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Spring 2015

# An Adapted Shared Storybook Reading Program Implemented in Inclusive Preschool Classrooms: An Investigation of its Use and Effectiveness

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An Adapted Shared Storybook Reading Program Implemented in  
Inclusive Preschool Classrooms:  
An Investigation of its Use and Effectiveness

by

Andrea Noël-Hahn Golloher

A dissertation submitted in partial satisfaction of the  
requirements for the degree of

Joint Doctor of Philosophy  
with San Francisco State University

in

Special Education

in the

Graduate Division

of the

University of California, Berkeley

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Professor Anne E. Cunningham, Chair  
Professor Pamela Hunt  
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## Abstract

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The *Pathways to Literacy* reading program (Lee, Mims, & Browder, 2011) has been demonstrated to be effective at increasing both engagement and comprehension during shared storybook reading for students with exceptional needs. To date, research on *Pathways to Literacy* has been limited to students in early elementary school rather than preschool, which is when shared reading is usually emphasized as part of the general education curriculum. In these investigations, the reading program has been administered in one-on-one instructional settings, often in special education classrooms. No existing research has examined the ability of participating students to generalize newly learned skills to novel adapted books. The current study seeks to add to the literature by investigating the use of the *Pathways to Literacy* reading program in inclusive preschool settings. Three questions were addressed. First, using a multiple baseline design across three students, the question of whether or not the reading program remained effective for the target student when introduced in this new setting was asked. Second, whether or not the target students were able to generalize their skills in the areas of engagement, listening comprehension, and communication was addressed via the introduction of novel adapted books. Finally, teachers' perceptions of the reading program were explored. Of particular interest were questions related to what changes they would recommend so that the reading program can be used in this new setting. Results suggest that the *Pathways to Literacy* reading program was effective in increasing both engagement and listening comprehension and communication for the targeted preschool students and these skills generalized to novel adapted books. Pre- and post-intervention interviews suggest that the teachers found the goals, procedures, and outcomes of the *Pathways to Literacy* reading program were generally appropriate for preschool students.

*Keywords: shared reading, inclusive education, universal design for learning, early literacy, early communication*

## Dedication

To my husband

Without you, none of this would have been possible.

Thank you for the encouragement, support, and confidence in my work that kept me going when I thought I couldn't go anymore.

To my daughters

Without you, none of this would have been worth it.

Thank you for bringing joy to every day. I strive to be a mother you will be proud of.

Madeline, thank you for demanding I read book after book after book with you. Your insatiable love of reading renewed my sense of purpose in this work.

Violet, I really hope you like *Ladybug Girl*. Your sister sure does.

To my family

Without you, I would never have found my path.

Thank you for indulging my love of reading, even when it was a nice day outside and I needed some fresh air. Books have always been my comfort.

I seek to share that comfort with those who need it most.

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Dr. Cunningham provided invaluable insight on the development of literacy in early childhood and the importance of shared reading. This knowledge will ground my research agenda as I seek to develop practices to support literacy development in young children with significant needs. This project benefited from the input of Eileen Gambrill, who willingly volunteered her time to review my project and provide valuable insight into its completion.

My research interests did not develop in a vacuum. When I entered the program, I was welcomed into Laura Sterponi's research group on communication and autism. Through discussions with her and the group members, my conceptualizations of autism spectrum disorders and communicative development were challenged and expanded. Dr. Sterponi's course on literacy was one of the most challenging in the entirety of my schooling. I certainly thought about throwing in the towel as I struggled to comprehend Derrida's post-structural theory. Grappling with the concepts in this course, however, helped refine my understanding of literacy and the ability of literacy practices to define entire communities..

My classmates number too many to thank. However, I truly would not be here today without Katrina Martin's encouragement to apply to the program, her assistance as I struggled through the coursework, and her valuable support in reviewing the data as I pieced together this final project. Jody Siker was always available to commiserate about the challenges of the program and celebrate the completion of each milestone. (We finally made it, Professor Siker!) Kristen Bottema spent many hours patiently discussing my work and providing feedback for this and my pilot study, without which I would have been lost.

I would also like to thank the teachers who agreed to give up valuable class time in pursuit of understanding how best to meet the needs of their students. It is not easy for teachers to find the time in their day, but "Jamie" and "Geri" were both eager and encouraging as we struggled through this project together. This study would not have been possible without the participation of the students. I hope they found their experience in this project to be enjoyable, and I sincerely hope that their future teachers will continue the good work begun by Jamie and Geri.

Finally, I must thank my husband, Ted Prescop. Not only did he manage to pick up the slack as I spent hours studying for my qualifying exam, developing my proposal, and implementing my project, he is the best editor I have ever had. Truly, the words below have been improved by his exacting eye and attention to detail.

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## **Chapter 1**

### **Introduction and Literature Review**

Historically, students with moderate to severe developmental disabilities have had limited access to literacy instruction based on assumptions about their inability to learn to read (Browder, Wakeman, Spooner, Ahlgrim-Delzell, & Algozzine, 2006). In recent years, federal education policy has shifted the emphasis of special education for these students away from life skills instruction toward accessing the general education curriculum and instruction. It has done so by increasing the pressure on educators working with students in special education programs to address more rigorous academic content, including literacy. The Individuals with Disabilities Education Improvement Act of 2004 (IDEIA, 2004) mandates that special education programs provide access to the general education curriculum, including addressing the grade level standards for each state when developing goals for individualized education programs (IEPs) and when establishing curricula in special education programs. In addition, No Child Left Behind (NCLB, 2002) specifies that students enrolled in special education must participate in the state-wide accountability system. Taken together, these policies make clear an expectation at the federal level that students enrolled in special education should be engaged in high-quality, evidence-based instruction in literacy, math, and other content areas.

#### **Shared Reading as the Child's First Step toward Full Literacy**

As the pressure has increased to improve literacy outcomes for students with moderate to severe developmental disabilities, there has been increasing pressure to prepare preschoolers for the rigors of academic instruction in kindergarten and beyond through the introduction of literacy instruction during the early childhood years (Hatch, 2002). Shared reading occurs when a reader and listener interact about a text (Adams, 1990; Browder et al., 2009; Gunn, Simmons, & Kameenui, 1998; Lonigan, Anthony, Bloomfield, Dyer, & Samwel, 1999; Morrow & Gambrell, 2002). Also known as interactive shared reading, this practice has been identified as a developmentally appropriate practice in which to embed literacy instruction for this age group (International Reading Association/National Association for the Education of Young Children [IRA/NAEYC], 1998). While the literature includes a variety of names for shared reading, including dialogic reading, read alouds, shared stories, and book sharing, a critical aspect of any shared reading interaction is that the listener is an active participant in the exchange. This distinguishes the practice of shared reading from passive reading in which the listener is expected to attend quietly as the reader reads the text.

The International Reading Association and National Association for the Education of Young Children (IRA/NAEYC, 1998) and the National Early Literacy Panel (NELP, 2008) have established that early childhood literacy curricula should emphasize shared reading. In 1998, the IRA/NAEYC published a joint statement on the introduction of literacy into early childhood curricula entitled *Learning to Read and Write: Developmentally Appropriate Practices for Young Children*. At the time of this statement, the approach to early literacy instruction in early childhood education was in a state of flux. On the one hand, maturational theories in which literacy development was conceptualized as an extension of oral language development continued to dominate practice (IRA/NAEYC, 1998). Based on these theories, literacy instruction was to be eschewed in favor of practices that encouraged oral language growth until a child was able to produce and comprehend language (Geoffrion, 1982; Morphet & Washburn,

1931; de Saussure, 1986 [1916]; Tracy & Morrow, 2006). On the other hand, those practitioners who were determined to address literacy in early childhood education had begun to introduce teaching practices more appropriate for older children or adults, such as whole-group instruction and intensive drill and practice on isolated skills (IRA/NAEYC, 1998).

The purpose of the IRA/NAEYC (1998) statement was to guide practitioners, researchers, and curriculum developers to use evidence-based, developmentally appropriate practice when addressing literacy in early childhood education based on summaries of the available research. According to the statement, these practices included reading aloud to children, an introduction to phonemic awareness through exposure in books rather than direct instruction, exposing children to concepts of print by highlighting features of books during readings and infusing text in natural contexts throughout the day (e.g., asking preschoolers to “sign” their names upon entering the class for the day), instruction on the alphabetic principle, exposure to linguistic awareness games, and support of early writing. In kindergarten, these practices included repeated readings, a broad approach to enhancing vocabulary development (i.e., taking advantage of teachable moments to introduce new vocabulary rather than drilling vocabulary words), and continued practice in letter naming and phonemic awareness. In this statement, the IRA and NAEYC made clear their position that shared reading was the natural context in which to embed exposure to literacy and develop early literacy skills in early childhood education.

Ten years later, the report of the National Early Literacy Panel (NELP, 2008) again highlighted the importance of engaging children in shared reading from an early age to support the development of early literacy skills. The NELP report was completed at the request of the United States Congress to complement the report of the National Reading Panel (NRP, 2000). The NRP report had examined existing literature to identify effective and evidence-based practice in the area of literacy instruction and served as a guide for reading-education policy and practice related to K-12 education. While this report had been influential, it did not address the needs of children from birth through age five. As policy makers looked toward early childhood education as a means of preparing students for formal literacy instruction in kindergarten, the National Early Literacy Panel was established to “identify interventions, parenting activities, and instructional practices that promote the development of children’s early literacy skills,” under the auspices of the National Center for Family Literacy (NCFL). The panel convened in 2002 and set out to first identify *early literacy skills*, or skills which existing research had identified as precursors to *conventional literacy skills*, such as decoding, reading comprehension, and writing. After identifying 11 early literacy skills, including alphabet knowledge, phonological awareness, rapid automatic naming (RAN) of letters and digits, RAN of objects or colors, writing or writing own name, phonological memory, concepts of print, print knowledge, reading readiness, oral language, and visual processing, the panel then turned its attention to determining the extent to which existing practices supported their development. In their final report, the panel identified five common instructional practices used to target early or conventional literacy skills for children between birth and five years of age: code-focused interventions, shared-reading interventions, parent and home programs, preschool and kindergarten programs, and language-enhancement interventions. Meta-analyses of the impact of these instructional practices on early literacy skills were then conducted to determine the extent to which each practice could be said to support early literacy development. It should be noted that, while its goals included the identification of instructional practices, some have argued that it stopped short of issuing specific recommendations for parents and practitioners (Pearson & Hiebert, 2010).

The NELP report identified 19 experimental and quasi-experimental studies investigating shared-reading interventions that met the criteria to be included in the meta-analysis. These studies included both interactive shared reading as defined above as well as passive shared reading experiences. The results of the meta-analysis indicated that shared reading interventions had a moderate positive effect on oral language development and print knowledge. Oral language development includes the ability to produce and comprehend spoken language. This variable, therefore, encompassed a wide-range of sub-variables from receptive and expressive vocabulary knowledge, to listening comprehension, to grammatical knowledge. Print knowledge similarly encompassed a variety of sub-variables including alphabetic knowledge and concepts about print. Most of the research reviewed investigated expressive and receptive vocabulary knowledge as the primary measure of oral language development, with just five studies using composite oral language measures that incorporated two or more oral language skills such as listening comprehension, grammar, or the ability to produce formal definitions. This limited the panel's ability to investigate the influence of different types of shared reading interventions on specific oral language outcomes. Despite this limitation, however, the panel maintained that shared reading is an effective instructional method for addressing oral language development and print knowledge and should be recommended to parents and early childhood educators.

