmental range scores as suggested by Invernizzi et al. (2004). When plotted against developmental range norms, the data suggests that children with moderate language impairments in both types of therapy, experimental and control, achieved at or above developmental range norms. In other words, children with moderate language impairments made clinically significant gains in their alphabet knowledge, phonological awareness, and print and word awareness after the first block of therapy, regardless of therapy type. In contrast, for the children with severe language impairments, only those who participated in the experimental intervention made clinically significant gains and were functioning within developmental ranges on all three PALS Pre-K tasks after the first block of therapy and the rest period. Taken together, the results suggest that the emergent literacy-enhanced intervention had more clinically significant impact on children with more severe language impairments. For each dependent variable, children with severe language



impairments in the experimental group outperformed children in the control group. This is an important finding, suggesting that preschool language service-providers consider emergent literacy-based interventions in their support regimes for children with more severe language impairments. It may be that children with severe language impairments need more intense and explicit instruction in direct emergent literacy skills in order to achieve literacy outcomes within developmental ranges.

Generally, the pattern of results observed at the first posttest indicated that the experimental emergent literacy intervention may be particularly effective in improving children's alphabet knowledge, phonological awareness, and print and word awareness. The experimental intervention may be particularly effective for children with more severe language impairments. This result is consistent with previous research that has pointed to the important relationship between early skills and later reading development (Hamill, 2007). Research demonstrates consistently that the ability to identify letters is one of the most significantly reliable predictors of later reading ability and that children's print and phonological awareness are also strongly related to later reading-related skills (Scarborough, 2001).

### *Effects on Written Language and Phonological Awareness Skills at T3.*

The second set of posttest analyses (T3) explored between-group differences after children completed the second 12-week block of therapy and corresponding 12-week rest period (see study design illustrated in Figure 1). At this point, all participants had completed two blocks of therapy and two rest periods. However, an important factor to consider at T3 was the effect of grade one instruction. That is, all of the children

participating in the study completed their second block of therapy just prior to entering grade one. The 12-week rest period that followed the second block of therapy occurred while children were in the fall semester of their grade one year. This resulted in the second posttest data being collected 12 weeks into the grade one school semester – approximately at the end of November. At first, this may appear as a significant confounding variable in this set of analyses but in fact, it presented the study with an opportunity to consider the effects of formal grade one schooling on preschool language therapy. This offered a particularly interesting situation in that going into grade one, children in the experimental group appeared to have a significant advantage over children in the control group in regards to their emergent literacy skills as measured at the first posttest point. Specifically, as discussed in the previous section, children in the experimental group outperformed children in the control group on all measures of emergent literacy – this was particularly true for children with severe language impairments. Therefore, in light of these previous findings, an interesting question emerged – that is, would the gains measured after one or two blocks of therapy be sustained as children entered grade one? Although many of the children within the program attended various kindergarten programs, grade one curriculum was a particular important consideration as it involved a significant reading-based focus.

Results of the T3 between-group analyses indicated that the differences that existed at the first posttest point – after one block of therapy – were no longer evident. That is, at T3, no statistically significant between-group differences were found for Letter Identification, Phonological Awareness, and Print and Word Awareness. As illustrated in Figures 10 and 15 there were descriptive differences between groups on Means scores of

Phonological Awareness and Print and Word Awareness, but these were negligible. In general, results indicated that after two blocks of therapy, children in the control group were performing as well as the children receiving the literacy-enhanced intervention on measures of Letter Identification, Phonological Awareness, and Print and Word Awareness. This result was surprising when placed in the context of the findings at the first posttest where significant between-group difference did emerge. However, considering the fact that at T3, children had completed three months of grade one curriculum invited the hypothesis that formal schooling may have moderated the effects of therapy as indicated by the significant results of the first posttest analyses. In other words, it was hypothesized that the emergent literacy gains achieved by the experimental groups prior to school commencing were moderated by the experiences of grade one. Within the scope of this study, it was only possible to speculate about what factors within the grade one experience contributed to this moderation of results, but an important consideration should be the potential lack of continuation of support from preschool into grade one. In other words, children eligible for preschool support through SSN may no longer have been eligible for support within the school board. If this was indeed a possibility, the call would be for increased attention to the transitions of children with language impairments from preschool to elementary schooling. More generally, it would be important for both the Ministry of Children and Youth Services and the Ministry of Education to work more collaboratively to support a continuum of services between preschool and elementary schooling. This hypothesis could have been empirically validated by including a posttest point at the immediate end of the second block of therapy – immediately prior to grade one commencing – but this was not within the scope of the

clinical service delivery model and SSN and was considered a limitation of the study. However, although only speculation, it is hypothesized that the results of a posttest immediately following the second block of therapy would demonstrate significant between-group difference similar to those found at T2 – after one block of therapy.

