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Examining the Impact of a Little Book Intervention on the Early Literacy Skills of Children in Head Start via the Individual Growth and Development Indicators

BY

Laura J. Holstius

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

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IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY
CHARLESTON, ILLINOIS

2008
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Abstract

This study examined whether or not exposure to Rhyme and Letter Little Books significantly increased the rhyming and initial sound/alliteration recognition skills of academically at-risk preschool children. Twice a week for eight weeks, students in a Head Start program listened to a researcher present a lesson with either the Rhyme and Letter Little Books or the original Little Books. It was hypothesized that statistically significant differences in the rhyming and initial sound recognition skills between the two groups would exist at the end of the intervention because the Rhyme and Letter Little Books were created to foster *phonological awareness skills* in pre-readers, while the original Little Books that were designed to make *print concepts* accessible for pre-readers. The Individual Growth and Development Indicators (IGDIs) were used as a general outcome measure for pre- and post-testing to expand our knowledge of best practices under a Response to Intervention (RTI) approach within early education. Two subtests from the Phonological Abilities Test (PAT) were also used for pre- and post-test comparisons. Results indicated that growth was observed across each of the literacy measures for both conditions from the beginning to the end of the eight-week intervention. Implications drawn from this exploratory study and towards the field of early literacy assessment and intervention are discussed.

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Introduction

Risk Factors in Early Literacy Development

Because it has been shown that children who struggle with literacy development face considerable difficulty catching up to their peers in later school grades (Juel, 1988), practitioners have become concerned with finding ways to improve students' reading skills before it becomes too late (Justice & Pullen, 2003). Recent findings indicate that certain risk factors, such as having a developmental disability or growing up in a home that does not speak the language spoken in school, increase a child's vulnerability in experiencing difficulties with fundamentals in emergent or early literacy skills (Justice & Pullen, 2003). Research also indicates that students who are behind their peers in terms of literacy knowledge face a significant risk of being placed in special education, with those most at risk including children who a) live in poverty, b) who do not speak English as their first language, or c) have speech-language disabilities (Missall, McConnell, & Cadigan, 2006).

Indeed, studies (e.g. McCormick & Mason, 1986; Torgensen, 2004) have shown that children from lower SES homes have less knowledge of letter sounds, words, and letters than those children coming from higher SES, and that parents from lower SES homes do not support the acquisition of prereading skills to the same degree as parents from a higher SES standing. Moreover, evidence indicates that at-risk children are likely to 1) have less exposure to printed materials outside of school, 2) visit the library less frequently, 3) have smaller vocabularies, and 4) be exposed to fewer "academically-stimulating experiences" than middle-class children (Smith, Brooks-Gunn, & Klebanov, 1997). However, when at-risk children are provided with early opportunities to

experience success, prevention of school failure and the facilitation of parent-school bonding become possible (VanDerHeyden & Snyder, 2006).

As such, researchers in the field of education must begin to increase their understanding of specific types of interventions that can improve early literacy skills in at-risk children to inform and increase program effectiveness for these young students. In recent years Head Start programs, the federally funded preschool program for children living in poverty, have faced repeated budget cuts as a result of shrinking grant allowances, making it nearly impossible for programs to adhere to Head Start Program Performance Standards and keep enrollment numbers high (NHSA, June 18, 2007 Report). In a February 14, 2007 Report, it was noted that “more than half (56 percent) of Head Start programs surveyed across the United States have been forced to cut early childhood health and education services for America's most at-risk children and families” resulting from “an 11 percent effective cut in federal support that could grow to 13 percent in Fiscal Year 2008” (NHSA, p. 1). Because the preschool years present a critical opportunity to positively impact children’s developmental trajectories, researchers must continue to seek out affordable intervention strategies to enhance early literacy skills in prereaders so “that all children enter kindergarten ready to learn to read” (Missall et al., 2006, p. 4).

Early Intervention

Although our nation’s educational aspirations are beginning to transition to preventive, rather than remediation practices, many argue that more research must be conducted to determine how to specifically improve the developmental trajectories of young students (VanDerHeyden & Snyder, 2006). Increasingly, educational researchers

are advocating a Response to Intervention (RTI) approach under a three-tiered framework in school systems in order to identify at-risk students in need of additional support (Vaughn & Roberts, 2007). Under Tier 1 (i.e. primary prevention), all students are universally screened each year and are provided with appropriate instruction practices (Vaughn & Roberts, 2007). For those students that do not respond to primary prevention, secondary intervention (Tier 2) is provided in the form of supplementary instruction to students where it is most needed (Vaughn & Roberts, 2007). Tertiary intervention (Tier 3) is designed for those students that require further intensive intervention, and frequent progress monitoring is implemented throughout this process (Vaughn & Roberts, 2007). Because RTI avoids a “wait-to-fail” model, many argue that this approach is beneficial because it promotes a continuous decision-making process that utilizes close progress monitoring of students’ skills (Davis, Lindo & Compton, 2007). Using progress monitoring under an RTI approach also increases the likelihood that students’ academic trajectories will be positively impacted because their rate of growth and development can be meaningfully evaluated against desired outcomes and goals set by the school.

Bradley, Danielson, and Doolittle (2005) note that because variations exist between school districts in terms of how the levels are operationalized, a single model of RTI has yet to be identified as the “gold standard” for other school districts to follow. However, the literature has identified several core features of a successful RTI model. These include: “(a) high quality, research-based classroom instruction, (b) universal screening, (c) continuous progress monitoring, (d) research-based secondary or tertiary interventions, (e) progress monitoring during interventions, and (f) fidelity measures” (Bradley et al., 2005, p. 486). Within an RTI model, decisions regarding additional

supportive services for students are based on the quality of student outcomes and responses to research-based interventions that have been implemented in a given school district (Bradley et al., 2005). Thus, proponents of RTI strongly emphasize that a successful RTI model that is used for special education placement decisions must be based on “structured, data-based problem solving, flexible service delivery, regular monitoring of student progress on socially valid outcome measures, and a focus on the natural classroom contexts” (Bradley et al., 2005, p. 486).

Today, RTI implementation within the context of early education remains restricted due to a predominant focus within the literature advocating “child find” practices, criticism regarding early diagnostic decision making, and limited methods for monitoring young children’s progress (VanDerHeyden & Snyder, 2006). However, VanDerHeyden and Snyder argue that extending the concept of RTI to include early education can improve our current educational system by “providing a paradigm for articulating the purpose of early education, evaluating the degree to which that purpose is being achieved, and determining how to alter efforts formatively to improve (a) programming efficiency and (b) programming effectiveness as measured by child growth, development, and learning” (2006, p. 522). Furthermore, RTI offers a solution “against the error-prone assumption of a within-child cause of poor learning or inadequate performance by focusing on environmental quality, curricular quality, and teaching strategies used in the classroom as the first step in multitiered intervention” (VanDerHeyden & Snyder, 2006, p. 525). That is, young children’s performance and growth can be more meaningfully and realistically evaluated within the context of their current environmental opportunities.

For instance, it has been shown that many children naturally develop an understanding of *emergent literacy knowledge* before kindergarten through their cultural and social contexts in which they live (Justice & Pullen, 2003). However, not all children have opportunities for early literacy experiences and often face significant difficulty in comprehending fundamentals in emergent literacy skills as a result (Justice & Pullen, 2003). Specifically, Justice and Pullen (2003) note that these *emergent literacy skills* include being able to a) comprehend “the function and form of print and the relationship between oral and written language” (Goodman, 1986; Justice & Ezell, 2001), b) recognize “words as discrete elements of both print and speech” (Bowey, Tunmer, & Pratt, 1984; Tunmer, Bowey, & Grieve, 1983), and c) show “sensitivity to the phonological structure underlying oral and written language” (Ball, 1997; Bradley & Bryant, 1983; Lonigan, Burgess, Anthony, & Barker, 1998) (p. 100). Emergent literacy components, which consist of early developing knowledge about reading and writing prior to conventional literacy instruction, appear to play a pivotal role in the development of later higher-level literacy skills (Justice & Pullen, 2003).