It should be noted that the panel attempted to compare the impact of dialogic reading (an interactive shared reading style) and non-interactive reading practices. While the effect size of studies employing dialogic reading was higher than the non-interactive shared reading practices, the difference between the two did not reach statistical significance, possibly due to the limited number of studies included in the analysis. This led the panel to recommend interactive shared reading practices over non-interactive practices. A closer inspection of the impact of interactive shared reading practices on outcomes in early childhood validates this recommendation.

### **Impact of Shared Reading on Early Literacy Skills**

As noted above, the panel included both passive and interactive shared reading styles in their meta-analysis, yet concluded with the recommendation that interactive shared reading is likely more beneficial than passive shared reading. Although the available literature did not allow for a comparison of the effects of interactive and passive shared reading, an examination of the literature provides a rationale for such a recommendation. Additionally, this conclusion complements the IRA/NAEYC joint statement (1998), which argued that interactive shared reading interactions influenced oral language development, print knowledge, and motivation to read. In this section, the influence of shared reading on these early literacy skills will be explored.

**Oral Language Development.** The relationship between *shared reading interactions* and *oral language development* has been well established. In studies on the impact of shared reading as part of the home literacy environment, researchers have found repeatedly that parental report of shared reading correlates with increased oral language development, including measures of expressive and receptive vocabulary (Foy & Mann, 2003; Hood, Conlon, & Andrews, 2008; Kalia & Reese, 2009; Karrass & Braungart-Rieker, 2005; Sénéchal & Cornell, 1993; Sénéchal, Pagan, Lever, & Ouellette, 1998; Sénéchal, Pagan, Lever, & Ouellette, 2008), receptive language and listening comprehension (Carlson, Bitterman, & Jenkins, 2012), receptive and expressive grammatical development (Burgess, 2002), and morphological knowledge (Sénéchal et al., 2008). It is interesting to note that these studies did not direct parents to engage in any particular

behaviors during the shared reading interactions. Instead, they investigated the existing home literacy environment to determine its impact on oral language development and found that the presence of shared reading in particular, compared to other markers of home literacy such as number of books present in the home or familiarity with authors of children's books, correlated with oral language development. This implies that the interaction between the adult and child about books is beneficial for oral language development over simple exposure to books.

Although correlational studies suggest that shared reading is beneficial for oral language development, experimental studies have demonstrated this effect, particularly when the reader encourages the child's active participation in the shared reading interaction. In 1988, Whitehurst et al. investigated the impact of a home-based shared reading intervention on expressive language ability in 30 children. In this program, parents were taught techniques to scaffold language development during shared reading. Specifically, parents were taught to use "open-ended questions, function/attribute questions, and expansions; to respond appropriately to children's attempts to answer these questions; and to decrease their frequency of straight reading and questions that could be answered by pointing" (p. 552). The authors called this form of shared reading *dialogic reading*, which emphasizes the importance the dialogue between the adult and child about the book. After one month of intervention, the children in the experimental group scored significantly higher on standardized measures of expressive language ability and produced longer utterances than the children in the control group whose parents were asked to read to their children as usual. These differences persisted when the children were assessed six months after the conclusion of the intervention phase.

Follow up studies have replicated and extended this initial finding when dialogic reading has been implemented by teachers (e.g., Lonigan et al., 1999; Lonigan & Whitehurst, 1998; Morrow, O'Connor, & Smith, 1990; Whitehurst et al., 1999) or parents (e.g., Arnold, Lonigan, Whitehurst, & Epstein, 1994; Blom-Hoffman, O'Neil-Pirozzi, Cutting, & Bissinger, 2007; Lonigan & Whitehurst, 1998). These findings persisted when dialogic reading was introduced to diverse populations, including children from low socio-economic backgrounds (e.g., Dickinson & Smith, 1994; Karweit, 1989; Whitehurst et al., 1994; Zevenbergen, Whitehurst, & Zevenbergen, 2003), with language delays (Crain-Thoreson & Dale, 1999; Dale, Crain-Thoreson, Notari-Syverson, & Cole, 1996), or who speak Spanish (Valdez-Menchaca & Whitehurst 1992; Vivas, 1996) or Chinese (Chow & McBride-Chang, 2003; Chow, McBride-Chang, Cheung, & Chow, 2008). Furthermore, studies have demonstrated that it is possible to use community resources, such as story times at the public library (Huebner, 2000) or routine pediatric well-visits (High, LaGasse, Becker, Ahlgren, & Gardner, 2000), to teach parents to use dialogic reading to address their children's expressive and receptive vocabulary development.

While a significant body of literature exists for dialogic reading, other interactive shared reading techniques have shown similar success in addressing oral language development, specifically receptive and expressive vocabulary (Gonzalez et al., 2014; Roberts, 2013; Wasik & Bond, 2001; Zucker, Cabell, Justice, Pentimonti, & Kaderavek, 2013). For example, in Wasik and Bond's (2001) study, four teachers serving 127 four-year-olds were taught to incorporate concrete items into shared reading interactions and use open-ended questions when talking about the book during large group reading sessions (with 12-15 children present). At the same time, teachers were asked to provide children multiple opportunities to use the book-related words throughout the class day. They found significant increases in expressive and receptive vocabulary for preschoolers enrolled in the experimental classrooms despite teachers in the control classrooms reading to their classes as frequently as the teachers in the comparison group.

Many of the studies described above replicated Whitehurst et al.'s (1988) findings on the impact of dialogic reading on expressive language development, particularly measures of expressive vocabulary, such as the Expressive One Word Vocabulary Test (EOWVT; Gardner, 1981) (e.g., Blom-Hoffman et al., 2007; Lonigan & Whitehurst, 1998; Whitehurst et al., 1994; Zevenbergen et al., 2003). Others extended them to include measures of receptive vocabulary, such as the Peabody Picture Vocabulary Test (PPVT; Dunn & Dunn, 1981) (e.g., Arnold et al., 1994; Chow et al., 2008; Kraemer, McCabe, & Sinatra, 2012; Lonigan et al., 1999; Roberts, 2013; Valdez-Menchaca & Whitehurst, 1992; Whitehurst et al., 1999). While receptive and expressive vocabulary is a component of oral language development, it encompasses all of the sub-variables associated with the ability to produce and comprehend spoken language, such as listening comprehension and grammatical knowledge.

Although the initial study by Whitehurst et al. (1988) demonstrate significant increases in mean length of utterance (MLU) in the experimental group, few follow up studies have included this measure of in their analyses. Despite the emphasis in the literature on the impact of shared reading on receptive and expressive vocabulary development, there are a handful of studies which have examined the impact of shared reading on other measures of oral language (Kramer, McCabe, & Sinatra, 2012; Lonigan & Whitehurst, 1998; Roberts, 2013; Valdez-Menchaca & Whitehurst, 1992). For example, in their investigation on the effect of read-alouds on listening comprehension, Kramer et al. (2012) found that first graders exposed to read-alouds of expository texts during the classroom read-aloud time over the course of four weeks developed stronger listening comprehension abilities when exposed to expository texts during post-test compared to their peers who had been exposed to narrative texts during their read aloud period. Both groups maintained their level of comprehension for narrative texts during post-test, presumably due to the heavy emphasis on narrative texts in both classrooms prior to the study's commencement. Roberts (2013) investigated the benefit of embedded instruction on comprehension strategies during shared reading interactions between parents and their children. These strategies included retelling, in which the reader or listener was asked to retell a portion of the text; story structure, in which the reader focused the listener's attention on salient features of the plot including characters, settings, problems, and resolutions; activation and use of prior knowledge, in which readers connected the text to the listener's prior knowledge through discussions before, during, and after the reading; and talking about text, in which the reader modeled making meaning of challenging text. After eight weeks, Roberts (2013) found that the ten children enrolled in the experimental group developed stronger comprehension skills, including the use of prediction, connection to life, and retelling compared to the ten children in the control group.

The findings described above support the assertions maintained in the IRA/NAEYC (1998) statement and NELP (2008) report that interactive shared reading is an effective intervention for oral language development, including vocabulary development and listening comprehension. Furthermore, they call into question the practice of eschewing shared reading until young children demonstrate competence in oral language and comprehension as shared reading can be a valuable context in which to develop these very skills.

**Print Knowledge.** The meta-analysis in the NELP (2008) report also identified the benefit of shared reading on preschooler's development of print knowledge. Print knowledge, as defined in the report, includes elements of (a) alphabetic knowledge, or the ability to recognize letters and their sounds; (b) concepts of print, which includes knowledge about print conventions, such as the left-right, front-back orientation of books; and (c) early decoding, such

as recognizing that certain words start with certain letters. Justice and her colleagues have conducted several studies on the impact of embedding explicit print awareness instruction within shared reading interactions. In the initial study of 28 parents and their four-year-old children, parents were asked to use nonverbal and verbal print referencing techniques during their shared reading interactions with their children (Justice & Ezell, 2000). Nonverbal print referencing included tracking the words while reading and pointing to print in the text, while verbal print referencing included comments, questions, and requests about print, such as asking their child the name of a letter in the book or to point to a word in the book. In this study, the experimental group showed a significant improvement in the areas of recognizing words in print (e.g., finding the longest word on the page), word segmentation (i.e., identifying a word as separate from the words preceding and following it), and print concepts (e.g., finding the front of the book and knowing where to start reading).

Similar results have been found in follow up studies when teachers were taught to use nonverbal and verbal print referencing during shared reading interactions with groups of students (Justice & Ezell, 2002; Justice, McGinty, Piasta, Kaderavek, & Fan, 2010) and were particularly beneficial when introduced in lower quality classrooms and to children with poorer attentional skills (McGinty, Justice, Piasta, Kaderavek, & Fan, 2012). The implications of these findings persisted when children were followed for the first two years of their formal schooling, with preschoolers from the experimental classroom demonstrating stronger gains in the areas of reading, spelling, and comprehension at the end of the first grade (Piasta, Justice, McGinty, & Kaderavek, 2012). Similar findings have been demonstrated when explicit references to print were embedded in the shared reading interactions between children with language impairment and their therapists, despite the fact that the children were not asked to respond to the references in any way (Lovelace & Stewart, 2007). A common theme in these studies is the introduction of explicit and developmentally appropriate instruction on print awareness during shared reading interactions. This approach is similar to the explicit focus on embedding opportunities to use language during shared reading interactions found in the dialogic reading studies. Together, these findings highlight the value of embedding explicit instruction on early literacy skills within the natural context of sharing a story with young children.

**Motivation to Read.** Finally, the IRA/NAEYC report emphasized the importance of introducing developmentally appropriate early literacy experiences (i.e., shared reading) on children's motivation and persistence in learning to read and write. Literacy researchers often refer to the so-called "Matthew Effect" in literacy development (Cunningham & Stanovich, 1997; Stanovich, 1986; Walberg & Tsai, 1983). This effect, alluding to a verse from the Gospel according to Matthew, refers to situations in which the rich get richer and the poor get poorer (Walberg & Tsai, 1983). In the area of literacy, this means that students entering formal schooling with stronger literacy skills are likely to excel and excel faster than their peers who enter school with less literacy knowledge in part due to their motivation to read (Cunningham & Stanovich, 1997; Sparks, Patton, & Murdoch, 2014). Cunningham and Stanovich (1997) demonstrated the Matthew effect in literacy when they completed a 10-year follow-up of a group of 56 students who had been tested on their reading and cognitive abilities in the first grade. In the 11<sup>th</sup> grade outcome study of 27 students available for follow up, the researchers were able to demonstrate that those students who had excelled on the first grade reading assessments continued to excel in reading when controlling for cognitive ability. An important mediating factor appeared to be the extent to which the students engaged in reading activities. As they note, "if the student got off to a fast start in reading... then they are more likely to engage in

more reading activity” as measured by level of print exposure in the 11<sup>th</sup> grade (p. 942). Sparks et al. (2014) replicated this finding, again suggesting that early success in reading has a strong influence on a student’s motivation to read.