Similarly to the first set of posttest analyses, the next step here was to investigate whether the effects of two blocks of therapy changed depending on children's language characteristics. To investigate this, both the experimental and control groups were divided into two subgroups – children with severe and less severe (moderate) language impairments as indicated by their norm-referenced percentile scores on the CELF-P2. Results of the severity of language impairment analyses indicated that children with severe language impairments in the experimental intervention statistically significantly outperformed the children with severe language impairments in the control group on Print and Word Awareness; however, there were no statistical differences on Letter Identification, and Phonological Awareness. In general, the results of the language severity grouping analyses were similar to the general between-group analyses. That is, that the between-group difference observed after one block of therapy were no longer evident after one semester of grade one schooling.

Although no statistically significant between-group differences were found in grade one, from an applied research perspective it was informative to consider the clinical significance of the gains achieved by children on the PALS measure in grade one. To consider such data, grade one PALS scores were measured against the development range benchmarks provided in the PALS technical manual (Invernizzi et al., 2004). Children with moderate language impairments in both the experimental and control groups made

clinically significant gains in alphabet knowledge and phonological awareness. In other words, at the second posttest point, children with moderate impairments were achieving at or above developmental benchmarks on alphabet knowledge and phonological awareness regardless of the type of language therapy they received. This was not a uniform finding for children with severe language impairments. As illustrated in Figure 11, only children with severe language impairments who were in the experimental group had Phonological Awareness posttest scores that were above developmental benchmarks. Neither group of children with severe language impairments reached developmental benchmarks on any other PALS measure. A particularly important finding here centered on the clinically significant comparisons of the PALS Print and Word Awareness task; the results illustrated in Figure 16. These results indicated that all children, regardless of the group status or the severity of language impairment, were performing below developmental benchmark scores on Print and Word Awareness. It is important to consider why children did not reach the benchmarks on this particular task. The Print and Word Awareness task on the PALS 1-3 required children to move beyond isolated skill sets such as letter identification or phonological awareness. On both of these single-skill tasks, many children performed at or above developmental benchmarks. However, the Print and Word Awareness tasks required children to utilize a complex set of skills including letter identification, phonological processing, and a complex set of language skills. It may be that the cognitive complexity of the Print and Word Awareness task placed too high of a cognitive demand on participating children – children who had identified language impairments from early on in their lives. It may be that in grade one, children are beginning to master the lower-order skills such as letter identification or

phonological awareness, but may still be struggling with higher-order skills such as Print and Word Awareness. An implication of this finding is that children with language impairments require increasingly more support as developmental literacy skills become more complex. It may be that the emergent literacy therapy adopted in this study did not address higher-order emergent literacy skills with enough explicitness or intensity.

### *Grade One Report Cards*

Using the clinical battery of posttest assessments, the general finding was that children in both the experimental and control groups were achieving at commensurate levels on all of the grade one measures. The implications of these findings centred around continuation of services, cognitive complexity of grade one tasks, and intensity of support for preschool children with language impairments. An important applied component to this study included children's achievement on their grade one report card. The results of the report card analyses confirmed the results of the clinical assessments in that children and the experimental and control group demonstrated no statistically significant difference in their grade one reading and writing report card mean scores. In addition, it is also important to note that both groups had mean scores that fell below Provincial standards. In other words, children with language impairments, whether they had received the emergent literacy-enhanced language intervention or the traditional language therapy, were reading below provincial standards. In line with previous discussion, these results suggest that even after receiving two blocks of therapy children were still lacking expertise in critical skills necessary for successful reading achievement.