To increase the likelihood of future reading success, research indicates that having both *phonological awareness* (involving both knowledge and sensitivity to speech sound segments that are present in language) and *written language awareness* (involving both explicit and implicit knowledge regarding the nature of printed text) are crucial (Justice & Pullen, 2003). Numerous studies have shown that preschoolers’ knowledge in both written language and phonological awareness separately account for “significant proportions of variance in later reading ability” and appear to mutually interact in ways that facilitate later attainment of the alphabetic principle and fluency in reading (Justice

& Pullen, 2003, p. 100). In particular, phonological awareness skills appear to be essential in the process of learning how to read because they form the basis of early decoding (the mapping of printed word to verbal equivalent) that occurs within spelling-to-sound translations (Davis et al., 2007). If children do not grasp the underlying structural and sublexical aspects of spoken language, it becomes nearly impossible to grasp the alphabetic principle and benefit from guided instruction in reading (Justice & Pullen, 2003). Common measures of phonological awareness skills in children include skills in alliteration, rhyming, blending of syllables and speech sounds, segmenting syllables and speech sounds, and manipulating syllables and speech sounds (Davis et al., 2007).

Fortunately, options exist beyond merely assessing students' phonological skills. Results from a meta-analysis of the experimental research on learning to read conducted by the National Reading Panel (NRP) indicate that instruction in phonological awareness (PA) can successfully teach young students to manipulate and attend to speech sounds within words, and has been proven to be effective under various instruction conditions with diverse types of learners (National Institute of Child Health & Human Development (NICHD), 2000). Phonemic awareness training has been shown to improve reading performance in preschool and elementary students, children at-risk for reading failure, and in both normally progressing children as well as older disabled readers (NICHD, 2000). Furthermore, it has been demonstrated that classroom teachers as well as computers can provide effective PA instruction, and that this instruction can be successfully implemented with whole classrooms, small groups, or on an individual basis

as well. The NRP also emphasizes that training in PA in students does not need to be lengthy or time-consuming for it to be effective (NICHD, 2000).

It also appears that the most successful early phonological awareness interventions focus on specific skills. For instance, research studies (e.g. Schatschneider, Francis, Foorman, Fletcher, & Mehta, 1999) have shown that rhyme (an aspect of phonological awareness) appears to precede other phonological awareness skills (Runge & Watkins, 2006). Indeed, a factor-analytic study conducted by Runge and Watkins (2006) found that phonological awareness appears to be a two-dimensional construct in kindergartners; with one skill as the ability to identify and create rhyme, and the other skill as an ability to “isolate and perform mental tasks on phonological units” (Runge & Watkins, 2006, p. 383). As such, it has been argued that young children who do not possess strong phonological awareness skills will benefit most from interventions designed to enhance rhyming skills first (Runge & Watkins, 2006). Once these children’s rhyming skills have been established, interventions should then target multifaceted skills that “help children identify, isolate, and manipulate specific phonological units” (Runge & Watkins, 2006, p. 382). Afterwards, these children’s understanding of the alphabetic principle and phonetic decoding skills then become more feasible goals (Runge & Watkins, 2006).

Surprisingly, although the literature stresses the importance of early reading skill development and the classroom variables that appear to positively impact these skills, Missall and colleagues state that “very little is known about specific practices targeted at early literacy and language outcomes in preschools, particularly for at-risk groups” (2006, p. 4). Moreover, proven intervention approaches are not always applied in early

childhood settings - most often due to a mismatch between researchers' questions and educators' immediate needs. However, Justice and Pullen (2003) highlight three evidence-based methods that appear to increase emergent literacy skills. These include adult-child shared storybook reading, literacy-enriched play settings, and teacher-directed structured phonological awareness curricula. In particular, the structured phonological awareness curricula approach (particularly with respect towards rhyme and initial sound recognition or alliteration) appears to effectively support the needs of children who are at risk for reading failure (Justice & Pullen, 2003). However, more field-based research using interventions must be conducted in order to understand how to best prevent reading failure in the first place.

Little Books: One Intervention Approach

Using Little Books to complement language and literacy activities for prereaders exists as a Tier 1, whole-class intervention approach that educators can use to improve children's chances for future reading success. First developed by Mason and McCormick almost 30 years ago, the original Little Books were designed to allow young children to 1) experience the act of reading/reciting and to 2) begin to connect the spoken and written word at their developmental level. Each book has a unique story or theme that progresses throughout its 6-9 pages, with each page presenting a simple line drawing with a matching word or phrase written below it. The original Little Books were specifically designed to make *beginning speech-to-print concepts* accessible for pre-readers by utilizing high frequency words and familiar topics. In addition, due to the limited text per page in each Little Book, most 4- to 5- year old children can recite an entire Little Book after only a few initial modeling sessions with an adult.

It has been shown in a series of studies (Mason, McCormick, & Bhavnagri, 1986; McCormick & Mason, 1989a) that the original Little Books not only appear to a) match young children's interest in print, but also b) positively impact the early reading skills of those who typically do not succeed under the systematic reading instruction offered in formal education (Mason, Kerr, Sinha, & McCormick, 1990). Evidence from a preliminary study conducted by Mason and McCormick (1981) in which preschool children were introduced to the original Little Books at school (and were then provided with books at home) found that children began to 1) interact more verbally with their teachers over the course of several sessions and 2) use several strategies such as monitoring, planning, and evaluating information within the text (McCormick & Mason, 1989a). The use of the Little Books was then investigated in a home intervention study that sent packets of the Little Books home prior to the start of the kindergarten year. Assessments at the end of kindergarten not only showed that those who received the books showed increases in spelling, word knowledge, and book reading, but follow-up examinations of children's reading progress at the end of first grade showed that children in the treatment group earned higher average rankings in reading progress from teachers (who were unaware of the study) than children in the control group as well (McCormick & Mason, 1989a, p. 159).

To better determine the nature of the effect these books have on prereaders, Mason et al. (1990) note that a two-year study was then conducted (McCormick & Mason, 1989a) which utilized either a Book Recitation (using the Little Books) or a Story Discussion intervention in a Head Start program. These two groups were provided with either a Home Book (i.e. Little Books) or a Home Activity intervention at home for the

following kindergarten year. In the first year, it was found that the Book Recitation treatment group who had received the Little Books showed greater interest in telling and hearing stories, trying to read, and trying to print than the control group (Mason et al., 1990). Follow-up investigations a year later found that those who received the Little Books “were able to identify significantly more letter sounds than the control group” in kindergarten (Mason et al., 1990, p. 190). Moreover, not only were those in the treatment group “more likely to be effective readers in the first years of school than were children who missed the opportunity to recite books at school and use them at home,” but these effects were found to “increase over time despite the elimination of book recitation at school and were generalized beyond little book reading” (McCormick & Mason, 1989a, p. 171).

The What Works Clearinghouse (WWC, 2007), whose database offers high-quality reviews on the effectiveness of replicable educational interventions, recently reviewed the research on Little Books as part of their involvement in Beginning Reading (K-3) interventions. Although more field research is needed to specifically determine what impact the original Little Books may have on children’s reading development, preliminary evidence suggests that Little Books may be an effective intervention approach to enhance young children’s early literacy skills. For instance, parental interview data taken from previous studies states that some of children began showing off newfound confidence in an ability to “read,” that is recite, their Little Books. It also appears that the books encouraged many of them to take a more direct role in “trying to read printed information and to engage in verbal interaction with parents about the pictures and print” (McCormick & Mason, 1989a, p. 158). Moreover, it was found that

the children increasingly began displaying metacognitive strategies such as monitoring, planning, and evaluating text information with their teacher in the classroom (McCormick & Mason, 1986). The evidence indicates that when easy-to-read books are available, parents often begin to take a more proactive stance in their children's early reading skills (McCormick & Mason, 1986).