While these studies tracked students from the first grade on, there is evidence that earlier literacy experiences influence students’ motivation to read prior to the first grade (Baker & Scher, 2002; Baker, Scher, & Mackler, 1997; Meagher, Arnold, Doctoroff, & Baker, 2008; Morgan & Fuchs, 2007; Sonnenschein & Munsterman, 2002; Zhou & Salili, 2008). Sonnenschein and Munsterman (2002) examined the shared reading interactions and home literacy experiences of 30 five-year-olds as they prepared to enter kindergarten and the first grade. Prior to entering kindergarten, the children were observed reading books with their family members and the children’s families were interviewed about their home literacy practices. As the students began their first grade year, their motivation to read was assessed. The researchers found that the family members’ affect during shared reading before kindergarten strongly influenced the students’ motivation to read when controlling for other markers of home-literacy such as frequency of reading, although frequency of reading was correlated with other early literacy skills. Baker and Scher (2002) found similar results when investigating the influence of parental beliefs and home reading practices on 65 six-year-olds entering the first grade. Students whose parents identified reading as a pleasurable activity scored higher on a measure of motivation to read than those whose parents did not identify reading as a pleasurable activity, regardless of the frequency with which parents reported reading to their children. The authors hypothesized that this effect was due to the behavior of parents during their shared reading interactions with their children. Again, these studies suggest that adult behavior during shared reading interactions has a profound influence on early reading behaviors in children.

### **Shared Reading Interventions for Children with Moderate to Severe Developmental Disabilities**

Recent analyses of the research literature have illustrated a lack of emphasis on beginning reading instruction for individuals with severe intellectual disabilities (Browder et al., 2006; Hudson & Test, 2011). Browder and her colleagues (2006) reviewed 128 studies on teaching reading to students with severe intellectual disabilities conducted between 1975 and 2003. The review compared the interventions in these studies against the recommendations for literacy instruction made by the National Reading Panel. According to the National Reading Panel’s (NRP, 2000) recommendations, beginning reading instruction should address five critical components: phonemic awareness, phonics, fluency, vocabulary, and comprehension. The results of the Browder et al. (2006) review revealed that the components of beginning reading instruction were not adequately addressed in the literature. Over seventy percent of the studies examined sight word instruction, followed by picture identification as it relates to developing symbolic understanding and communication skills, with less than a third of studies examining reading comprehension in any way. These results suggest that additional research is needed to identify effective interventions to teach a comprehensive array of beginning reading skills to students with severe intellectual disabilities.

One obstacle to developing appropriate literacy instruction for individuals with severe disabilities has been the lack of consensus on a definition of literacy appropriate for this population. In 2009, Browder and her colleagues offered a framework for literacy that included two outcomes: (1) increased access to literature; and (2) increased independence as a reader.

According to this framework, throughout the student's educational experience, there should be an emphasis on providing access to chronological-age appropriate literature that is adequately adapted to allow the student to participate meaningfully with the text. Providing increased access to literature requires both *opportunities* for students to access literature and *instruction* for skills that increase access. This instruction would include structured shared reading interactions designed to support text awareness, vocabulary, and listening comprehension, with the goal of constructing meaning through interactions with the text.

Building upon the literacy framework offered by Browder et al. (2009), Hudson and Test (2011) argued that "reading is ... a social and cultural practice every child participates in as a reader" (p. 34). They proposed a broad definition of literacy "as skills that increased *access to* age appropriate literature (e.g., listening comprehension) and *reading independence* (e.g., vocabulary and comprehension), including emergent literacy skills" (p. 36, emphasis in original). For students with significant intellectual disabilities who are in the beginning stages of symbol understanding and use (or who inconsistently use spoken language, sign, or augmentative or alternative communication [AAC]), reading instruction would focus on increasing access to literature and developing text awareness, vocabulary, and listening comprehension skills.

**Adapted Shared Reading Research.** In 2011, Hudson and Test conducted a review of the literature to determine the existence of evidence-based practice for the use of shared reading as an instructional method for students with severe intellectual disabilities. Six studies undertaken by two research teams were included in this review. Koppenhaver, Erickson, and Skotko (2001) examined the impact of resting hand splints, augmentative communication systems, and parent training on the use of scaffolding techniques to support the development of listening comprehension and communication in four girls with Rett syndrome. The results of their analysis suggest that the girls, ages 3 to 7 years, increased their use of labeling and commenting as these strategies were introduced within the reading interaction. In a related study, Skotko, Koppenhaver, and Erickson (2004) studied the behavior of both girls with Rett syndrome and their mothers during shared reading interactions over the course of four months. Using correlation and multiple regression analyses of their data, the authors showed that the girls were able to develop their communication skills as their mothers employed naturalistic strategies to support communication development, such as the use of pointing or asking predictive questions.

In 2008, Browder, Mims, Spooner, Ahlgrim-DeLzell, and Lee first described an adapted shared reading program used to increase participation in shared reading, symbol understanding, and listening comprehension for students who were learning that symbols have meaning. The intervention incorporated several components designed to address these goals. First, each book was presented along with an anticipatory set of objects chosen to highlight critical vocabulary words from the text. Second, the books were adapted to include simplified line drawings (icons) highlighting these critical vocabulary words as they were used in the text. Third, the student's name was used throughout the text to maintain the student's attention. Fourth, in addition to these supports, the least-to-most prompting procedure was used to elicit correct responses from the students. Finally, a contingent surprise element was introduced as reinforcement for participating in the reading interaction. Given the heterogeneity of support needs for this population of students, the intervention also included the use of Universal Design for Learning (UDL) to adapt shared reading strategies for each of three participants in the study. The results demonstrated an increase in each of the targeted areas, suggesting that the combination of



appropriate adaptations along with systematic instruction supported the students' engagement in reading.

Mims, Browder, Baker, Lee, and Spooner (2009) implemented an adapted shared reading program for two students with intellectual disabilities and visual impairments extending the results of the 2008 study. This study differed from the 2008 study in several ways. Because of the students' visual support needs, the study emphasized the use of three dimensional objects in both listening and responding. Additionally, this study more heavily emphasized listening comprehension through the use of comprehension questions in addition to the prediction and general comprehension questions used in the 2008 study. The researchers were able to demonstrate increases in comprehension as measured by the students' correct responses to specific questions embedded throughout the books.

Browder, Lee, and Mims (2011) further extended the results of their previous studies. Because the three students who participated in this study had both significant intellectual disability and either a physical or sensory impairment, this study examined the use of different response modes, such as eye gaze, point response, and object response. Additionally, this was the first examination of the program that employed teachers rather than members of the research team. Measures of both engagement and comprehension indicated improvement for all three participants. The intervention described in this study was published by the Attainment Company as a story-based curriculum for early symbol uses and entitled *Pathways to Literacy* (Lee, Mims, & Browder, 2011).

Muchetti (2013) extended the results from the above studies to include four students with autism who were minimally verbal. Using a combination multiple baseline and modified alternating treatments design, teachers introduced adapted shared reading for four students between five- and six-years of age who were enrolled in a nonpublic school for students with autism. The adapted shared reading intervention included simplified text, the inclusion of picture symbols highlighting salient words on each page, and three dimensional objects attached to pages throughout the books highlighting salient objects in the story related to the comprehension questions asked during the reading sessions. Teachers followed a task analysis adapted from Browder et al. (2008). All students demonstrated increased engagement and comprehension, although problematically these results did not generalize to non-adapted books introduced during the modified alternating treatments design phase of the study. This lack of generalization was most likely due to the students' need for adapted materials in order to demonstrate their competence.

**Limitations in the Existing Research.** Hudson and Test's (2011) review documents the establishment of a moderate level of evidence for the use of shared reading interventions to increase literacy skills in students with severe disabilities. Despite this promising initial body of research, there is a need not only for continued replication of these procedures, but also to extend the intervention to younger children and to those enrolled in inclusive preschool programs. There is also a need to examine the generalizability of the skills learned in the *Pathways to Literacy* (Lee, Mims, & Browder, 2011) reading program. Although the NELP report (2008) suggests that shared reading is an important activity for preschool-aged children, the participants in the studies described above were much older, ranging in age from five years to 10 years. Several conclusions can be drawn from the studies examining these participants' age ranges. First, it suggests that they had not adequately mastered the ability to participate in shared reading during preschool, quite possibly because their teachers did not know how to adequately adapt their instructional methods for these students. Second, it suggests that these students have

consistently fallen further behind their same-age peers in the area of literacy development. It is possible that earlier intervention during preschool may reduce future deficits in this area.

An additional consideration that requires further investigation is the context in which instruction is implemented. In previous studies, the students received instruction in one-on-one interactions with the teacher. This practice may serve to reinforce the cultural assumption that these students are incapable of participating in grade-level instruction, perpetuating the myth of their incompetence. Given the requirements of IDEA (2004) and NCLB (2002) for special education to align with general education curricula, it would be reasonable to suggest that the adapted shared reading program should be introduced at younger ages, namely during preschool when shared reading is the focus of literacy instruction. This emphasis on shared reading as a developmentally appropriate practice in early literacy instruction is evident in the IRA/NAEYC (1998) joint statement, and the evidence from the NELP (2008) report suggests that it is a valuable context in which to target oral language skills and print knowledge. The IRA/NAEYC (1998) statement in particular highlighted the need for daily shared reading experiences that provide an opportunity for children to build on existing knowledge and develop a deeper understanding of words and concepts that begin as early as possible.

Finally, the existing research on adapted shared storybook reading practices has failed to demonstrate that the participants in the studies were learning generalizable skills they could employ when reading other adapted books. This is an important point, as learning rote responses to questions embedded within a set of three or four books does not equate with the development of the listening comprehension skills critical for the development of reading comprehension. Muchetti (2013) investigated generalization to non-adapted books, but there were many reasons to presume that the students would fail to generalize new skills to non-adapted books. In the UDL framework, there is a clear distinction between adaptations and prompts. While prompts are extraneous stimuli introduced to ensure correct responding, adaptations are necessary accommodations to allow a student to demonstrate competence (Cooper, Heron, & Heward, 2007; CAST, 2011). Prompts are best viewed as a teaching tool, designed to be removed as students master new skills. For example, when teaching a student to produce a new word, the teacher may initially provide a model for the entire word (e.g., when teaching the word dog, the teacher may show the student a dog and say, “What’s that? Say dog.”). Over time, the teacher may fade this prompt (“What’s that? Say d...”). Eventually, the student will be able to respond without any prompting. This is very distinct from accommodations designed to present materials in a way the student can understand, allow the student to respond in the manner of expression he or she finds most comfortable, and offer multiple means of engagement. For example, students with hearing impairments may require sign interpreters to understand class lectures and to communicate with those who are not competent at signing. Without the interpreters, the students with hearing impairments would not be able to demonstrate their competence. This accommodation, therefore, should not be removed. When Muchetti (2013) examined the participants’ generalization to non-adapted books, it is entirely possible that she removed important accommodations that the participants required to demonstrate their competence with books. Any changes in adaptations should be made based on the changing needs of the participant.