### *Effects on Oral language Skills*

Although the primary objective of this study was to assess the emergent literacy outcomes of children participating in an emergent literacy-enhanced language therapy, it was also important to assess how children progressed in their language – the very skills that were deemed problematic and had led to the child’s referral to SSN. Children’s oral language abilities, as measured broadly with the CELF Core Language Score, were assessed after completing the 12-week intervention and 12-week rest period. When comparing the experimental group to the control group of the entire sample at the first posttest point, the experimental group outperformed the control group. These results were similar for both children with severe language and moderate language impairments. However, it should be noted also that the average standard core language score achieved by the experimental group was around six points higher ( $M = 97.80$ ) than the control group ( $M = 91.44$ ). Both of these mean scores were above 85 – the clinical scores used as a benchmark for impairment. As such, both children in the experimental and control groups had posttest test language scores that were considered within developmental norms. Overall, these results are encouraging, indicating that children’s language skills improve as a result of participating in language therapy, whether the intervention is enhanced with an emergent-literacy component or not. However, these results also suggest that the addition of an emergent literacy component is beneficial for children with language impairments not to develop their emergent literacy skills but also to improve their language skills. Furthermore, these results may support the idea Teale and Sulzby (1986) put forth, that language development (oral, reading, and writing) does not

develop in separate stages but instead as a set of skills that are interrelated, concurrent, and continuously influencing one another.

### **Theoretical and Clinical Implications**

Three broad sets of important findings emerged from this study. The first finding indicated that children with specific language impairments benefited from the preschool language therapy that included a component of emergent literacy from Read It Again!. The second related finding indicated that the impact of this preschool emergent literacy language therapy may not be sustainable in grade one. The third general finding was that the pattern of results was not consistent across all of the PALS measures. That is, children may have demonstrated clinically significant gains on Letter Identification but not on Print and Word Awareness. In other words, it may be that the nature of the intervention itself explains why it was successful in affecting children's achievement differently at each posttest point, at different magnitudes of strength, and on some but not other PALS tasks. As discussed in Chapter 2, certain skills are acquired more effectively through embedded, naturalistic approaches to literacy instruction, while others are better learned through explicit teaching. Children's alphabet knowledge and print awareness are highly sensitive to environmental influences and are skills that can be effectively taught through embedded approaches (Justice & Ezell, 2002). On the other hand, researchers have pointed to the need to use a direct, explicit approach to teach phonological awareness – a skill that may be less susceptible to environmental influences (e.g., Justice et al. 2003; O'Connor et al, 1993). Although the experimental intervention employed in this study was designed to balance an embedded-explicit approach, it may be that the



explicit, direct teaching components were not explicit, systematic, or intensive *enough* to influence the weak phonological awareness and print and word awareness skills of the children with language impairments in the study. In general, the findings revealed that response to intervention was dependent on the severity of language characteristics of the children.

Following this idea, an important applied implication is that children with more severe language skills in preschool may need more targeted instructional opportunities compared to children with stronger skills in these language domains. In other words, the most appropriate form of therapy and instruction seems to depend on individual child characteristics and the particular skills that need to be developed. For instance, Justice et al. (2003) suggest that children with severe impairments experiencing difficulties with emergent literacy development seem to be less impacted by intervention and may require more systematic or structured opportunities to develop key skills. As such, interventions may need to individualize instruction to ensure child progress through the hierarchical process of literacy development in a systematic method. For example, Bailet, Repper, Piasta, and Murphy (2009) discuss the process of developing phonological sensitivity. Given the English language is an alphabetic language, to be a proficient reader a child must first have the ability to analyze and manipulate spoken words into smaller phonemic units, which over time will transfer into associating them to letters and graphemes. Phonological awareness involves a hierarchy of skills; the manipulation of syllables and rhyme patterns are more primary skills that must be mastered in order to move towards more complex skills that require advanced capabilities for tasks such as onset-rime and full phoneme detection and manipulation (Anthony & Francis, 2005). Similarly, children

must first master their letter names and single letter-sound associations before they begin to map out English sounds onto written letters. The children involved in this study still had difficulties with letter identification tasks at the second posttest; suggesting that children with severe language impairments could not yet recognize all 26 letters of the alphabet by the time they had reached grade one. Perhaps an individualized intervention utilizing structured, systematic, and explicit intervention following the hierarchy of literacy development would help ensure children master the essential basic skills before introducing more complex tasks. In general, it may be concluded here that when working with children with severe language impairments emergent literacy and language intervention may need to be administered more frequently, with greater explicit and intensive focus on phonological awareness, and print and letter knowledge to have the best possible literacy outcomes.