Recently, a new set of Little Books was created by McCormick. Although the familiar vocabulary, easy-to-recite print, and simple line drawings remain the same as ones developed in years past, the text itself in these new Rhyme and Letter Little Books focuses on *phonological awareness skills* rather than the more holistic speech-to-print concepts found in the original Little Books. For instance, instead of short sentences such as “*Read a book. Brush your teeth. Get a hug. Climb into bed,*” these 4-page Rhyme and Letter Little Books highlight a combination of both rhyme and initial sound recognition. To illustrate one example: “*C is for cat. cat bat hat. Cat is at bat. C is for cat.*” The minimal text and explicit picture cues available on each page are designed to help facilitate easier recall for preschool children who wish to practice on their own without an adult or teacher present. Rhyming and initial sound (aspects of phonological awareness) are emphasized in these new Rhyme and Letter Little Books in light of evidence suggesting that skills, such as identifying rhyming words and the ability to recognize initial sounds in words, appear to be critical components in learning how to read (Hess & McFarren, 2005).

Today, it is known that early interventions aligned with best practice can improve the phonological skills (i.e. rhyming, alliteration, letter naming) in kindergarten students (Runge & Watkins, 2006). However, given that entering preschool may be the first

opportunity that some children have with early literacy experiences, Missall et al. argue that early reading interventions should be conducted in these classroom settings as well as other settings (2006). To understand how we can better reach at-risk groups of children throughout different stages of their development, more researchers must begin to shift their emphasis from descriptive correlational studies to those that actively identify successful elements of intervention practices. In other words, Carta (2002) argues that increasing our understanding of the types of *evidence-based practices* that can be utilized in the real-life settings by parents and teachers to positively impact children's educational trajectories is desperately warranted – especially within the realms of reading. In essence, our knowledge base must begin to extend beyond recommended practices to solutions that piece together the most effective ways to implement interventions in natural settings where children are – in their homes, communities, and childcare programs (Carta, 2002).

Overall, evaluating the effectiveness of a chosen intervention remains critical because when “high-quality, ecologically valid, developmental, systems-focused interventions are used,” the occurrence of secondary disabilities and future academic failure can be reduced (VanDerHeyden & Snyder, 2006, p. 522). To reach this goal, Runge and Watkins (2006) emphasize that proven valid and reliable assessment tools must remain at the forefront of our intervention practices and research. In the past, assessment practices typically relied on a *critical skills mastery approach* in order to ascertain a child's developmental progress (Phaneuf & Silberglitt, 2003). In this type of approach, it was assumed that discrete skill sets were developmentally related or linked to one another, and that certain skills would emerge before others followed. However, numerous aspects of a critical skills mastery approach minimize its application in early

childhood settings. For example, it has been argued that the measurement framework is extremely limited because 1) short-term objectives are the focus of evaluation (which may be strongly linked to instructional practices) and 2) the focus of measurement quickly shifts to a new skill once the previous one is mastered. As such, Phaneuf and Silbergitt (2003) argue that connections between the short-term objective and a broader behavior(s) of interest may be ambiguous to school personnel who serve these students (p. 114). With this in mind, Hojnoski and Missall (2006) assert that current best practices in school psychology should include assessment methods such as General Outcome Measures (GOM) that “facilitate the measurement of skill growth over time and contextual and functional approaches to skill development and behavior” (p. 604).

General Outcome Measurement

Unlike the teach-test-place model of evaluation, General Outcome Measurement (GOM) offers a unique approach to assessment by allowing practitioners the opportunity to measure students’ progress toward long-term educational goals (Hojnoski & Missall, 2006). Under this model, practitioners collect student data, and both individual and group progress is closely monitored over time against benchmarks previously set by school personnel (Hojnoski & Missall, 2006). The ultimate goal is to measure students’ performance in relation to a *behavior of interest* that is inherently tied to the curriculum, and this is accomplished by repeatedly using comparable stimulus materials over time in order to assess students’ academic progress (Phaneuf & Silbergitt, 2003). For example, the behavior of interest underlying one subtest of a recently developed GOM assessment for preschoolers is *expressive language*, and the numbers of pictures identified per minute are used as the measure of progress over time (Phaneuf & Silbergitt, 2003).

In this example, Phaneuf and Silbergitt note that although the measure itself remains the number of pictures named correctly, it is not determined by a particular instructional focus. Instead, the overriding educational goal exists to positively impact the student's communication skills by way of analyzing a broader outcome (i.e. expressive language). Because the measure is not linked to any particular instrumental technique, the GOM approach offers a means to compare curricula, interventions, and even programs in a formative manner. Essentially, these authors conclude that a GOM approach is beneficial because it promotes the continued assessment of a student's long-term progress – instead of only short-term measurement of a student's (component) skills that make up a particular target behavior (2003). GOM methods are also ideal because they offer a quick and relatively inexpensive method for school districts to determine if their students are currently on-track towards meeting established goals (Missall et al., 2006).

The most well-known application of GOM, the Dynamic Indicators of Basic Literacy Skills (DIBELS), holds promise for improving interventions because they allow educators to specifically track children's literacy progress starting in kindergarten. Currently, DIBELS is advocated by educational researchers and practitioners alike as a means to “facilitate adequate yearly progress in early reading because of its demonstrated link to reading competence and high stakes testing at the end of Grade 3” (VanDerHeyden & Snyder, 2006, p. 529), and because it has been validated as a functional tool for screening, progress monitoring, and instructional decision-making (e.g. McCormick & Haack, 2007). For kindergarten children, literacy indicators within DIBELS include Letter Naming Fluency, Nonsense Word Fluency, Phonemic Segmentation Fluency, and Initial Sound Fluency which can be found online at

<http://dibels.uoregon.edu>. Because of the demand for new assessment practices to be linked to early prevention and intervention practices in preschool, Hojnoski and Missall argue that GOM offers educators an opportunity to “facilitate competency in key skill areas and promote school readiness for all children” (2006, p. 605).

Because DIBELS was not designed to be used with children who have not yet entered kindergarten, researchers affiliated with the Early Childhood Research Institute on Measuring Growth and Development at the University of Minnesota (1998) have recently developed a GOM application that can be used with 3 to 5-year-olds to quickly and efficiently assess several early literacy skills which are predictive of success with learning to read in school. McCormick and Haack (2007) note that these measures, the Individual Growth and Development Indicators (IGDIs), were specifically designed to provide a meaningful link between a child’s early education and formal school progress and use a similar procedural model to the DIBELS. Recent field-based research findings suggest that IGDIs can be used as an effective means to monitor the development and growth of at-risk children (Missall et al., 2006). Compared to DIBELS, the indicators used in the IGDIs assess somewhat different measures of early literacy skills, including Rhyming and Alliteration. Information about the development of the IGDIs can be accessed on the home page of University of Oregon (through the DIBELS link at <http://dibels.uoregon.edu>) or through the website Get it Got it Go (www.ggg.umn.edu).