## Purpose

To address these weaknesses in the literature, the current study replicated and extended the studies investigating the adapted shared reading program which was revised and published as *Pathways to Literacy* (Lee, Mims, & Browder, 2011). In the present study, *Pathways to Literacy* was implemented with three preschoolers with severe disabilities enrolled in inclusive early childhood classrooms. Several steps were taken to ensure that the *Pathways to Literacy* program was appropriate for inclusive preschool classrooms. The special education teachers implementing the program were interviewed to provide feedback on their impressions of the program, challenges they faced with implementing it, and recommendations for modifications to the program to increase its appropriateness for preschool culture. To investigate the generalizability of children's listening comprehension, and communication skills acquired from the program, two adapted books were introduced in the final generalization phase of the study. These books were related to the classroom's ongoing instructional theme. The following questions were addressed:

- (1) Does the *Pathways to Literacy* adapted shared reading program increase shared reading engagement, listening comprehension and communicating of a response for children with severe intellectual disabilities in inclusive classrooms?
- (2) Do the target students generalize these skills (reading engagement, listening comprehension and communication) to new adapted books?
- (3) What are the teachers' perceptions of the *Pathways to Literacy* adapted shared reading programs related to its ease of use, appropriateness for preschool culture, practicality, and relevance for all students? What, if any, changes do participating teachers recommend in order to successfully implement it in the classroom?

## Chapter 2

### Method

#### Participants

Recruitment of participants occurred in two phases. First, special education teachers working in inclusive early childhood classrooms were invited to participate. Once two teachers had consented to participate, three students in their respective programs (two in one classroom and one in another) were recruited and screened for eligibility.

**Special education teachers.** Given the rich tapestry that characterizes early childhood special education placement options, from public school programs, to private preschools, to state or federally funded preschool programs, there are a variety of models for inclusion in existence. In order to be eligible to participate in this study, special education teachers had to work with students who were fully enrolled in a program in which the majority of students were not eligible for an Individualized Education Program (IEP). At the same time, at least one of the students enrolled in their programs had to meet the eligibility criteria as a target student described below. Due to the study design, it was imperative that the special education teachers had the authority to implement the reading program in the classroom, which required modifications to the class schedule and reconfiguring groups of students. Teachers were recruited through word-of-mouth. Two special education teachers were ultimately included in the study.

Jamie taught in a private preschool classroom located in a densely populated urban area in Northern California. Her program served 20 students, six of whom were eligible for IEP services for a wide range of needs, including speech language impairment, autism, and visual impairment. This program used a co-teaching model of inclusion, with Jamie teaching alongside the general education teacher. The program also employed two aides and was visited by multiple therapists who conducted push-in therapy throughout the week. The program was open daily, Monday through Friday, from 7:30 am to 6:00 pm. Children were dropped off and picked up throughout the day. Jamie had been serving as the special education teacher in this program for two years and had been employed in classrooms for five years either as a paraprofessional or special education teacher. She had earned her credential as an education specialist in moderate to severe disabilities along with a Masters degree in special education.

Geri was employed through a county office of education (COE) located in a sprawling suburban area in Northern California. She was originally employed through the COE as a teacher of a special day classroom serving preschoolers with visual impairments. Over the years, she had worked with her administration to first integrate and then fully include her students in Head Start classrooms located on her campus. While she had been teaching for 35 years, and had been employed by the COE for 20 years, this was the first year that her afternoon class had been fully included in the Head Start classroom. The classroom enrolled 17 preschoolers, 2 of whom were identified as eligible for an IEP under the category of visual impairment. The classroom employed a co-teaching model of inclusion, with Geri supporting the general education staff in developing instruction and making adaptations for the students on her caseload. The program also employed two paraprofessionals, one hired through Head Start and one through the COE. Speech, orientation and mobility, occupational, and physical therapists provided a mix of push-in and pull-out support for the students with visual impairments. The program was open four days a week, Tuesday through Friday, from 11:30 am to 2:30 pm. Children were dropped off and picked up at the beginning and end of the day. In addition to

enrollment in the Head Start classroom, preschoolers enrolled in the visual impairment program attended class on Mondays. This class was dedicated to addressing the therapeutic needs of the students. Geri had received a credential in elementary education and social studies and had a Masters degree in visual impairments.

**Target students.** Three target students were recruited to participate in this study. Students were eligible to participate if they were at least 4-years-old, were eligible for an IEP, and demonstrated delays in communication and literacy. Inclusion criteria were based on the requirements needed to participate in the third phase of the *Pathways to Literacy* reading program. Students were eligible if they (a) demonstrated fewer than 25% of spontaneous independent initiations on the task analysis for adapted shared storybook reading (see Figure 1) when reading non-adapted storybooks; (b) demonstrated inconsistent use of spoken language and/or poor comprehension skills; and (c) demonstrated an emerging understanding that pictures and objects have meaning, either through use of AAC, the ability to match pictures to objects, or the ability to follow a picture schedule. Target students were recruited through teacher referral.

Mora was a 4-year, 3-month-old girl whose ethnicity was described by her parents as Japanese-American. She was enrolled part-time in Jamie's classroom, attending daily from 8:45 am to 1:00 pm. She was eligible for special education services through the category of visual impairment, with visual acuity of 20/200 due to familial exudative vitreo-retinopathy (FEVR). During the course of the study, her IEP was updated to include the eligibility category of autism. In addition to participating in the ongoing activities in Jamie's class, she received push-in vision therapy and orientation and mobility therapy provided by the school district. Outside of class, she received private speech and occupational therapies. Mora was exposed to both Japanese and English at home, while all instruction in the classroom was conducted in English. Although her spoken language was limited, she began to produce a mix of Japanese and English one- to two-word utterances shortly before the beginning of the study. Due to the increase in her use of spoken language and at the request of Mora's parents, Jamie had discontinued instruction on the use of a voice output device in favor of supporting spoken language. Before beginning the study, Mora had demonstrated an inconsistent understanding of symbols. Her teachers had attempted to use a variety of object- and picture-based systems for communication and instruction, with limited success. Jamie reported that Mora frequently chose to interact with books during free choice times, but that she insisted on manipulating the books herself and did not appear to understand how to interact with her teachers or peers about the books. She did not demonstrate comprehension of the text when the teachers asked her questions about the books. During screening, Mora was able to complete two of the 24 steps the task analysis independently (8.33%). The steps she completed were attending to the anticipatory set and selecting the object that goes with the book.

In addition to limited receptive and expressive language abilities and low visual perception, Mora exhibited a variety of behaviors that inhibited her ability to participate in shared reading. When agitated or upset, she would yell, jump out of her seat, and hit herself. If allowed to escalate, she would bite herself. These moments of agitation were frequent but usually short-lived. They could be triggered by a variety of factors, including a desire to obtain the manipulatives Jamie introduced or to end the reading session. Jamie was usually able to redirect Mora to bite a toy or use her words during these episodes. When calm, Mora would re-engage in the activity quickly. If the agitation escalated to include self-harm, the reading session was discontinued. Additionally, Mora engaged in several presumably self-stimulatory behaviors, although it is possible she used these behaviors to avoid participating in the reading activity. She

Step	Example Student Responses	Dependent Variable
1. Choose book to read	Touches one book, reaches toward one book, or says book name	Engagement
2. Places own name/photo with the book choice or indicates where the name/photo goes	Drop photo onto the book	Engagement
3. Attends to the title and author as they are read	Touch the title	Engagement
4. Attends to the anticipatory set and engages with a story-related object	Look at, touch, lean toward, or turn head towards object	Engagement
5. Makes a prediction when asked, "What do you think this story is about?" and shown three objects	Touches one object related to the book	Listening comprehension and communication
6. Attends as book is opened	Grasps edge of front cover, opens. Considered correct even if several pages are opened at the same time.	Engagement
7. Attends to the introduction of the repeated storyline by participating in completing the sentence	Completes the storyline by providing the final word and/or activating the AAC device	Listening comprehension and communication
8. – 10. Participates in reading by completing repeated story line using a switch or spoken words	Says line within 2 seconds of reading of first half of line	Listening comprehension and communication
11. – 13. Locates the symbol placed on or near the storyline on the page (embedded picture)	Gives, points to, or pulls off the symbol	Listening comprehension and communication
14. – 16. When shown an object related to the text, locates the object on the page to "read" with teacher	Touch object or pull object off book	Listening comprehension and communication
17. – 19. Selects object to answer comprehension questions about text.	Touch object or pick object up	Listening comprehension and communication
20. – 22. Independently turn page, imitate a page turn, or request a page turn when provided opportunity	Grasps edge of page and lifts it up. Correct even if several pages turned at once.	Engagement
23. When asked what the story was about, select the object that goes with the book (using same distractors from step 5)	Touches one object related to the book	Listening comprehension and communication

*Figure 1.* Task analysis for student engagement in shared storybook reading

frequently played with her eyes, either pushing on them or flicking her fingers near them as she looked up and away from the book. When engaged in these behaviors, Jamie would direct Mora to return her focus to the book. If she fondled herself, Jamie would place her hands on the tray

between them upon which the book and other materials were placed. Finally, Mora appeared highly motivated by a desire to mouth objects. This could prove to be a distraction in the reading session as materials were presented to support symbolic understanding. Jamie would allow Mora to mouth the objects so long as they were not required in the reading interaction. When the objects had to be returned, she would attempt to direct Mora to mouth other objects, such as a textured chewy tube provided by the occupational therapist.

Angela was a 4-year, 4-month-old girl whose ethnicity was described by her parents as Mexican-American. She participated in the full class day in Geri's classroom (11:30 am to 2:30 pm). She was eligible for special education services through the categories of visual impairment and speech and language impairment. Due to optic nerve atrophy, she had no light perception. Her speech therapist described her speech impairment as a receptive and expressive language delay. In addition to participating in Geri's class, she received speech, orientation and mobility, occupational, and physical therapies, all of which occurred as push-in or pull-out from her primary classroom. Angela's first language was Spanish, and her family spoke Spanish exclusively in the home. Classroom instruction was primarily English, although the Head Start paraprofessional was bilingual and would translate for Angela and other students as needed. Angela produced a mix of Spanish and English utterances, typically in the form of echolalia or scripted utterances. For example, throughout each session, she frequently asked "¿qué es eso, Geri?" ("what's that, Geri?"), and would persist to ask this question despite Geri's response. She would also echo Geri's language used in the shared reading interactions. For instance, she would mimic Geri's intonation and say "Thank you" as she chose an object for a response. Before the onset of the study, Angela had demonstrated an inconsistent understanding that symbols had meaning. While her teachers used physical objects to support comprehension throughout the school day, these had not been successful in increasing her participation and engagement in activities. She could, however, label the objects when asked. Angela never chose to interact with books during free choice times and appeared unengaged when books were read during large group activities. During screening, Angela was able to complete three of the 24 steps of the task analysis independently (12.5%). The steps she completed were choosing her name (presented in Braille) and placing it on the book, attending to the anticipatory set, and opening the book.