A final consideration here was children's reading achievement as assessed using the report card reading scores. The results of the regression analysis suggested that children with language impairments whether they had received the emergent literacy-enhanced language intervention or the traditional language therapy were reading below provincial standards. In line with previous discussion, these results suggest that even after receiving two blocks of therapy children were still lacking expertise in critical skills necessary for successful reading achievement.

### **Limitations**

This thesis has a number of limitations that are important to consider. First, this study was implemented in an applied setting at Speech Services Niagara. The movement of this type of research from the laboratory to a naturalistic clinical setting poses a

number of threats to validity and reliability. As indicated in Chapter three on methodology, the intervention was administered by SLPs working at SSN within their typical clinical setting and their typical clinical protocols. This type of approach to intervention research involves releasing control of a number of factors. Therefore, it is important to consider the results here with some reservation. Issues such as a therapist-effect, individual differences in children, and various measurement issues need to be considered. Second, the effect sizes were relatively small for each of the outcomes. This may have been attributed to the lower statistical power in all of the analyses. The sample size in this study was relatively small – particularly when measuring between-group difference. In light of this statistical confound, one must consider the possibility of type-one error, or even type-two error – the non-detection of significant differences that may have been detected with a larger sample size. To address this issue, this study was considered exploratory in nature and calls for replication studies with a larger sample size.

Generalizability of these results is limited. It is important to couch the current results within the settings in which the study took place. Given the issues of reliability due to the effects of studying this intervention within a natural setting, along with the small sample size, it is important not to generalize these results to speech and language services in general. Rather, the results of the current study could act as learning-points to consider how services are delivered and furthermore, how further research in this area may be conducted.

The current study did not sufficiently consider control issues such as SES, Home environment, primary language, attention skills, motivation, etc. The results of the current

study could certainly have been affected by such moderating variables. Future research in this area should consider these types of environmental factors.

## **Conclusion**

The current study is important as it attempts to bridge the gap that frequently develops between researchers, policy makers, and practitioners. This study begins this bridging process by testing the efficacy of empirically-supported intervention tactics with children within a 'real-world' naturalistic clinical setting. Although previous research has studied the link among language difficulties, emergent literacy skills, and later reading success, a very limited amount of longitudinal research has studied emergent literacy interventions with preschoolers within the natural clinical setting. This applied type of research is important both theoretically and practically as this field of study requires a more complete understanding of preschool emergent literacy, the developmental trajectories of emergent skills, the most effective methods to measure such development, and best techniques for supporting children who demonstrate language impairments in their preschool years.

The provision of preschool emergent literacy intervention has emerged as a seemingly powerful vehicle for reducing the risk for later problems with conventional literacy. Given the current interest in identifying approaches that effectively and efficiently promote skill development in areas associated with literacy outcome, particularly with at risk children, this study provides evidence that participation in explicit skill-building activities is an effective means for enhancing emergent literacy growth. The findings here suggest that there is a possible link between severity of

language impairment during preschool and the tendency for these children to have lower reading outcomes in elementary years - children with more severe impairments are less influenced by intervention. Therefore, for these children, qualitatively and quantitatively different intervention approaches may be necessary to optimize early and later literacy outcomes.

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## APPENDICES

## Appendix A

### Information Letter/Consent Form

#### Informed Consent

Date: **May 18, 2006**

Project Title: **Emergent Literacy for Preschool Children with Language Difficulties**

Co-Principal Investigator: **John McNamara**  
**Department of Child and Youth Studies,**  
**Brock University**  
 Tel: **905.688.5550 ext 3835**

Co-Principal Investigator: **Jackie Van Lankveld**  
**Speech Services Niagara**  
 Tel: **905.688.3550**

#### INTRODUCTION

You are invited to participate in a study that involves research. The purpose of this study is to develop and measure the effects of an emergent literacy facilitation program designed to support pre-school children who have been identified as having speech and/or language difficulties. The research will be conducted by Dr. John McNamara from Brock University in partnership with Jackie Van Lankveld, the Director of Speech Services Niagara. The research is aimed at measuring the effectiveness of an emergent literacy facilitation program that includes a primary focus on phonological and print awareness on children as they progress from pre-school (age 3 and 4) to grade one (age 6).