Because IGDIs were created to be sensitive to skill development over time, Phaneuf and Silbergitt (2003) state that practitioners can use them as a progress-monitoring tool within the context of early education settings. It is also important to note that behavioral methods (i.e. observation information, performance sampling, and graphic

analyses of data) that are linked to general outcome measures such as IGDIs provide results and evidence that are of use for teachers and parents (Phaneuf & Silbergitt, 2003). For instance, repeated administration of these measures can answer questions regarding 1) a child's current performance level compared to a normative group of peers, 2) his or her projected rate of development and how likely it will be for him or her to reach a long-term goal by a desired date or age based on the given information, and 3) whether a particular intervention appears to be effective in improving the child's rate of growth and development (McConnell, Priest, Davis, & McEvoy, 2002). In light of this, IGDIs carry the potential to enhance educational interventions because practitioners are better informed of students' developmental progress and academic trajectory at a young age (Hojnoski & Missall, 2006).

Although the development and application of IGDIs are relatively new, recent findings by Hojnoski and Missall indicate that the utility and social validity of IGDIs were found to be effective in a field-based application that monitored the development and growth of preschoolers (2006). Phaneuf and Silbergitt (2003) also state that IGDIs scores correlate with other measures of language and early literacy skills. For instance, these researchers point to evidence (McConnell et al., 2002) that the Peabody Picture Vocabulary Test – Third Edition (PPVT-III) correlates with the IGDIs Rhyming task ($r = .56$) and the Alliteration task ($r = .57$), and that letter identification correlates with the IGDIs Rhyming task ($r = .59$) and the Alliteration task ($r = .74$). However, because IGDIs were developed only recently, further investigations regarding the reliability, validity, and overall utility of the measures are warranted (Phaneuf & Silbergitt, 2003).

Using a General Outcome Measure such as the Individual Growth and Development Indicators (IGDIs) to assess an early literacy intervention in Head Start presents an ideal opportunity for this research to continue. Moreover, extending a GOM approach to at-risk preschoolers in a field-based research setting will not only 1) increase our understanding regarding how to prevent reading failure in the first place but it may also 2) help us use limited fiscal resources in the best way possible. Because the Little Books are inexpensive and easy to reproduce, they offer an affordable solution to be used as an intervention approach that can be implemented in the classroom and extended to children's homes when children are given a take-home copy of the Little Books. Moreover, preliminary evidence indicates that these easy-to-recite books may significantly enhance young children's interest in reading, and may carry the potential to impact their phonological skills as well. With this in mind, an eight-week early literacy intervention with Head Start children using Rhyme and Letter Little Books was proposed in order to determine whether they may enhance the rhyming skills and initial sound recognition/alliteration skills of young pre-readers.

Purpose

The purpose of this experimental study was to examine the impact of a Little Books intervention on the early literacy skills of children in Head Start. Specifically, this study investigated if exposure to the Rhyme and Letter Little Books would significantly increase the rhyming skills and initial sound recognition/alliteration skills of at-risk children in Head Start more than exposure to the original Little Books. Because the Rhyme and Letter Little Books were created to foster *phonological awareness skills* in pre-readers, while the original Little Books were designed to foster *speech-to-print concepts*, it was hypothesized that statistically significant differences in the rhyming and initial sound recognition skills would favor the children exposed to Rhyme and Letter Little Books at the end of the intervention.

Findings from this study are potentially significant for several reasons. First, early skills in phonological awareness (e.g., rhyming, alliteration) are strongly correlated to one's ability to use phonics later in life, and have been shown to be precursory skills for future reading success (Adams, 1990; Snow, Burns, & Griffin, 1998). By examining the pre- and post-test rhyming skills and initial sound recognition growth rates of preschool children in a local Head Start agency, it may be better understood whether or not a Rhyme and Letter Little Book intervention could be effective in increasing their rhyming and initial sound recognition skills. Moreover, because research in relation to early literacy interventions for at-risk groups remains limited, increasing this knowledge base in the literature may not only provide educational tools to enhance at-risk children's literacy skills, but it may also help to tailor program efforts to fit the unique needs of these groups as well (Missall et al., 2006).

The pre- and post-test assessments used in this intervention study to measure children's rhyming and alliteration skills were specifically chosen for several reasons. Currently, the IGDIs exist as the only established progress monitoring tool for preschool children available in the United States. Phaneuf and Silbergitt (2003) note that the IGDIs are useful because they are sensitive to growth rates over time in that they correlate highly with chronological age (McConnell et al., 2002), and because they provide assessment information that has long been regarded as lacking for early childhood educators and parents (Bagnato & Neisworth, 1991; Division of Early Childhood Task Force on Recommended Practice, 1993) (p.115). Few studies have utilized a progress monitoring measure such as the IGDIs to track young pre-readers phonological awareness skills in an early literacy intervention. Given that the IGDIs exist as a method of progress monitoring for pre-readers prior to the start of kindergarten, using them in this study also 1) enhances our understanding of the types of early literacy interventions that are most effective with at-risk children and 2) expands our knowledge of best practices under a Response to Intervention approach to early education. However, because the IGDIs were only recently established and have had very little application in intervention studies, a second standardized screening measure used in the U.K., the Phonological Abilities Test (PAT), which has subtests assessing rhyming skill and letter identification, was also used to assess the participants' progress over the eight-week intervention as well.

Methods

Setting & Participants

This study was conducted in a Head Start program located in small city in the rural Midwest. Of the 65 children enrolled in this Head Start program, 44 returned signed parental consent forms. During the course of the eight week intervention, 3 children discontinued education at this school site. As such, 41 children (age range 3 years 5 months to 5 years 5 months) participated in the study. The two teachers from this site allowed both their a.m. and p.m. classrooms to participate in the literacy intervention.

Measures of Early Literacy Skills

The Individual Growth and Development Indicators (IGDIs) used in this study were developed for use as a general outcome measurement (GOM) approach to assess child literacy and language outcomes. Recently, Missall et al. (2007) conducted a literature review determining that the Early Literacy IGDIs (EL-IGDIs) are “the only currently available CBM-like measures of early literacy for ages 3-5” (p. 435). Although Missall et al. note that most studies to date have focused on the psychometric properties of the IGDIs, only a select few intervention studies (McConnell et al., 2002; Phaneuf & Silbergliitt, 2003) have been conducted thus far (2007). Overall, evidence suggests that the IGDIs have “strong theoretical connections and adequate psychometric properties with preschool-aged children,” although sensitivity to intervention has not been firmly established (Missall et al., 2007, p. 435).

Rhyming IGDI

To administer the Rhyming Individual Growth and Development Indicator (Phaneuf & Silbergitt, 2003), examiners present a card that has three pictures on the bottom and one picture on the top. The child must choose the picture on the bottom that “sounds the same as” (or rhymes with) the picture on the top. The examiner demonstrates this task twice for the child first before asking the child to participate. The child is then allowed to practice the task four times: twice with feedback and twice without feedback. If the child correctly answers at least two of the four practice card questions, the task is then administered for a total session time of 2 minutes. The outcome measure is the number of correctly identified rhymes.

Reliability findings. In a study of 42 preschoolers (both with and without risks), (Priest, Silbergitt, Hall, & Estrem, 2000b) found that test-retest reliability for Rhyming IGDI scores over 3 weeks was high ($r = .83$ to $.89$) (Missall et al., 2006).

Construct validity findings. Missall et al. (2007) also states that IGDI Rhyming has been shown (Priest et al., 2000b) to correlate positively with age ($r = .46$). One longitudinal study (Priest et al., 2000b) found that “Rhyming was sensitive to children’s monthly rate of growth, with children without identified risks gaining .38 rhymes per month, children from low-income families gaining .95 rhymes per month, and children with identified disabilities gaining .40 rhymes per month” (Missall et al., 2006, p. 7). Hierarchical linear modeling (HLM) results (centered at 53 months of age) from this longitudinal study illustrated “an average Rhyming score of 7.61 for children without identified risks, 6.5 for low income children, and 5.07 for children with identified disabilities” (Missall et al., 2006, p. 7).