In addition to limited receptive and expressive language abilities and a lack of light perception, Angela presented with a variety of behaviors that interfered with her independent participation in shared reading. In particular, Angela had a short attention span and would quickly become interested in other activities. When allowed to, she would turn around in her chair or find an empty shelf. Positioning her face in the corner of the chair or shelf, Angela would make a variety of sounds. The classroom staff called this "echoing," as it appeared that Angela enjoyed hearing the echoes made in this manner. She would also become distracted by sounds made in the classroom, such as children crying or yelling. Finally, she had the tendency to reach out to feel around for any objects to explore. For each of these behaviors, Geri would spend some time redirecting Angela back to reading the book, reminding her that she would be able to "echo" or play with the object when the book was done. When the distraction was crying or another loud sound, Geri would sympathize with Angela about the distracting sound.

Adam was a 5-year, 2-month-old boy whose ethnicity was described by his mother as Russian-American. He was enrolled part-time in Jamie's classroom, attending four days a week from 8:30 am to 5:00 pm. He was eligible for special education services through the category of autism. In addition to participating in the ongoing activities in Jamie's class, he received specialized academic instruction from the school district. This instruction was provided as push-

in therapy in the classroom. Outside of class, he received private speech, occupational, and Floortime therapies. Adam was exclusively exposed to English in school and at home. His language was characterized by repetitive utterances. In his specialized academic instruction sessions, Adam had mastered the ability to match pictures to objects and had begun letter identification; he had, however, yet to demonstrate listening comprehension. He appeared to enjoy interacting with books but was unable to demonstrate comprehension of the texts. He was also prone to engaging in idiosyncratic patterns of behaviors with books, insisting on manipulating them in a particular manner which made shared reading difficult for the teachers. During screening, Adam was able to complete five of the 24 steps the task analysis independently (20.83%). The steps he completed were choosing a book, matching his name to the book, attending to the anticipatory set, opening the book, and selecting the correct answer to a comprehension question on one of three opportunities.

In addition to limited listening comprehension skills, Adam presented with a variety of behaviors that inhibited his ability to participate in shared reading. In particular, he was easily distracted from the task and would jump out of his seat, roll on the floor, or attempt to gain access to materials to play with them. When this occurred, Jamie would redirect him to sit down and return his focus to the book. She also attempted to hide materials when not in use so as to reduce the chance that he would attempt to gain access to them. After a couple reading sessions, Adam also began to display some rigidity in his responding. For example, whenever he was given a choice of three objects to choose from, he would grab all the objects and say, "All three." He also began to place his name card on the book upside-down and comment that he was being "wacky." This was apparently a reference to the ongoing classroom theme at the time (Dr. Seuss), which included a Wacky Wednesday celebration. During baseline, Jamie would simply move on to the next step of the shared reading protocol when he displayed such rigidities.

**Peer selection.** One peer was chosen to join the target student for each reading session. All peers included in this study were preschoolers between four and six years of age who were fully enrolled in their respective classrooms for the duration of the study. Peer selection differed across classrooms. Jamie's classroom had a focus on developing friendships between the children, emphasizing child choice in peers during activities throughout the day. To continue this practice, Mora and Adam were given the opportunity to choose their peer for each reading session. The reading sessions were described for the class during circle time at the beginning of the study. Before each session Mora and Adam were asked to choose a peer to join them. Because Mora was still working on identifying peers, she was shown two pictures of classmates from which to choose. It was possible for her to make a third choice, however. For example, one time she was shown two pictures and asked to choose a friend for reading group. Instead of choosing one of the pictures, she approached another of her classmates and gave her a hug. Jamie interpreted this as Mora's choice and had this classmate join them for reading group. Adam was able to choose a peer when given the verbal direction. When asked, he would verbally name a peer or approach a peer and point at him or her.

In Geri's classroom, the reading sessions were described to the class during circle time. Initially, the designated "classroom helper" was asked to join the reading sessions as the peer. This method of peer selection was dropped during baseline for three reasons. The first was that some of the peers had difficulty joining in the shared reading interaction and following Geri's instructions. The second was that there were times when the classroom helper did not wish to join the reading session. Finally, because the classroom helper rotated for the entire class, there would have been a day on which Angela would be the classroom helper, which would have



required another peer selection to be made. When this method was dropped, Geri generated a list of six students who were eager to join Angela for reading sessions. For each session, a peer from the list was asked to join the group, rotating through the list. If the child was absent or asked not to participate that day, the next child on the list was recruited to join Angela for reading group.

## **Setting**

Reading sessions were implemented within the context of a typical inclusive preschool environment. Each teacher was asked to choose a time of the day during which they could read to the target student and a peer. Both teachers chose to conduct the reading sessions during “free choice” time, or the period in the day in which the preschoolers were allowed to choose from a variety of activities available in the classroom. Once the time of day was determined, each teacher specified an area of the classroom that would be relatively quiet and free of distractions.

Jamie opted to use the “cubby area,” a space near the cubbies at the entrance to the room. This area was demarked by a short wall with a swinging gate and was routinely used by therapists visiting the class to provide push-in therapies. Students were less likely to enter this area during their free choice time, reducing the number of distractions for Jamie and the reading group. Mora and Adam’s reading sessions took place on the floor of the cubby area. A small, raised tray was placed between Jamie and the target student and his or her peer. This tray was approximately seven inches tall, 12 inches wide, and 28 inches long. Materials used in the reading sessions were placed on the tray as needed. For example, when giving the students the opportunity to place their names on the book, the cards with the students’ names were placed on the tray, and the book was held next to the tray.

On several occasions, the cubby area was not available for use during the reading sessions. This occurred when a visiting therapist was using the cubby area and once when a large delivery was expected during the reading session. On these rare occasions, Jamie opted to conduct the reading sessions in the “block area,” a corner of the classroom which housed blocks and other small manipulative toys. When conducting sessions in the block area, Jamie would set up the tray in the same configuration as that used in the cubby area.

Initially, Geri chose to conduct Angela’s sessions at the classroom writing area. This area featured a table, upon which there was a small shelf that held paper, pencils, stencils, scissors, and other utensils for writing and playing with paper. The target student and peer sat at two chairs located side-by-side at the table. Geri sat behind and between the preschoolers as she read the books. The related materials were placed on the shelf and taken down as needed to provide the preschoolers with opportunities to respond. This location was abandoned after five sessions in favor of a small table in the classroom “library area” for several reasons. First and foremost, the writing center was located next to the “sensory area,” an area housing a sensory table that was filled with beans, sand, or rice at various times. This was a popular spot for the classroom, and the preschoolers in the sensory area frequently interrupted the reading sessions. Another challenge with the set up at the writing center was related to the placement of the students and teacher. Because Geri was sitting behind her, Angela regularly asked to sit on Geri’s lap during the reading sessions. This was to be avoided to allow Geri to access materials as needed, share attention with the peer, and to reduce the chances of unintended prompting.

The remainder of Angela’s sessions took place in the classroom “library area,” a small nook surrounded by bookshelves that regularly housed a rocking chair and beanbag chair. During reading sessions, a small table, approximately 24 inches by 36 inches, was placed in the

center of the library area. A portable folding partition, approximately 24 inches high and 36 inches wide, was placed on the shelf between the library area and sensory area. Angela and her peer sat in chairs on one side of the table while Geri sat on the other. Because Angela was likely to become distracted by materials on the shelves or by “echoing” in the shelves around her as described above, the table was positioned so that she sat at least an arm’s length away from the nearby bookshelves. This area was rarely visited by children during free choice time, making it relatively quiet compared to the table at the writing center.

### **Independent variable: *Pathways to Literacy*, an adapted shared storybook reading program**

The adapted shared storybook reading program, *Pathways to Literacy*, included an implementation guide, three adapted storybooks, teacher guides with scripted lessons, story-related objects, card sets, a Big Button augmentative/alternative communication (AAC) device, a symbol creation kit, and data sheets. As part of the implementation guide, instructions for adapting books so that they can be used with the reading program were provided. The three adapted books provided with the *Pathways to Literacy* program were introduced during the intervention phase of the study. Prior to commencement of the generalization phase of the study, teachers chose additional books to adapt based on the ongoing themes in their classrooms.

The *Pathways to Literacy* reading program includes five levels, each with a task analysis detailing progressively higher levels of participation in shared reading and use of symbols for listening comprehension and communication on the part of the student. Level One is designed to increase the student’s engagement with the story by inserting the student’s name into the story and introducing a surprise element which is intended to serve as reinforcement for participation in the reading interaction. Levels Two through Five target progressively higher levels of symbolic understanding, from choosing a response using physical objects in level two to using pictures or symbols to answer questions in Level Five. Level Three was selected for the study. This level targets the use of objects to respond to comprehension questions throughout the book, answering predictive and summative questions before and after the reading, and locating pictures or symbols in the book. In addition, engagement through choosing a book, turning pages, and attending as materials are introduced addressed. This level was selected based on the characteristics of the target students, including emerging symbolic understanding a lack of engagement during shared reading.

Level Three uses a task analysis that combines the steps of the task analyses from the Browder et al. (2008) and Browder et al. (2011) studies. The reading program incorporates the principles of Universal Design for Learning (UDL) to make adjustments to fit the needs of the student, including defining how materials are presented, how each child will respond, and prompting strategies to increase engagement.

The implementation guide for *Pathways to Literacy* specifies that teachers should develop a prompting strategy using either a least-to-most prompting hierarchy or time delay procedures (Lee, Mims, & Browder, 2011). The least-to-most prompting hierarchy was used in the current study. The least-to-most prompting procedure requires the teacher to employ successively more intense prompts to ensure the child produces the desired response. In this procedure, the teacher initially waits for the child’s response. If the child does not respond or responds incorrectly, an initial, low level prompt (such as a verbal direction) is provided. If this first level of prompt does not successfully elicit the correct response from the child, the teacher employs a second, slightly more intense prompt (such as a verbal prompt combined with a

gesture) to support a correct response. Finally, if the student is not successful at this prompt level, the teacher will employ the highest level prompt (such as hand-over-hand guidance) to ensure the child responds correctly before moving on. As described below, the least-to-most prompting hierarchies were developed based on the participants' individual prompting needs. Praise was given for all active participation.

## Materials

Because this study's aim was to investigate the use of the *Pathways to Literacy* reading program in inclusive preschool classrooms, it was decided to initially use the books and materials included in the published package. The three books included in the reading program are *Jamaica's Find* (Havill, 1987), *Tar Beach* (Ringgold, 1996), and *EarthDance* (Ryder, 1999). Upon completion of the intervention phase of the study, two new books were introduced for each participant to assess how well the participants generalized their ability to participate in adapted shared reading. These books and how they were chosen are described below.

**Baseline materials.** During baseline, non-adapted copies of each book were provided to teachers. The only changes made to these books was the introduction of the repeated storyline, which was required for the target students and their peers to participate in steps 8 through 10 of the task analysis, "completing the repeated story line" (Figure 1). Materials used by the students to respond, including objects and picture cards, were displayed on the tray or table in front of the preschoolers as needed. The word cards were not adapted for Mora or Adam during baseline. Given Angela's lack of light perception, tactile symbols (included with the *Pathways to Literacy* reading program) were attached to the face of the word cards during her baseline sessions.

**Intervention materials.** When the *Pathways to Literacy* reading program was introduced during the intervention phase of the study, the adapted copies of the books and materials were introduced. These copies were adapted with laminating and spiral binding. The title of each book was printed on foam and attached to the book in place of the original title, raising it slightly from the rest of the cover. Additionally, hook and loop fasteners were used to adhere the objects and picture cards used to facilitate symbolic understanding to pages of the book when the preschoolers were asked to identify them during the reading session. Finally, based on input from the special education teachers, the decision was made to remove text from each story. Any text not necessary to the storyline was blacked out using a permanent marker to reduce text complexity. Additional adaptations were introduced for each target student based on the results of the UDL meetings between the investigator and the teachers following the guidelines described in the implementation guide included in the *Pathways to Literacy* materials. These adaptations are described below.