#### WHAT'S INVOLVED

As a participant, you will be asked to possibly include your child in an enhanced language therapy that includes a pre-literacy component in addition to the typical language therapy they would receive from Speech Services Niagara. As a participant your child will be randomly assigned to one of two groups. The first group will include children who receive the enhanced form of language and literacy therapy. The new pre-literacy component of this therapy is designed to support children's reading as they progress into elementary school. The second group will include children who will receive the typical language therapy. Both groups of children are important parts of the study. You may be concerned that your child will be assigned to the typical language therapy group and therefore not receive the enhanced literacy-based therapy. This new therapy has not yet been proven to be enhanced and testing this new therapy is the purpose of the study. We are currently unaware of the effects of this therapy. At the end of the study you may access the summary of the results of this study which will describe the components of the enhanced therapy – components that you can implement at home and at school.

Your child's participation in this study will take no longer than typical language therapy they would be provided if they did not participate in the study. Children participating in the study will not notice any difference in the delivery or service they will experience in their language therapy sessions. In addition to the therapy sessions, we will be contacting parents to conduct follow-up assessments. There will be two follow-up assessments approximately 3 months and 1 year after their last therapy session at SSN. The follow-up assessments will take approximately 1 hour and may take place at the Niagara Peninsula Children's Centre or at your home. The follow-up assessment will be conducted by the same Speech and Language Therapist that completed your child's therapy. An honorarium of \$50 will be paid to participating families at the end of the last follow-up assessment.

#### POTENTIAL BENEFITS AND RISKS

Possible benefits of participation include your child gaining enhanced literacy skills that will assist in her/his future reading ability. There are no known or anticipated risks associated with

participation in this study. Your decision to participate or not is totally up to you and has no bearing whatsoever on your therapy services. You may be concerned that when participating in the study your child will not receive the enhanced literacy-based therapy. This new therapy has not yet been proven to be enhanced and this is the purpose of the study. You may access the summary of the results of this study which will describe the components of the enhanced therapy – components that you can implement at home and at school.

### CONFIDENTIALITY

All information you provide is considered confidential; your name will not be included or, in any other way, associated with the data collected in the study. Furthermore, because our interest is in the average responses of the entire group of participants, you will not be identified individually in any way in written reports of this research. Data collected during this study will be stored with your child's speech and language therapist as well as with the principal investigator. Data pertaining to the research study will be kept for 10 years after which time it will be destroyed. Access to this research data will be restricted to the research team consisting of Dr. John McNamara, Jackie Van Lankveld (Director of Speech Services), and the Research Assistants working on the research project.

### VOLUNTARY PARTICIPATION

Participation in this study is voluntary. If you wish, you may decline to answer any questions or participate in any component of the study. Further, you may decide to withdraw from this study at any time and may do so without any penalty or loss of benefits to which you are entitled.

### PUBLICATION OF RESULTS

Results of this study may be published in professional journals and presented at conferences. Feedback about this study will be available by contacting the principal investigator at the above address. A summary of preliminary results will be available in September 2007.

### CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions about this study or require further information, please contact the Principal Investigator using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University (insert file #). If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca.

Thank you for your assistance in this project. Please keep a copy of this form for your records.

### CONSENT FORM

I agree to participate in this study described above. I have made this decision based on the information I have read in the Information-Consent Letter. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this consent at any time.

Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## Appendix B

Sample of a Lesson Plan for the Literacy Component of One Experimental  
Intervention Session