Criterion validity findings. Missall et al. (2007) notes that the criterion validity for IGDI Rhyming has been examined longitudinally with “the Peabody Picture Vocabulary Test ($r = .56$ to $.62$), Concepts About Print (CAP; Clay, 1985; $r = .54$ to $.64$) and Test of Phonological Awareness (TOPA; Torgenson & Bryant, 1994; $r = .44$ to $.62$; McConnell et al., 2002)” (p. 437). It has also been shown to moderately correlate with Picture Naming ($r = .46$ to $.63$), Alliteration ($r = .43$), DIBELS Letter Naming ($r = .48$ to $.59$), and DIBELS Onset Recognition Fluency ($r = .44$ to $.68$) (Missall et al., 2007).

Alliteration IGDI

To administer the Alliteration Individual Growth and Development Indicator (Phaneuf & Silbergitt, 2003), the examiner presents a card that has three pictures on the bottom and one picture on the top. The child is asked to point to the picture on the bottom that begins with the same sound as the picture on the top, and the examiner demonstrates this task twice for the child first before asking him or her to participate. The child then practices the task four times: twice with feedback and twice without feedback. If the child correctly answers at least two of the four practice card questions, the task is then administered for a total session time of 2 minutes. The outcome measure is the number of correctly identified alliterations.

Reliability findings. Test-retest reliability scores over a 3 week study (Priest et al., 2000b) have shown moderate to high correlations ($r = .62$ to $.88$) with a sample of preschool children with and without risks (Missall et al., 2006, p. 8).

Construct validity findings. Missall et al. (2007) also notes that studies have shown Alliteration scores to be positively correlated with age ($r = .61$; Priest et al., 2000b). Results from a longitudinal study indicate that Alliteration is sensitive to

children's growth rate over the course of a month, with "children without identified risks gaining .38 alliterations per month, children from low-income families gaining .25 alliterations per month, and children with identified disabilities gaining .36 alliterations per month" (Missall et al., 2006, p.8). Hierarchical linear modeling (HLM) results (centered at 53 months of age) from this longitudinal study illustrated "an average Alliteration score of 5.23 for children without identified risks, 4.28 for low income children, and 4.43 for children with identified disabilities" (Missall et al., 2006, p. 8).

Criterion validity findings. Missall et al. (2006) states that the Alliteration IGDIs have been examined longitudinally (McConnell et al., 2002) that included children with disabilities and those living in poverty in the sample "with the PPVT-3 ($r = .40$ to $.57$), TOPA ($r = .75$ to $.79$), and CAP ($r = .34$ to $.55$) (p. 7). Moderate to high correlations ($r = .39$ to $.71$) have been found with DIBELS LNF.

Phonological Abilities Test (PAT):

Developed by Muter, Hulme, and Snowling (1997), the Phonological Abilities Test (PAT) can be utilized as a screening measure in the identification of children at-risk for literacy difficulties and as a diagnostic measure to assess the potential extent of phonological difficulties in older children with reading problems. The PAT is comprised of six subtests: four involving phonological awareness, a test of letter knowledge, and a test of speech rate, with each test taking approximately 5 minutes for administration. For this study, the subtests used included Rhyme Detection, Rhyme Production, and a modification of Letter Knowledge.

To administer PAT Rhyme Detection, the examiner presents a picture that has three pictures on the bottom and one picture on the top, and the child is asked which

picture rhymes with the picture on the top. If the correct answer is not given, the examiner demonstrates the task and explains the answer to the child if necessary. The examiner demonstrates this task two more times for the child before proceeding onto the 10 test items. Feedback may be provided for the first four test items. No specified time limit on this subtest exists, and the outcome measure remains the number of correctly identified pictures.

To administer PAT Rhyme Production, the examiner asks the child to think of as many words that rhymes with or sounds like “day.” The examiner first explains that another word that rhymes with day is “say,” and asks the child to supply other words that rhyme with “day.” Any correct rhyming word or nonword (such as “tay”) that is given within 30 seconds is scored as correct. The examiner then follows the same procedures with the word “bell.” The outcome measure remains the total number of correct rhyming responses for both “day” and “bell” combined (Muter et al., 1997).

To administer PAT Letter Knowledge, the child is asked to identify by name or sound the 26 letters of the alphabet presented on flashcards in random order. All responses that are correct are scored as one point (Muter et al., 1997). However, given that we were mainly interested in assessing children’s rhyming and initial sound recognition skills in relation to intervention, the children in this study were asked to identify by name the same 10 alphabet letters presented in the Rhyme and Letter Little Books. The outcome measure was the number of correctly identified alphabet letters.

Internal reliability findings. According to the PAT manual, reliability coefficients for the PAT on all subtests except for Speech Rate remain consistently high. Cronbach’s alpha using an item analysis on 60 children (30 boys; 30 girls) from three classes of a

primary school in York was found to be .87 for Rhyme Detection, and .83 for Rhyme Production. Letter Knowledge was excluded from the internal reliability analyses for the PAT.

Test-retest reliability findings. According to the PAT manual, the stability of scores showed acceptable test-retest correlations of .80 for Rhyme Detection and .86 for Letter Knowledge, but indicated lower correlations of .65 for Rhyme Production. The manual states that 35 children were given the test on two separate occasions approximately 3 weeks apart.

Construct validity findings. According to the PAT manual, moderately high intercorrelations (0.3 – 0.7) were found for the six subtests, with Letter Knowledge correlating highly with phonological awareness measures (0.4 – 0.6). Principal component analyses (excluding Letter Knowledge) were also performed with an orthogonal rotation and resulted in three separate factors. Rhyme Detection and Rhyme Production loaded highly on Factor 3 as a Rhyming Factor (with an Eigen Value of 0.86 and accounting for 12% of the variance).

Criterion-related validity findings. The PAT manual states that the criterion-related validity of the individual subtests of the PAT were found to be moderately correlated (Rhyme Detection = .51, Rhyme Production = .47) with the British Abilities Scales test of Single Word Reading, a standardized test of reading ability. A series of multiple regression analyses showed that all subtests on the PAT, with the exception of Word Completion, significantly predicted reading skills on the BAS. Simultaneous regression analyses of the subtests scores for each age group (e.g. four-, five-, and six-year-olds) were all found to be nonsignificant.

Intervention Design

An early literacy intervention using Little Books was conducted over an eight-week period in the spring with children enrolled in Head Start. Each of the two teachers involved in this Head Start program had a morning (a.m.) and an afternoon (p.m.) classroom. One classroom (Teacher A) had a treatment group as the a.m. class and a control group as the p.m. class, while the other classroom (Teacher B) had a control group as the a.m. class and a treatment group as the p.m. class. The independent variable (i.e. the type of Little Book being used) was manipulated by dividing the children into either control group or the treatment group for each a.m. and p.m. class. The control group received the original *Little Books* (IV₁), while the treatment group received the *Rhyme and Letter Little Books* (IV₂) (see Appendices A and B for sample Little Books). The dependent variables, *rhyming* (DV₁), and *initial sound recognition* (DV₂), were measured by conducting pre-test (0 weeks) and post-test (8 weeks) assessments using the IGDIs and the PAT with all participants in the study to determine their progress in these skills. (See Table 1 in Appendix C.)

Because the control group and the treatment group both received a Little Book intervention, the odds that the results were due to unknown factors (such as merely receiving a literacy intervention in general) should have been diminished. Likewise, it is assumed that splitting the treatment and control groups for the a.m. and p.m. classes for each classroom should have reduced the risk that the outcome results were influenced by other confounds (such as one teacher providing superior instruction over the other teacher through the school year, or the impact of listening to the books during a particular time of day). Ten Rhyme and Letter Little Books and original Little Books each were utilized

throughout the eight-week intervention to decrease the possibility that the results were determined by the choice of one (or a few) particular Rhyme and Letter Little Books and/or original Little Books.