**Generalization materials.** In addition to the three books included with the *Pathways to Literacy* reading program, two new books selected from the preschool classroom library were adapted based on the guidelines described in the implementation guide and were introduced during the generalization phase of the study. The books used in this phase were chosen by the special education teachers based on the themes that guided classroom activities (e.g., Spring). Both teachers chose three possible books to adapt for generalization. The target students were then asked to choose two of the three books. Due to the short length of the generalization phase, each book was presented three times on alternating sessions (Book 1 in Session 1, Book 2 in Session 2, and so on). Jamie's class was implementing a "Spring" theme during the generalization phase. To complement this theme, she chose *The Very Hungry Caterpillar* (Carle,

1989), *Planting a Rainbow* (Ehlert, 1988), and *Bugs! Bugs! Bugs!* (Barner, 1999). When asked to select two books, Mora chose *The Very Hungry Caterpillar* (Carle, 1989) and *Bugs! Bugs! Bugs!* (Barner, 1999). Adam chose *The Very Hungry Caterpillar* (Carle, 1989) and *Planting a Rainbow* (Ehlert, 1988). Geri's class was completing an "Insects" theme during the generalization phase. She chose *The Very Hungry Caterpillar* (Carle, 1989), *Bugs! Bugs! Bugs!* (Barner, 1999) and *The Grouchy Ladybug* (Carle, 1996) to complement this theme. From these, Angela chose *The Very Hungry Caterpillar* (Carle, 1989) and *Bugs! Bugs! Bugs!* (Barner, 1999).

These books were then adapted using the instructions in the *Pathway to Literacy* implementation guide in consultation with the special education teachers. The adaptations made are described in Table 1. First, each teacher chose target vocabulary and generated an anticipatory set for each book. Most of the materials used in the anticipatory sets were found in the classroom. Any additional materials needed, such as the planting soil for *Planting a Rainbow*, were purchased by the investigator.

Next, the teachers generated literal comprehension questions to ask during the reading sessions. Repetitive lines were generated for each book as needed. Because Mora and Angela required tactile objects to be attached to the word cards used in the books, one key component for the repetitive lines was that the final word of the line could be represented by a tactile object. For this reason, the line in *The Very Hungry Caterpillar* (Carle, 1989), "But he was still hungry," was changed to, "But he was still a hungry caterpillar." This change lent itself to the addition of a tactile object (a small plastic caterpillar) to be attached to the word card.

Finally, the teachers discussed physical modifications for the books. These decisions were based on the wishes of the teachers and needs of the target students. Jamie opted to have her books laminated and spiral bound due to Mora's history of destroying books in the classroom and the relatively thin pages of *Planting a Rainbow*, whereas Geri did not find lamination or spiral binding necessary. Jamie also opted to outline the titles of each book using puffy paint to highlight the title and raise it up from the surrounding book. Meanwhile, Angela benefitted from the introduction of "page fluffers," or small felt tabs attached to the outer edge of each page, in intervention, and it was decided to continue the use of page fluffers in the generalization phase. For Angela's books, Braille was placed over the titles of the books, without raising it up on foam. The teachers continued to use hook and loop fasteners to attach objects and pictures to the books as needed.

**Reading levels of books.** Choosing books for shared reading presents a unique challenge. While resources are available for matching students to books, many of these assume that the student will be engaging in some level of independent reading. For example, the Lexile® Framework was designed to help match books to readers (MetaMetrics, 2014; Stenner, Burdick, Sanfor, & Burdick, 2007). In this framework, a reader is assigned a Lexile® Reader Measure based on the results of the Lexile® assessment (in general, first graders usually score 300L or below). Teachers can then select books with a similar Lexile® Text Measure, which combines information about the complexity of the semantics and syntax used in the book. If a reader and book are perfectly matched (e.g., a 300L reader with a 300L book), the reader should be able to comprehend 70% of the text during independent reading (MetaMetrics, 2014). As is noted by the creators of the Lexile® measure, "if the reader receives help [as is the case in shared reading], the comprehension rate will increase" (MetaMetrics, What is a Lexile Measure?, 2014).

Table 1.  
Book Adaptations for Generalization Phase

	Mora's Books		Angela's Books		Adam's Books	
	<i>The Very Hungry Caterpillar</i> Eric Carle	<i>Bugs! Bugs! Bugs!</i> Bob Barner	<i>The Very Hungry Caterpillar</i> Eric Carle	<i>Bugs! Bugs! Bugs!</i> Bob Barner	<i>The Very Hungry Caterpillar</i> Eric Carle	<i>Planting a Rainbow</i> Lois Ehlert
Physical adaptations	Pages laminated; book spiral bound; titles outlined in puffy paint	Pages laminated; book spiral bound; titles outlined in puffy paint; "Spiders" replaced "Daddy long legs"	Braille title added; felt page fluffers added to each page	Braille title added; felt page fluffers added; "Spiders" replaced "Daddy long legs"	Pages laminated; book spiral bound; titles outlined in puffy paint	Pages laminated; book spiral bound; titles outlined in puffy paint
Repeated story line	"But he was still a hungry caterpillar"	"I see bugs"	"But he was still a hungry caterpillar"	"I see bugs"	"But he was still a hungry caterpillar"	"We planted a rainbow"
Word card Tactile symbols	"Caterpillar" <i>Plastic caterpillar</i>	"Bugs" <i>Two plastic bugs</i>	"Caterpillar" <i>Plastic caterpillar</i>	"Bugs" <i>Two plastic bugs</i>	"Caterpillar" <i>None</i>	"Rainbow" <i>None</i>
Objects for symbolic understanding	Cloth caterpillar, strawberry, and butterfly	Cloth ladybug and bee; plastic spider; plastic bowl full of plastic bugs	Plastic egg, caterpillar, and butterfly	Plastic ladybug, spider, grasshopper; plastic bowl full of plastic bugs	Cloth caterpillar, strawberry, and butterfly	Potted fabric flowers; foam rainbow; plastic container with soil; seed packet
Prediction question	"What do you think <i>The Very Hungry Caterpillar</i> will be about?"	"What do you think <i>Bugs! Bugs! Bugs!</i> will be about?"	"What do you think <i>The Very Hungry Caterpillar</i> will be about?"	"What do you think <i>Bugs! Bugs! Bugs!</i> will be about?"	"What do you think <i>The Very Hungry Caterpillar</i> will be about?"	"What do you think <i>Planting a Rainbow</i> will be about?"
Literal comprehension question/answer 1	"What popped out of the egg?"/ <i>caterpillar</i>	"What went creeping by?"/ <i>lady bug</i>	"What lay on a leaf?"/ <i>egg</i>	"What went creeping by?"/ <i>lady bug</i>	"What popped out of the egg?"/ <i>caterpillar</i>	"What did we order?"/ <i>seed packet</i>
Literal comprehension question/answer 2	"What did the caterpillar eat four of?"/ <i>strawberry</i>	"What never bites?"/ <i>spider</i>	"What popped out of the egg?"/ <i>caterpillar</i>	"What never bites?"/ <i>spider</i>	"What did the caterpillar eat four of?"/ <i>strawberry</i>	"Where do we plant the seeds?"/ <i>soil</i>
Literal comprehension question/answer 3	"What did the caterpillar turn into?"/ <i>butterfly</i>	"What buzzes by flowers?"/ <i>bee</i>	"What pushed his way out of the cocoon?"/ <i>butterfly</i>	"What goes hop, hop, hopping by?"/ <i>grasshopper</i>	"What did the caterpillar turn into?"/ <i>butterfly</i>	"What did we watch grow?"/ <i>rainbow</i>
Comprehension question	"What was <i>The Very Hungry Caterpillar</i> about?"	"What was <i>Bugs! Bugs!</i> about?"	"What was <i>The Very Hungry Caterpillar</i> about?"	"What was <i>Bugs! Bugs!</i> about?"	"What was <i>The Very Hungry Caterpillar</i> about?"	"What was <i>Planting a Rainbow</i> about?"

The framework does attempt to identify which books will most likely be read with adult support, or which books may be appropriate for beginning readers (assigning an AD or BR code before the Lexile® Text Measure), but the Lexile® Text Score remains the same as it would be for independent reading. In the Lexile® Framework, *Jamaica's Find* (Havill, 1987) receives a score of 460L, *Tar Beach* (Ringgold, 1996) receives a score of AD790L, and *EarthDance* (Ryder, 1999) receives a score of AD820L. These scores would roughly correspond to second to fourth grade equivalencies (MetaMetrics, 2014). Meanwhile, the books chosen for generalization receive lower scores. *The Very Hungry Caterpillar* (Carle, 1989) receives a score of AD460L, *Planting a Rainbow* (Ehlert, 1988) receives a score of 170L, and *Bugs! Bugs! Bugs!* (Barner, 1999) is not rated using this framework. Thus, *The Very Hungry Caterpillar* (Carle, 1989) corresponds roughly to the second grade level, and *Planting a Rainbow* (Ehlert, 1988) is considered a book appropriate for first grade or below (MetaMetrics, 2014).

Pearson publishes the Developmental Reading Assessment, 2<sup>nd</sup> Edition PLUS (DRA2+) as a tool to match students to books (Beaver & Carter, 2006). In this framework, students are assessed on reading engagement, oral reading fluency, and comprehension. These scores combine to generate the students' DRA level. Books can be matched to students based on DRA, much in the same way outlined in the Lexile® framework; unlike in the Lexile® Framework, however, the results indicate a student's independent or instructional levels. Students demonstrate stronger comprehension at the independent level, but this is not quantified in a way similar to the Lexile® Framework, which specifies that a student should be able to comprehend 75% of the text. Again, with support students should be able to comprehend books they cannot read independently (McCarthy & Christ, 2010). In the DRA framework, *Jamaica's Find* (Havill, 1987) receives a score of 18, *Tar Beach* (Ringgold, 1996) receives a score of 38, and *EarthDance* (Ryder, 1999) has not been assigned a score. These scores would roughly correspond to second or third grade equivalencies (Scholastic, Inc., 2014b). *The Very Hungry Caterpillar* (Carle, 1989) receives a score of 16, *Planting a Rainbow* (Ehlert, 1988) receives a score of 10, and *Bugs! Bugs! Bugs!* (Barner, 1999) is given a DRA score of 6. The scores roughly correspond to first to second grade equivalencies (Scholastic, Inc., 2014b).

Finally, Scholastic, Inc. (2014a) provides an estimate on the expected interest level for texts. Not much information is provided on the way in which this level is calculated, but Scholastic, Inc. (2014a) purports that this system indicates the grades in which students "are the most likely to be engaged by the book's content and approach" (About Reading Levels). Although this measure lacks detail on the reliability and validity of the scores provided, it may be one of the more useful for selecting books for shared reading. As discussed in the introduction, it is expected that shared reading will be introduced well before students develop competence in independent reading (IRA & NAEYC, 1998; NELP, 2008). Instead, educators are asked to choose books based on suitability (either featuring interesting themes or, alternatively, featuring themes with which a student may be familiar), literary and artistic merit, the balance between text and illustrations, high production quality, and lasting appeal (Matthews, 1993). Because the preschoolers will not be required to decode the text, the teacher instead focuses on supporting comprehension of the new vocabulary embedded in interesting story lines. Scholastic, Inc. (2014a) suggests that all the books included in the study (including those used for generalization) would interest students in Kindergarten through second grade. None of the measures discussed indicate interest or reading levels below Kindergarten.