| Week Eight   |   |
|--|---|
| Spot's Birthday Party<br>by Eric Hill  |   |
| Activity #3  |   |
| Objective: To segment words into syllables and to blend syllables into words |   |
| Phonological Awareness   | Materials: book   |
|  | <p>Activity Description:</p> <ul style="list-style-type: none"> <li>Tell the children how some words have a lot of parts, but others have only one part. You could say:             <ul style="list-style-type: none"> <li><i>Today we are going to listen for the parts of words. Some words have two parts, like the word <b>birthday</b>. Clap for each syllable in this word: birth-day. (Be sure to clap as you say the syllable in the word, not before or after.) Some words have only one part, like the word <b>Spot</b>. Clap for the one syllable in this word: Spot.</i></li> </ul> </li> <li>Now, tell the children that you are going to say some words that are broken into their smaller parts. Tell the children to try to identify the word you are saying. Use these seven words, and say them syllable-by-syllable with a 2-second pause between the syllables.             <ul style="list-style-type: none"> <li><b>Par-ty</b></li> <li><b>Cup-board</b></li> <li><b>Some-one</b></li> <li><b>Be-hind</b></li> <li><b>Sill-y</b></li> <li><b>Ta-ble</b></li> <li><b>Cur-tain</b></li> </ul> </li> </ul> <p>After you say each word and the children have an opportunity to guess what it is, model the correct answer. You could say:</p> <ul style="list-style-type: none"> <li><i>I said part-y The word is party. I broke the word into its two parts, part-y, and then you had to put them together to figure out the word. Party has two parts: part-y. Let's say those two parts: part-y Now let's say the word with all its parts pushed together: party.</i></li> <li><i>I said cup-board. The word is cupboard. I broke the word into its two parts, cup-board, and then you had to put them together to figure out the word. Cupboard has two parts: cup-board. Let's say those two parts: cup-board. Now let's say the word with all its parts pushed together: cupboard.</i></li> </ul> |
| Activity #4  |   |
| Objective: To recall three or more major events in a story                   |   |
| Narrative  | Materials: book, chalkboard or large paper to write down ideas  |
|  | <p>Activity Description:</p> <ul style="list-style-type: none"> <li>Re-read the book.</li> <li>During reading: Comment about major events in the story. You could say:             <ul style="list-style-type: none"> <li><i>It is Spot's Birthday.</i></li> <li><i>Spot is playing hide and seek.</i></li> <li><i>Spot found the bear behind the curtain.</i></li> </ul> </li> <li>After reading: Talk with the children about the major events of the story. You could say:             <ul style="list-style-type: none"> <li><i>Spot was playing hide and seek with his friends. Let's try to remember where Spot found his friends.</i></li> </ul> </li> <li>Write the major events on the chalkboard or paper. After listing several events, read the list to the children. You could say:             <ul style="list-style-type: none"> <li><i>These are all the events we remembered from our story.</i></li> </ul> </li> </ul>  |

## Appendix C

Sample Outline of One Complete Experimental and Control Group Therapy Session for  
Children With the Same Language Goals

| <b>Language Goals:</b>  |   |  |
|---|---|--|
| 1) Understanding and use prepositional phrases/concepts: behind, in front, beside<br>2) Will use negation (is not, do not) with 80% accuracy in structured task.<br>3) Will use possessive pronouns his, hers, theirs with 80% accuracy in structured task.<br>4) Expand expressive vocabulary. |   |  |
|   | <b>Experimental Group<br/>(Literacy-Enhanced Therapy)</b>   | <b>Control Group<br/>(Traditional Therapy)</b>   |
| <b>Introduction</b>   | <ul style="list-style-type: none"> <li>• Open the session with a discussion about birthdays. Ask the child how old they are. Do they remember their birthday party? Did they get any toys? What else might they see at a birthday party?</li> <li>• Read Spot's Birthday Party and follow the outlined lesson plan as per the modified <i>Read It Again!</i> regime</li> <li>• Review the prepositions behind, in front and beside as you find the animals in the book.</li> <li>• Talk about what you see at a birthday party</li> </ul>   | <ul style="list-style-type: none"> <li>• Open the session with a discussion about birthdays. Ask the child how old they are. Do they remember their birthday party? Did they get any toys? What else might they see at a birthday party?</li> </ul>  |
| <b>Activity One</b>   | <p><u>Target:</u> possessive pronouns HIS/HERS<br/> <u>Target:</u> expressive vocabulary – toy labels and actions</p> <ul style="list-style-type: none"> <li>• Pretend it is a birthday party and the children open presents to give to the boy and girl dolls.</li> <li>• Place 10 pictures of different toys in small presents that can be opened.</li> <li>• Let the child open the present one at a time.</li> <li>• Let the child label each toy inside the present.</li> <li>• Talk about what we do with each toy. Think of an ACTION word. Can we push the toy (car), pull the toy (wagon), throw the toy (ball), jump with the toy (rope), fly the toy (kite).</li> <li>• Following the discussion of what we do with the toy, let the child decide whose toy it is. The SLP can cue the child "Is it <i>her</i> toy or <i>his</i> toy?". As the child gets</li> </ul> | <p><u>Target:</u> possessive pronouns HIS/HERS<br/> <u>Target:</u> expressive vocabulary – toy labels and actions</p> <ul style="list-style-type: none"> <li>• Pretend it is a birthday party and the children open presents to give to the boy and girl dolls.</li> <li>• Place 10 pictures of different toys in small presents that can be opened.</li> <li>• Let the child open the present one at a time.</li> <li>• Let the child label each toy inside the present.</li> <li>• Talk about what we do with each toy. Think of an ACTION word. Can we push the toy (car), pull the toy (wagon), throw the toy (ball), jump with the toy (rope), fly the toy (kite).</li> <li>• Following the discussion of what we do with the toy, let the child decide whose toy it is. The SLP can cue the child "Is it <i>her</i> toy or <i>his</i> toy?". As the child gets used to the format, the SLP can sub-step</li> </ul> |