Procedures

Pretest Procedures

Professor McCormick and this researcher administered the IGDIs and the PAT to each child that returned a signed parent consent form during the week prior to the start of the intervention. Both researchers randomly administered either the PAT or the IGDIs to 2 children in the same room. Once a child completed half of the administration (i.e. either the PAT or the IGDIs), he or she was then escorted over to the other researcher to be administered the other test.

Intervention Procedures

Once the intervention study began, Professor McCormick read a Rhyme and Letter Little Book to each of the two the treatment group classes (N = 21) and an original Little Book (McCormick & Mason, 1990) to each of the control group classes (N = 20) twice a week. Each intervention session lasted approximately 10 minutes per group. During these sessions, Professor McCormick introduced either an original Little Book or a Rhyme and Letter Little Book to the particular class following the basic procedures described by McCormick and Mason (1990). After the introduction and model reading of the Little Books, the participants were then encouraged to join in the second or third reading of the same book along with her. At the conclusion of each lesson, the children

were given a copy of the introduced Little Book to take home. Children attended this program 4 days a week for approximately 3 hours a day.

Post-test Procedures

Professor McCormick and this researcher administered the IGDIs and the PAT to each student with parent consent during the week after the end of the intervention. Both researchers randomly administered either the PAT or the IGDIs to 2 children in the same room. Once a student completed half of the administration (i.e. either the PAT or the IGDIs), he or she was then escorted over to the other researcher to be administered the other test.

Results

Means and standard deviations by group at pre- and post-testing were calculated for each of the variables: IGDI Rhyming (RHY), IGDI Alliteration (ALL), PAT Rhyme Detection (RD), PAT Rhyme Production (RP), and Letter-Name Identification (LN). Both groups showed higher post-test scores for all measures. (See Table 2 in Appendix C.) To determine whether the increased scores were influenced by the intervention treatment beyond chronological age, a two-way analysis of variance for mixed factorial designs was conducted on each pre- to post-test measure.

IGDI Rhyming Analysis

At an alpha level of .05, results show that there was no significant interaction between group and time of testing on the IGDI Rhyming score, $F(1,39) = .46, p = .50, \eta_p^2 = .01$. There was also no significant main effect of group, $F(1,39) = .41, p = .52, \eta_p^2 = .01$. However, there was a significant main effect of time of testing, $F(1,39) = 11.01, p = .002, \eta_p^2 = .22$. Regardless of group, the means of rhyming scores were significantly higher on post-test measures ($M = 7.43, SD = 6.55$ for the treatment group, $M = 5.90, SD = 4.95$ for the control group) compared to pre-test measures ($M = 4.48, SD = 5.65$ for the treatment group, $M = 3.95, SD = 5.20$ for the control group). (See Table 3 in Appendix C.) It was observed that although pre-test means differed, a t-test for independent means indicated that these mean differences were not significant.

IGDI Alliteration Analysis

At an alpha level of .05, results show that there was no significant interaction between group and time of testing on the IGDI Alliteration score, $F(1,39) = .000, p =$

.995, $\eta_p^2 = .000$. There was no significant main effect of group, $F(1,39) = .53, p = .47, \eta_p^2 = .01$. However, there was a significant main effect of time of testing, $F(1,39) = 4.74, p = .04, \eta_p^2 = .11$. Regardless of group, the means of alliteration scores were significantly higher on post-test measures ($M = 4.62, SD = 3.61$ for the treatment group, $M = 3.95, SD = 3.62$ for the control group) compared to pre-test measures ($M = 3.48, SD = 3.30$ for the treatment group, $M = 2.80, SD = 3.02$ for the control group). (See Table 4 in Appendix C.) It was observed that although pre-test means differed, a t-test for independent means indicated that these mean differences were not significant.

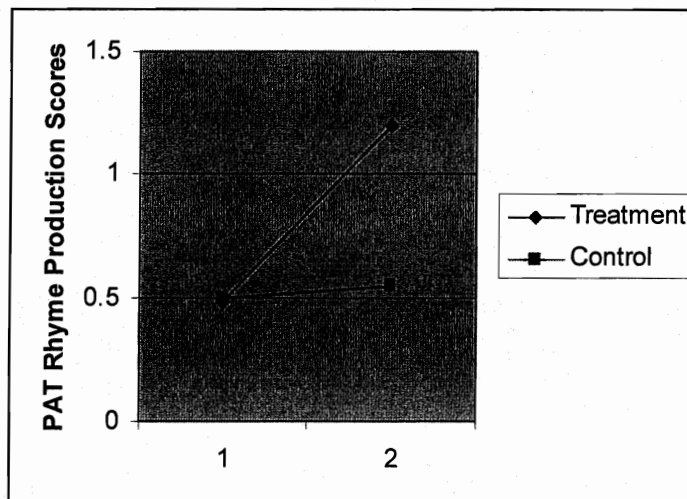
PAT Rhyme Detection Analysis

At an alpha level of .05, results show that there was no significant interaction between group and time of testing on the PAT Rhyme Detection score, $F(1,39) = 1.84, p = .18, \eta_p^2 = .05$. There was also no significant main effect of group, $F(1,39) = 1.43, p = .24, \eta_p^2 = .04$. However, there was a significant main effect of time of testing, $F(1,39) = 17.76, p = .000, \eta_p^2 = .31$. Regardless of group, the means of rhyme detection scores were significantly higher on post-test measures ($M = 5.57, SD = 3.27$ for the treatment group, $M = 4.05, SD = 2.74$ for the control group) compared to pre-test measures ($M = 3.52, SD = 3.22$ for the treatment group, $M = 3.00, SD = 2.62$ for the control group). (See Table 5 in Appendix C.) It was observed that although pre-test means differed, a t-test for independent means indicated that these mean differences were not significant.

PAT Rhyme Production Analysis

At an alpha level of .05, results indicate that there was a significant interaction between group and time of testing on the PAT Rhyme Production score, $F(1,39) = 4.59, p$

$= .04$, $\eta_p^2 = .11$. For the treatment group, the means of rhyme production scores were significantly higher on post-test measures ($M = 1.29$, $SD = 1.85$ for the treatment group) compared to pre-test measures ($M = .48$, $SD = 1.03$). (See Table 6 in Appendix C.) The treatment group performance on PAT Rhyme Production significantly improved from pre- to post-test while the control group performance did not as noted in the figure below. It was observed that although pre-test means differed, a t-test for independent means indicated that these mean differences were not significant.



The treatment group improved from pre-test to post-test while the control group did not.

Letter-Name Identification Analysis

At an alpha level of .05, results indicate a significant interaction between group and time of testing on the Letter-Name Identification score, $F(1,39) = 5.30$, $p = .03$, $\eta_p^2 = .12$. (See Table 7 in Appendix C.) The treatment group improved from pre- to post-test while the control group did not. It was observed that on Letter-Name Identification the pre-test means significantly differed on an independent t-test. Because the group pre-test scores were not equal at the start of the intervention, an analysis of covariance was

conducted on the Letter-Name Identification scores using the pre-test scores as a covariate. At an alpha level of .05, results show that there were no significant differences in Letter-Name Identification scores among participants for either group after undergoing the intervention, $F(1,38) = 2.16, p = .15, \eta_p^2 = .05$. In other words, children who received the Rhyme and Letter Naming Little Book intervention (*adjusted M* = 4.84) did not have significantly higher post-test Letter-Name Identification scores over those who received the original Little Book intervention (*adjusted M* = 3.62) after controlling for pre-test Letter-Name Identification scores.