**Universal Design for Learning (UDL).** During the baseline condition, after providing training on the general adaptations used in the *Pathways to Literacy* reading program, the

investigator met with the special education teachers to develop individualized adaptations for each student based on the principles of UDL. Recognizing that each target student brings his or her own unique strengths and needs to the shared reading interaction, the goal of the UDL meetings was to determine adaptations and accommodations that would remove barriers to participation and allow the target student to demonstrate his or her competence in the interaction (Rose & Meyer, 2014). The meetings covered: (a) how the materials were presented to increase access to the reading program; (b) how to encourage engagement, including developing a least-to-most prompting procedure; (c) how the student would demonstrate competence (i.e., what would be accepted as a correct response); and (d) the introduction of external reinforcers to increase engagement. The adaptations and accommodations generated at each target student's UDL meeting are discussed below.

*Results of Mora's UDL meeting.* The focus of Mora's UDL meeting was on increasing access to the materials through alterations in the presentation of materials and increasing motivation to participate through the introduction of external reinforcement. In order to increase motivation to participate in the reading group, a first/then object schedule was introduced. A picture of the three books included in the *Pathways to Literacy* materials was placed in the "first" section of the schedule. Mora was then given a choice of two activities she could access after the reading session. These choices included music (represented by an iPod), riding on the classroom's rocking horse (represented by a small wooden horse), or playing with a parachute (represented by a small parachute made of felt). After she chose which activity she would like to engage in after the reading session, the object used to represent this activity was placed in the "then" section of the schedule. Additionally, because she had the tendency to mouth the materials associated with the books, she was given access to small toys that she could mouth throughout the reading session. These were removed when she was given an opportunity to respond and returned to her after she had made a response. A variety of toys were used, including small sensory balls, the wooden horse used to represent the classroom rocking horse, and gummy "window clings." This decreased her mouthing of the book-related materials and appeared to serve as reinforcement for independent responses.

In addition to the above modifications designed to increase motivation to participate, a variety of adaptations were introduced to increase access to the reading materials. A primary barrier to Mora's access of the reading materials was her tendency to look away from the book and materials while engaging in self-stimulation. For this reason, whenever Mora was given a choice, it was decided to hold the materials close to her face, rather than placing them on the tray. When only two choices were given (in the case of choosing books), Jamie simply held these items up near Mora's face. When three choices were given (in the case of answering comprehension questions), these choices were attached to a laminated sheet of card stock using hook-and-loop fasteners. This sheet was then held close to Mora's face. To encourage Mora to correctly identify her name and place it on the book, two adaptations were made. First, her name card was enlarged, her picture attached, and the card was laminated. Initially, it was decided to prop the books on a slant board on the tray in front of Mora to increase her attention to the books. After several sessions, this was abandoned in favor of moving the book to intercept with Mora's eye gaze and then returning it to a neutral position between Jamie and the preschoolers once her attention was established. It was also decided to outline the pictures in *Jamaica's Find* (Havill, 1987). While the images in *Tar Beach* (Ringgold, 1996) and *EarthDance* (Ryder, 1999) featured high-contrast colors, *Jamaica's Find* (Havill, 1987) was illustrated with light-colored watercolors. Given Mora's visual acuity, Jamie was concerned that she would not discriminate

the images on the page. The salient images on each page were outlined using a black permanent marker. Given Mora's visual acuity, tactile symbols, included in the *Pathways to Literacy* materials, were attached to each word card used in steps 11 through 13 of the task analysis, "locates the picture or symbol placed on or near the storyline on the page" (see Figure 1). For example, the word card for "dog" in *Jamaica's Find* (Havill, 1987) included the word dog and a drawing of a dog. For this picture card, a small piece of furry fabric was glued over the picture of the dog. Initially, page fluffers were introduced, but these were taken out after the first intervention session because Mora became intensely involved in attempting to remove them from the book. Because Mora participated in singing songs in class, Jamie suggested enticing her participation in completing the repeated story line by using a sing-song voice.

Finally, a least-to-most prompting hierarchy was created to increase engagement with the shared reading interaction. Based on her knowledge of the types of prompts Mora responded to throughout the day, Jamie helped generate two prompting hierarchies: one to increase participation in the steps of the task analysis that required Mora to make a physical choice (e.g., choosing the answer to a comprehension question) or complete an action (e.g., turning the page), and one to increase participation in vocal responses (i.e., completing the repeated story line). For steps involving a physical choice or completing an action, Jamie first used a vocal prompt, explicitly telling Mora what to touch. For example, when asking a comprehension question such as "What did Jamaica find on the ladder step?" Jamie would first wait several seconds for Mora to respond. If she did not respond, Jamie then gave an explicit verbal prompt, "give me the hat." If Mora did not respond to this prompt level, a gestural prompt was given (e.g., tapping on the hat while holding it in Mora's line of sight). Finally, if these less-intensive prompts did not elicit a response, Jamie would provide hand-under-hand guidance by placing Mora's hand on top of her own and guiding her hand to the correct response.

For steps in the task analysis requiring a vocal response, namely the step in which the students are given the opportunity to finish a repeated storyline, an alternate prompting hierarchy was developed. For these steps, Mora was first given an object prompt. For example, when asked to complete the line "Jamaica found a dog," Jamie would show Mora the stuffed dog from the reading materials, while repeating "Jamaica found a...." If this level of prompt did not elicit a response, Jamie then gave a direct verbal instruction while continuing to show Mora the object. In this case, Jamie would say, "Say, 'dog.'" Finally, if Mora had yet to complete the storyline, Jamie would introduce the Big Button programmed with the word and featuring the picture used on the word card. If necessary, Jamie would use a hand-under-hand prompt to ensure that Mora successfully activated the Big Button. Once the Big Button had been activated, Jamie would again give Mora the direct instruction, "Say, 'dog.'" This strategy ensured that Mora had to opportunity to produce a response in at least one form (through the Big Button or vocally) and was usually successful in encouraging Mora to produce a vocal response.

*Results of Angela's UDL meeting.* Angela's UDL meeting focused on adaptations to increase access to the reading materials, ensure that she could demonstrate her knowledge through appropriate responses, and increase motivation to participate. While attempts had been made to reduce interruptions from classmates during the reading sessions by moving the location and erecting a partition on the shelf behind the reading group, Geri introduced a "busy hat" during the intervention phase of the study as interruptions were very distracting for Angela. During the classroom circle time preceding free choice and the reading group time, Geri showed the class the hat and reminded them that she was not available while wearing it. She did this preceding the first three reading sessions in the intervention phase. To address motivation, Geri



introduced ongoing rewards throughout the reading session. Of primary interest to Angela were objects that produced interesting sounds, including a plastic “echo” microphone and a closed FM system. The closed FM system featured a microphone into which Geri would speak and headphones that would allow Angela to listen to Geri’s words. At times, Angela would request to speak into the microphone. Additionally, Angela was given choices of who she would give objects to when responding. For example, when asked to find the word card after completing the repeated storyline (steps 11 through 13), she was asked if she wanted to give the card to Geri or to her peer. At times, Angela requested that her favorite classroom paraprofessional join her in the reading sessions. Geri permitted this so long as Angela participated, effectively using the paraprofessional as reinforcement for active participation. The paraprofessional did not provide any instruction or prompts, but at times Angela would choose to give the objects or pictures to the paraprofessional. At other times, Angela was motivated by breaks for gross motor activities, including jumping, twisting, and swinging her body. She would be given these breaks after she had participated in several steps of the task analysis. In most sessions, Angela’s interests changed several times. If Angela stopped responding or began to show signs of distraction, Geri would verbally present a variety of options to determine what would motivate Angela to continue her participation in the reading group.

Several adaptations were developed to address Angela’s lack of light perception. First, it was decided that Braille should be incorporated into the books to increase access to the reading materials. Braille was added to the title and picture/word cards through the book. Second, when asked to choose a book, find an object, or pick a word card, Geri helped Angela “touch scan” the objects as she presented the choices. Her hands were placed away from the objects or pictures before she was given the opportunity to respond. It was decided to embed two objects or word cards, rather than three, as Angela had demonstrated difficulty with such a skill in class, and she would often become distracted when she had to persist to search the area in front of her as she searched for objects. Third, when answering comprehension questions, three objects were placed on a divided tray with three openings. This was a procedure Angela was familiar with from other activities in class. Finally, page fluffers in the form of small pieces of foam or felt were introduced to help Angela find the right page to turn.

Next, a least-to-most prompting hierarchy was created to increase engagement with the shared reading interaction. Two hierarchies were developed based on Geri’s knowledge of Angela’s response to prompting in the classroom. For responses requiring a physical choice or completing an action, Angela was first given a direct verbal instruction (e.g., “give Geri the dog”). If this level of prompting was not effective, Geri then placed Angela’s hand on top of the correct choice and gave the direct verbal instruction again. Finally, Geri would use hand-over-hand prompting to ensure that Angela gave the correct response before moving on with the reading session. For verbal responses (i.e., completing the repeated storyline), Geri would first re-establish Angela’s attention to the task by tapping her on the shoulder and repeating the story line. If Angela responded at this level, it was not considered a prompted response. If Angela had not responded, however, Geri would then provide a partial verbal model, such as “Jamaica found a d...” Finally, Geri would give an explicit verbal instruction, such as “Say, ‘dog,’” if Angela had not yet produced a response.

*Results of Adam’s UDL meeting.* The focus of Adam’s UDL meeting was increasing his motivation to participate in the reading lesson. He had a strong interest in alphabet stickers, and would gain access to these stickers if he and his peer earned 15 tokens during the reading session. He could earn tokens for producing independent correct responses, as well as sitting

appropriately and listening to Jamie read the book or demonstrating other positive skills (such as appropriately interacting with his peer). His peer could also earn tokens for participating appropriately. This alteration to the typical token system structure was used as it appeared to increase Adam's attention to and sharing with his peer, something that the class was addressing throughout the day. Jamie also created a social story about appropriate behavior during reading time. The social story addressed the need to sit appropriately, listen, and respond. This story was read to Adam in a separate interaction before the intervention sessions.

The primary routine that interfered with Adam's ability to correctly respond was his impulse to grab materials used during the reading sessions. For example, if he was asked, "What did Jamaica find on the ladder step?" and presented with three objects, he would pick up all of the objects. At other times, he would attempt to grab the objects and pictures that Jamie had placed next to her for use later in the reading session. To address these issues, Jamie suggested creating a "home" for the objects when not in use. This was a sheet of 8½ inch by 11 inch construction paper with picture symbols for the items used in the book. This sheet was covered in contact paper and hook and loop fasteners were used to adhere the objects on top of their respective pictures. When introducing the anticipatory set, Jamie would allow Adam and his peer to interact with these materials and would put them back in their "home" before moving on to the next steps in the protocol. Simply attaching the materials to the book interfered with Adam's routine of choosing all of the materials for the steps in which he was asked to identify an object or picture in the book. To encourage Adam to choose just one response when presented with an array to answer the comprehension questions (steps 5, 17 through 19, and 23), an "answer sheet" was introduced. The answer sheet consisted of an 8½ inch by 11 inch sheet of laminated card stock. Running along the top of the page were three squares onto which three choices were adhered using hook and loop fasteners. Below this array, there was one square with a hook fastener. Adam was asked to put one answer in the open box.