|                       |  |  |
|-----------------------|--|--|
|                       | <p>used to the format, the SLP can substep and merely asks “Whose toy is it?”</p> <ul style="list-style-type: none"> <li>• After all the presents have been distributed, review what the girl and boy can do with each toy.</li> </ul>   | <p>and merely asks “Whose toy is it?”</p> <ul style="list-style-type: none"> <li>• After all the presents have been distributed, review what the girl and boy can do with each toy.</li> </ul>   |
| <b>Activity Two</b>   | <p><u>Target:</u> Negation</p> <ul style="list-style-type: none"> <li>• Continue to pretend it is a birthday party. Play a “matching game” with construction paper presents. Each present has a picture of one of the ten toys found in the previous activity glued on it, and each toy appears on a present twice.</li> <li>• Place all the presents face down. As the child turns over two presents, they can say “They match” or “They <i>do not</i> match”. Review what you can do with each toy as you find it. Wave your finger to promote the use of negation.</li> </ul> | <p><u>Target:</u> Negation</p> <ul style="list-style-type: none"> <li>• Continue to pretend it is a birthday party. Play a “matching game” with construction paper presents. Each present has a picture of one of the ten toys found in the previous activity glued on it, and each toy appears on a present twice.</li> <li>• Place all the presents face down. As the child turns over two presents, they can say “They match” or “They <i>do not</i> match”. Review what you can do with each toy as you find it. Wave your finger to promote the use of negation.</li> </ul> |
| <b>Activity Three</b> | <p><u>Target:</u> Prepositional phrases: in front, behind, beside, etc.</p> <ul style="list-style-type: none"> <li>• These prepositions were targeted through reading the book in the introduction activity</li> </ul>   | <p><u>Target:</u> Prepositional phrases: in front, behind, beside, etc.</p> <ul style="list-style-type: none"> <li>• Play “Prepositional Bingo” (a game where each Bingo square shows common toys and objects behind/in front of/beside other objects)</li> <li>• As they come up in the game, use the images on the Bingo board to practice the using the prepositions to describe the images</li> </ul>  |
| <b>Homework</b>       | <ul style="list-style-type: none"> <li>• ask the child to cut out and glue pictures of toys from magazines that they like on one page of their language book and toys that they DO NOT like on another page. Encourage them to practice “I like _____” and “I do not like _____”.</li> <li>• Encourage the child to talk about what they can do with each toy (action word vocabulary).</li> <li>• Encourage the child to also clap out the syllables for all the toys that he likes.</li> </ul>   | <ul style="list-style-type: none"> <li>• ask the child to cut out and glue pictures of toys from magazines that they like on one page of their language book and toys that they DO NOT like on another page. Encourage them to practice “I like _____” and “I do not like _____”.</li> <li>• Encourage the child to talk about what they can do with each toy (action word vocabulary).</li> <li>• Provide families with the matching game cards from negation activity so they can repeat this activity at home</li> </ul>  |

## Appendix D

Book Titles, Learning Domains & Literacy Objectives for the 12-week Literacy-  
Enhanced Experimental Intervention

| <b>LEARNING DOMAINS:</b> |
|--------------------------|
| Print Knowledge          |
| Vocabulary Skills        |
| Phonological Awareness   |
| Narrative Skills         |