Discussion

Although evidence is clear that multiple early literacy skills appear to interact in ways that facilitate children's reading development later in life, determining the most efficacious early literacy interventions remains a complicated process. Evidence indicates that preschoolers' knowledge in both written language and phonological awareness are linked to their future ability to grasp the alphabetic principle and benefit from guided reading instruction in the classroom. Although early interventions have been shown to improve the phonological skills in kindergarten students, less is known about proven practices that may enhance the early literacy outcomes for preschoolers – especially for at-risk groups. At this time, it appears that the most successful phonological interventions focus on specific skills. Because rhyme appears to precede other phonological awareness skills, it has been argued that children will benefit most from interventions designed to enhance rhyming skills first.

Therefore, the purpose of this current study was to evaluate both the rhyming and initial sound/alliteration skills of at-risk preschool children in Head Start after exposure to either a Rhyme and Letter Little Books or original Little Book intervention. By utilizing the IGDIs and the PAT, we aimed to link RTI best practice within the realm of early education by utilizing General Outcome Measurement (GOM) in this early literacy intervention. Overall, results indicated that growth was observed across each of the five literacy measures for both conditions from the beginning to the end of the eight-week intervention which matches the consistent finding that IGDI scores are moderately correlated with chronological age (Missall et al., 2007). To determine the degree to which treatment may have played a role in the increased scores on these five measures beyond

chronological age, a two-way analysis of variance (ANOVA) for mixed factorial design was conducted for each of the pre- and post-test scores: IGDI Rhyming, IGDI Alliteration, PAT Rhyme Detection, PAT Rhyme Production, and Letter-Name Identification. Results are discussed first in terms of the five ANOVA analyses, then for the study overall.

For all measures, there was a pre- to post-test improvement on scores regardless of group. The single significant interaction between groups was on PAT Rhyme Production. Although not reaching significance, means for the treatment group showed larger pre- to post-test gain scores than for the control group on both IGDI Rhyming and PAT Rhyme Detection as well. This suggests that a longer intervention study may have produced significant results on these measures. The pre- to post- IGDI Alliteration gain scores were virtually identical. Likewise, the means for the Letter-Name Identification measure showed no differences in scores between the two groups after controlling for secondary variance.

Of particular interest in this study was the finding that the treatment group's PAT Rhyme Production scores were significantly higher than the control group's scores at the end of the intervention. This provides some preliminary indication that the PAT Rhyme Production score was sensitive to the effects of the Rhyme and Letter Little Books as evidenced by growth rates, lending support to this study's hypothesis that statistically significant differences in the rhyming skills between the treatment and control group would exist at the end of the intervention. Given that these children were given more exposure and practice with the target skill of rhyme over the course of an eight-week time span, it seems likely that the children in the treatment group would be able to produce

more rhyming words at the end of the intervention compared to children in the control group. Caution should be taken with this proposed explanation given that a similar effect was not found for the treatment group on the rhyme detection measures.

It remains important at this point to distinguish among the rhyming measures. The IGDI Rhyming and PAT Rhyme Detection measure the number of correctly identified pictures of rhyming words, while the PAT Rhyme Production measures the number of correctly produced rhymes. As such, it remains plausible that the children in the treatment group were able to score higher on the PAT Rhyme Production measure because they were afforded practice with the skill of producing rhyming words in the Rhyme and Letter Little Books, but did not specifically practice identifying pictured words that rhyme as required for the IGDI Rhyming and PAT Rhyme Detection measures. It also remains important to consider recent findings from a longitudinal study (Missall et. al, 2007) suggesting that IGDIs may not be sensitive enough to determine response to intervention, as detailed below. This interesting finding may also shed light on the identical IGDI Alliteration scores between the two groups at the end of the intervention as well.

While this intervention study was underway, results from the first longitudinal study attempting to examine the predictive validity of the IGDIs with future outcomes in kindergarten phonological awareness and alphabetic principle measures were published in *School Psychology Review* (Missall et al., 2007). Although findings paralleled other studies (cf. McConnell et al., 2002; McConnell & Missall, 2004; Priest, McConnell, McEnvoy, & Shinn, 2000a) in that IGDIs appear to be sensitive to monthly rates of growth, Missall et al. conclude that “rates vary per measure and per sample and tend to be

too small for effectively determining response to intervention” (2007, p. 448). Likewise, Missall et al. note that although the IGDIs were developed to be used with children 3 to 5 years of age, they speculate whether or not all of the measures are appropriate for all children. The findings from this study mirror other studies’ speculations of floor effects for the Alliteration measure, which could indicate that the task is “quite difficult for a good deal of preschoolers” (Missall et al., 2007, p. 448). Other studies, such as Phaneuf & Silbergitt (2003), have similarly suggested that the IGDI Alliteration measure may not be sensitive enough to measure the effects of short-term literacy interventions, as evidenced by results showing that child performance on the IGDI Alliteration measure did not increase following the use of an intervention. In general, findings (e.g. Missall et al., 2006) have indicated that children with known risks for literacy acquisition tend to score lower on IGDI Rhyming and IGDI Alliteration than their peers without risks. As such, Missall et al. (2007) may be correct in their conclusion that early literacy alliteration assessment may not be developmentally appropriate for young preschool children with and without identified risks.

Limitations and Future Research

Findings from this particular study demonstrate significant growth across both groups for all measures, reinforcing the assumption (e.g. Missall et al., 2007) that any attempt at increasing students’ early literacy skills should result in a positive shift in their future reading trajectories. However, it remains impossible to determine the degree to which increases in chronological age and specific classroom and/or home educational practices may have played a role in the gains observed for both conditions during this study. Likewise, the pre-test Letter-Name Identification scores between the two groups in

this study that existed prior to the start of the intervention suggest that Head Start's national curriculum emphasis on letter name identification in its classrooms remains a potential confound in this study. Specifically, letter name identification instruction in these classrooms has been a daily experience the entire academic year and focused on a new letter each week. Additionally, information regarding the frequency and extent to which children read their personal copies of Little Books at home was not included in this study. Future research would benefit from examining the degree to which home variables may have increased the efficacy of the intervention effects for some participants. Given that the age range includes 3 to 5 year olds in Head Start programs, it remains possible that the sensitivity of IGDI measures was inadequate for the younger children in this study (Missall et al., 2006).

Other important limitations regarding this study's exploratory design highlight the need for more rigorous methodological procedures with future studies involving Little Book interventions. Although the researcher responsible for the interventions was observed on several occasions throughout the intervention by this researcher and by an undergraduate research assistant, measures of treatment fidelity were not documented. Similarly, although both researchers were trained on the administration of the IGDI's prior to administration, replicating studies should ensure that administration checklists and tests for reliability between practitioners are utilized before and after administering growth measures. It should be noted that the restricted and relatively small sample of participants of this study limits generalization of these findings. Although the study's design attempted to control for confounds of classroom environments and teachers, future

research should seek to recruit larger samples of students who do not share common program membership and school sites.

Nevertheless, several implications may be drawn from this exploratory study and towards the field of early literacy assessment and intervention as well. Several studies (e.g. Missall et al., 2006, 2007) in the literature lend support for the utility of IGDIs for measuring early literacy development and for the early identification of students at risk for later reading difficulty. However, few studies utilizing language and literacy preschool IGDIs in response to specific interventions in real-life settings appear to exist in the published literature at this time (Missall et al., 2006). Although researchers argue that IGDIs are intended to be sensitive to the effects of intervention growth over time and can be utilized as useful progress-monitoring tools, findings from this study indicate that the IGDIs were not sensitive enough to detect growth between the two groups throughout a short eight week intervention. Extending a general outcome measures approach such as the IGDIs to a larger group of at-risk preschoolers in other field-based research settings is warranted at this time to increase our understanding of the most optimal and efficacious assessment tools for these types of early interventions.