| <b>SESSION:</b> | <b>BOOK TITLE:</b>      | <b>ACTIVITY #:</b> | <b>LITERACY OBJECTIVES:</b>   |
|-----------------|-------------------------|--------------------|---|
| 1               | Chicka Chicka Boom Boom | 1 & 2              | -recognition of print carrying message of story<br>-use of colour names             |
| 2               | Chicka Chicka Boom Boom | 3 & 4              | -identification of rhyme<br>-description of setting, characters & events            |
| 3               | Sheep Take a Hike       | 1 & 2              | -recognition of print carrying message<br>-comprehension and use of new nouns       |
| 4               | Sheep Take a Hike       | 3 & 4              | -identification of rhyme,<br>-description of setting, characters & events           |
| 5               | The Letters Are Lost    | 1 & 2              | -recognition of left-right directionality<br>-comprehension and use of verbs        |
| 6               | The Letters Are Lost    | 3 & 4              | -syllable segmentation and blending<br>-recall of 3+ events in a story              |
| 7               | Spot's Birthday Party   | 1 & 2              | -recognition of left-right directionality<br>-comprehension and use of prepositions |
| 8               | Spot's Birthday Party   | 3 & 4              | -syllable segmentation and blending<br>-recall of 3+ events in a story              |
| 9               | Growing Vegetable Soup  | 1 & 2              | -letter naming<br>-comprehension and use of adjectives                              |
| 10              | Growing Vegetable Soup  | 3 & 4              | -syllable segmentation and blending<br>-recall of 3+ events in a story              |
| 11              | The Mitten              | 1 & 2              | -letter naming<br>-comprehension and use of new animal vocabulary                   |
| 12              | The Mitten              | 3 & 4              | -identification of initial sounds<br>-recall of 3+ events in a story                |



## Appendix E

### Traditional Therapy Checklist for Activities to be Used in the Control Group Sessions

#### **Traditional Therapy Includes:**

- Games/structured activities
- Books for bombardment, sequencing, narratives
- Drill work/cards
- Hierarchy of tasks: bombardment
  - Discrimination
  - Words
  - Phrase
  - Sentences
  - Conversation carryover (natural talking)
- May include themes
- Label names under pictures of words
- May include crafts/toys/books for carryover conversation

#### **Does NOT include:**

- Book reading focused on print, the setting, characters, etc.
- Alliteration
- Segmenting
- Rhyming
- Letter recognition
- Letter/sound correspondence

## Appendix F

### Samples of Standardized Literacy Homework for Children in the Experimental Group

#### Session 1

##### ***Target: Print Awareness***

##### What to do this week:

- Before reading the book to your child, read the **title** of the book and point to **each word** as you read it. Explain that this is the ‘name’ of the story, or the title.
- Ask your child if he/she can find the **words** on the first page, which you are about to read (as distinct from the pictures)
- As you read the book, **follow each word with your finger**. Make a point of telling your child that you start reading over here (on the left) and move along to the right side of the page.

You can repeat this activity for other books that you may be reading to your child during the week.

#### Session 3

##### ***Target: Introducing New Words Into Your Child’s Vocabulary***

##### What to do this week:

- As you read the homework book together, or another book of your child’s choice, point out a few words which may be new to him/her and give a **brief explanation**.
- They may be **names of things** (eg. *Yak* – “That’s an animal that looks a bit like a bull”) or **descriptive words** (eg. *Plaid* – “That’s a pattern made with different coloured lines, like the one in the picture”) or **action words** (eg. *Creating* – “That means that they are making something”) or **other types of words** (eg. *Boldly* – “That means that they felt very brave and they weren’t scared at all when they went up to the cave”).
- At the end of the story **re-visit** some of the new words which you explained to your child, showing the relevant pictures if possible and see if he/she can remember something about them (eg. “Do you remember what we do with an xylophone?”)

You can repeat this activity for other books that you may be reading to your child during the week.

## Appendix G

### Ethics Approval

FROM: Michelle McGinn, Chair  
Research Ethics Board (REB)

TO: John McNamara, Child and Youth Studies  
Naomi Gutknecht

FILE: 08-221 - MCNAMARA/GUTKNECHT  
Masters Thesis/Project

DATE: January 26, 2009

The Brock University Research Ethics Board has received the research proposal:

***A Study of Emergent Literacy: Preparing Children for Grade One***

Initial screening of your proposal has been completed. Your proposal has been submitted for an **Expedited Review**.

If a reviewer of a proposal submitted for expedited review decides that a full review is warranted, that proposal will be reviewed at the next REB meeting. We will be in touch by Email when the reviewers have made their recommendations (approximately 15-20 working days).

Thank you for submitting your proposal.

**Please remember that no research with Human Participants shall commence prior to receiving clearance from this committee.**

MM/an