Future studies examining the potential of Little Book interventions may benefit from increasing the intensity and/or duration of the intervention phase. As with any intervention, the efficacy of Little Books to enhance early literacy skills would likely increase if 1) the books were introduced to smaller presentation groups which would allow for more individual participation in the lesson and/or 2) home-school collaboration efforts were implemented and documented. Nevertheless, findings from this study indicate that the Rhyme and Letter Little Books show promise as an easily-implemented

and affordable Tier 1 intervention for supporting the development of rhyming skill in Head Start children. Replication of these results utilizing a more rigorous methodological design is necessary to enhance future early literacy interventions.

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Appendix A

Original Little Book Sample

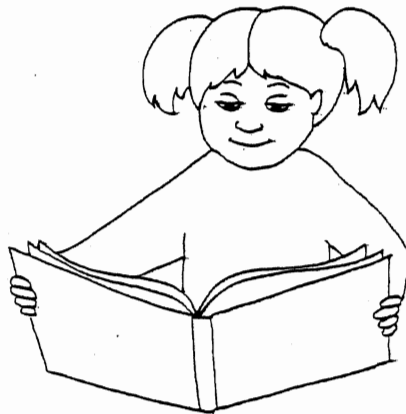
1



Time for Bed

From *Little Books*, published by Scott, Foresman and Company.
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2



Read a book.

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Brush your teeth.

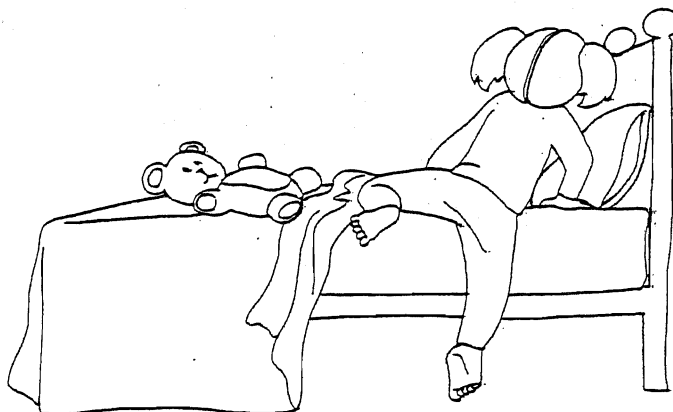
4



Get a hug.

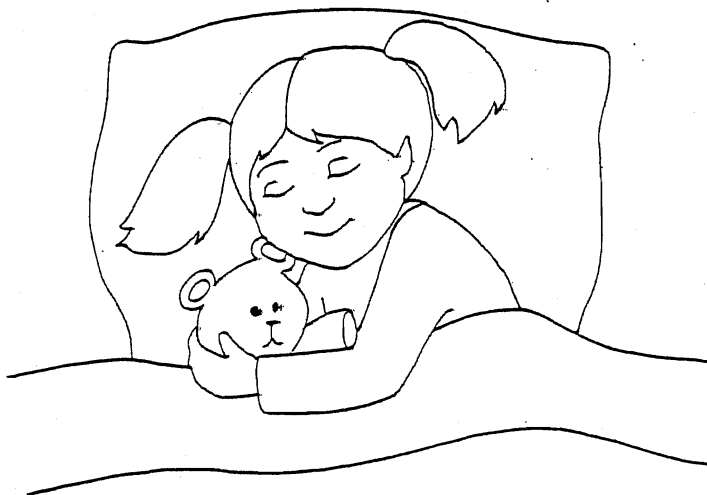
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Climb into bed.

6



Nighty-night, sleep tight.

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Appendix B

Rhyme and Letter Little Book Sample

B



Bear

1



Bear



Chair



Pear

2



Bear on a chair.

3

B



Bear

4

Appendix C

Tables

Table 1.
Intervention Design

Teacher A

	Rhyme & Letter LB	Original LB	
Class 1 A.M.	12	N/A	
Class 2 P.M.	N/A	10	
	12	10	

Teacher B

	Rhyme & Letter LB	Original LB	
Class 3 A.M.	N/A	10	
Class 4 P.M.	9	N/A	
	9	10	

(Between Subjects)

(Within
Subjects)

	Rhyme & Letter LB	Original LB	
Pre-Test	21	20	41
Post-Test	21	20	41

Table 2.

Means and Standard Deviations by Group at Pre- and Post-Testing

Treatment group	Pre-test		Post-test		Mean gain
	Mean	SD	Mean	SD	
IGDI RHY	4.48	5.65	7.43	6.55	2.95
IGDI ALL	3.48	3.30	4.62	3.61	1.14
PAT RD	3.52	3.22	5.57	3.27	2.05
PAT RP	0.48	1.03	1.20	1.85	0.81
LN	1.90	2.77	3.81	3.53	1.91
Control group	Pre-test		Post-test		Mean gain
	Mean	SD	Mean	SD	
IGDI RHY	3.95	5.20	5.90	4.95	1.95
IGDI ALL	2.80	3.01	3.95	3.62	1.15
PAT RD	3.00	2.62	4.05	2.74	1.05
PAT RP	0.50	1.61	0.55	1.15	0.05
LN	4.60	3.78	4.70	3.51	0.10

Note. Between-Subjects Factor: Type of Little Book. Within-Subjects Factor: Pre-test and Post-test Scores. Dependent Variable: Test Scores

Table 3.

Analysis of Variance Summary Table for IGDI Rhyming

Source	SS	df	MS	F	p	η^2
Between subjects						
Group	21.63	1	21.63	0.41	0.52	0.01
Residuals	2039.18	39	52.29			
Within subject						
Time	123.1	1	123.1	11.01	0.002*	0.22
Group x rhyming interaction	5.15	1	5.15	0.46	0.50	0.01
Residuals	435.95	39	11.18			
Total	2625.01	81				

* $p < .05$.

Table 4.

Analysis of Variance Summary Table for IGDI Alliteration

Source	SS	df	MS	F	p	η^2
Between subjects						
Group	9.27	1	9.27	0.53	0.47	0.01
Residuals	678.78	39	17.41			
Within subjects						
Time	26.93	1	26.93	4.74	0.04*	0.11
Group x alliteration interaction	0.000	1	0.000	0.000	0.995	0.000
Residuals	221.56	39	5.68			
Total	936.54	81	59.29			

* $p < .05$.

Table 5.

Analysis of Variance Summary Table for PAT Rhyme Detection

Source	SS	df	MS	F	p	η^2
Between subjects						
Group	21.43	1	21.43	1.43	0.24	0.04
Residuals	585.38	39	15.01			
Within subjects						
Time	49.15	1	49.15	17.76	0.000*	0.31
Group x RD interaction	5.10	1	5.10	1.84	0.18	0.05
Residuals	107.95	39	2.77			
Total	769.01	81	93.46			

* $p < .05$.

Table 6.

Analysis of Variance Summary Table for PAT Rhyme Production

Source	SS	df	MS	F	p	η^2
Between subjects						
Group	2.60	1	2.60	0.73	0.40	0.02
Residuals	138.38	39	3.55			
Within subjects						
Time	3.78	1	3.78	5.88	0.02*	0.13
Group x RP interaction	2.96	1	2.96	4.59	0.04*	0.11
Residuals	25.09	39	0.64			
Total	172.81	81	13.53			

* $p < .05$.

Table 7.

Analysis of Variance Summary Table for Letter-Name Identification

Source	SS	df	MS	F	p	η^2
Between subjects						
Group	65.86	1	65.86	3.27	0.08	0.08
Residuals	785.24	39	20.13			
Within subjects						
Time	20.59	1	20.59	6.54	0.02*	0.14
Group x LN interaction	16.68	1	16.68	5.30	0.03*	0.12
Residuals	122.81	39	3.15			
Total	1011.18	81	126.41			

* $p < .05$.