To increase Adam's engagement in the reading session, two least-to-most prompting hierarchies were developed. For physical choices or completing actions, Jamie used a prompting hierarchy similar to the one used for Mora. If Adam did not produce a correct response, Jamie initially gave a direct verbal instruction. If this was unsuccessful, she then used a gesture, such as pointing at or tapping the correct response. Finally, if this prompt level was not effective, she would use hand-over-hand prompting to ensure that he completed the step. For vocal responses (i.e., finishing the repeated storyline), Jamie first provided an object prompt by showing Adam the object he was supposed to name for a response. For example, to complete the line "Jamaica found a dog," Jamie would hold the stuffed dog up for Adam to see. If this was unsuccessful, Jamie would move to a partial verbal prompt by providing the first sound of the correct response. Continuing the above example, Jamie would say, "Jamaica found a d..." Finally, if Adam had not completed the storyline, Jamie would give him a direct verbal prompt; in this case, "Say, 'dog.'"

## **Dependent Variables**

There were three variables of interest in this study: (a) engagement in shared storybook reading, (b) listening comprehension, and (c) communicating a response. Participating in steps of the task analysis (Figure 1) was considered an indicator of engagement. In addition to the overall level of engagement, a subset of steps of the task analysis targeted listening

comprehension and communication skills. These steps are indicated on the task analysis in Figure 1.

Independent correct responses were recorded for the 23 steps listed in the task analysis using the data sheets provided in the *Pathways to Literacy* reading program. The summary measure for engagement was the percentage of steps in the task analysis completed independently and correctly. The summary measure for listening comprehension and communication was the percentage of the subset of steps of the task analysis that required students to comprehend aspects of the story being read and communicate a correct response to comprehension questions asked by the teacher.

### **Interobserver Agreement**

An independent observer, a faculty member from the researcher's graduate program, coded an average of 31.51% of the sessions to determine the rate of interobserver agreement (IOA). IOA was scored for 33.33% of Mora's sessions, 32.14% of Angela's sessions, and 27.78% of Adam's sessions. The level of agreement between the primary investigator and the independent observer was calculated by dividing the number of agreements by the total number of steps and multiplying by 100.

In order to ensure proper measurement, the investigator and independent observer simultaneously coded the behavior of non-participants in the study prior to the study's commencement. The study did not begin until an IOA of 100% had been established. Throughout the study, whenever a coding discrepancy occurred, the primary coder reviewed the video from the session, and the two coders discussed the discrepancy to come to an agreement. If at any time during the study IOA for the steps completed in the task analysis dropped below 85%, the two observers met to review the video together, discuss discrepancies, and clarify the definition of the codes.

### **Treatment Fidelity**

To ensure that special education teachers implemented the steps of each phase with fidelity, they were provided with a step-by-step guide to follow during reading sessions (see Figure 2 for an example of such a guide for the book *Jamaica's Find* [Havill, 1987]). Guides were created for each book and each phase of the study (thus, the guide for *Jamaica's Find* differed for baseline and intervention sessions). These guides were developed by the researcher. While the guides followed the task analysis, they described what the teacher was to do rather than the student's response and aligned with the events as they occurred in the book. Because Geri was farsighted, the text of this guide was enlarged to an 18-point font and the guide was turned into a book with each step on its own page. This allowed Geri to quickly reference the guide during the reading sessions. Jamie was able to use the guides as presented in Figure 2, but quickly mastered implementation so that she no longer needed to reference the guides during her reading sessions.

Prior to baseline, intervention, and generalization, teachers had to demonstrate 100% fidelity of the steps required for the next phase of the study. In other words, the teachers had to demonstrate 100% fidelity for the baseline procedures before baseline commenced. This involved following the steps of the task analysis using non-adapted books and materials. They then had to demonstrate fidelity to the intervention procedures prior to implementation of

Page	<i>Jamaica's Find -- What You Do</i> (Check when completed)	What Child Does (Personalized)
	Present choice of two books.	
	Provide each student an opportunity to put his/her name/photo with a chosen book.	
	Read title and author. <i>Ensure child has chance to look at or point to title before you do</i>	
	Introduce the anticipatory set and highlight one object. <i>Highlight one item for each child</i>	
	Present two objects and ask each student "What do you think <i>Jamaica's Find</i> is about?" <i>Use the object from step 4 and one distractor</i>	
	Model opening the book <i>Provide opportunity for a student to open the book</i>	
	Provide opportunities for the students to turn the page or ask for the page to be turned. <i>Each student should get at least three opportunities</i>	
4	Attach the <b>hat</b> to the page. "It's [name's] turn to read with me. First, find the hat on this page." <i>Allow child to engage with hat as you read the page</i>	
4	"What did Jamaica find on the ladder step?" <i>Present <b>hat</b> and two distractor objects</i>	
4	Introduce the repeated storyline and model how to complete it.	
7	Attach the <b>basket</b> to the page. "It's [name's] turn to read with me. First, find the basket on this page."	
7	"Where did Jamaica put the dog?" <i>Present <b>basket</b> and two distractor objects</i>	
8	Allow students to complete repeated storyline. "You read the word dog, now find the picture for dog in the book."	
11	Allow students to complete repeated storyline. "You read the word dog, now find the picture for dog in the book."	
14	Allow students to complete repeated storyline. "You read the word dog, now find the picture for dog in the book."	
19	Allow students to complete repeated storyline. "You read the word dog, now find the picture for dog in the book."	
21	Attach the <b>dog</b> to the page. "It's [name's] turn to read with me. First, find the dog on this page."	
21	"What did Jamaica plop on the counter?" <i>Present <b>dog</b> and two distractor objects</i>	
25	Allow students to complete repeated storyline. "You read the word dog, now find the picture for dog in the book."	
End	Ask each student, "What was <i>Jamaica's Find</i> about?" <i>Present items from step 5</i>	

Figure 2. *Jamaica's Find* guide sheet used during the intervention phase.

Steps	What Teacher Does	Teacher/Peer Behavior							
		Session Number							
		T	P	T	P	T	P	T	P
1.	Present choice of two books.								
2.	Provide each student an opportunity to put his/her name/photo with a chosen book.								
3.	Read title and author. Provide opportunity for students to identify title of book.								
4.	Introduce the anticipatory set, picture card and highlight main object for each child.								
5.	Present three objects and ask each student to predict what the story might be about.								
6.	Ask target student to open the book.								
7.	Introduce the repeated storyline and model how to complete it.								
8. – 10.	Read the repeated storyline and wait for students to complete the line.								
11. – 13.	Ask the students to find the picture on the page to complete the storyline.								
14. – 16.	Attach an object related to the text to the book and ask the students to locate it and “read” with you.								
17. – 19.	Using the embedded object and two distractors, ask a literal comprehension question.								
20. – 22.	Provide three opportunities for the student to turn the page.								
23.	At the end of the story, present three objects and ask what the story was about.								

*Figure 3.* Generic intervention fidelity sheet. A fidelity sheet was generated for each book and phase of the study that aligns the steps of the task analysis and the order of the events as they occur in the book. T = scoring for teacher fidelity; P = scoring for delayed peer response.

*Pathways to Literacy.* Finally, prior to introducing new books in generalization, they had to demonstrate 100% fidelity with the new books and materials. A generic copy of the program fidelity form can be found in Figure 3.

Throughout the study, fidelity was measured for 49.32% of sessions to determine the extent to which the special education teachers implemented the program accurately. Special education teachers were given feedback about any steps they forgot to implement or implemented incorrectly, and the investigator brainstormed with the teachers solutions to any problems they faced following each session. In order to ensure the reliability of intervention fidelity measures, a second rater, a postdoctoral student with over a decade of research experience, coded 27.78% of the sessions in which fidelity measures were gathered.

Because peers participated in the shared reading sessions, there was a risk of the peer modeling the appropriate response prior to the target student having a chance to respond. If this occurred, it would be difficult to determine whether the target student was demonstrating a response independently or simply imitating their peer. In order to ensure that the target students' scores were not influenced by their peers acting as models, the peers' behavior was measured as well. The special education teachers were asked to tell the peers to refrain from answering until the target student had the opportunity to respond. Peers participated "correctly" if they delayed their response until after the target student had responded, if the target student never emitted a response and the teacher then gave the peer a chance to respond, or if the peer responded during the least-to-most prompting hierarchy (as target student responses were not considered independently correct if prompted). Furthermore, because Angela would not see her peer's physical responses, her peers' physical responses (such as pointed to an object) were considered correct even if they occurred prior to her response. Peer behavior was scored for every session scored for treatment fidelity. Sessions were dropped if the peer was unable to delay their response for more than 20% of opportunities provided to the target student due to concerns that the target student's behavior was unduly influenced by the peer. This occurred once during the course of the study sessions.

## Procedures

**Design.** A multiple baseline across participants design was used to answer the question of whether the *Pathways to Literacy* reading program, implemented in inclusive preschool classrooms, increased the engagement, listening comprehension, and communication responses for the target student as measured by the task analysis in Figure 1. In this design, the introduction of the intervention is staggered to ensure that the intervention, and not other factors, is functionally related to any changes in responding as measured by the task analysis. According to the What Works Clearinghouse guidelines for single-case design implementation, changes in responding should be seen within three sessions of the phase change (Kratochwill et al., 2010). Meanwhile, no changes in the pattern of responding should be evident for the participants remaining in the baseline phase.

**Teacher training.** Special education teachers received training in three rounds. Prior to commencement of the study, they were trained on the baseline procedures. This involved following the steps of the task analysis (see Figure 1) using non-adapted books and materials. Prior to the intervention phase, they received training on the use of the *Pathways to Literacy* materials, which included adapted books and materials. Finally, before the generalization phase of the study, teachers were trained on the creation of new materials following the guidelines included with the *Pathways to Literacy* materials. During this training, they assisted in adapting two new books for each target student. Before each phase began, teachers demonstrated 100% fidelity for the steps involved in the upcoming phase.

Each special education teacher chose the location of their training and interview sessions. Jamie's training sessions occurred in her classroom during the class nap/rest-time. The trainings took place at a table in the front of the classroom or in the cubby area described above. Geri's training sessions occurred in her office, located adjacent to her classroom or in an empty classroom next door to her room. Her training took place during after-school hours.

**Baseline.** In the baseline phase, the target student and a peer engaged in shared book reading together in the classroom. In this phase, the teacher read a non-adapted version of one of the three books from the *Pathways to Literacy* reading program following the steps of the task analysis in Figure 1. For each session, a choice of two books was given for each session. The presentation of the books was rotated to ensure that each book was presented equally so that the target students were exposed to all three books. While the book itself was not modified in this phase, any auxiliary materials needed by the target student or peer to demonstrate independence (e.g., the materials for symbolic understanding) were present throughout the lesson. The teachers were asked to read the book in an animated fashion and were given a guide to track the steps of the reading protocol (see Figure 2 for a sample guide). No prompting for participation was introduced in this phase. If the students did not make an independent response within five seconds, the teacher moved on to the next step. Teachers provided positive verbal feedback for engagement and appropriate behavior as they usually would. Before introducing the intervention conditions, each target student had been exposed to each of the three books in baseline.

Initially, the target students participated in three sessions per week. Due to a participant being dropped from the study early in the baseline phase, Adam began his participation after the commencement of the study. This change extended the length of the baseline phase. In order to ensure that Mora and Angela did not become bored with the books during this extended phase, weekly probes were introduced after the participants had completed in a minimum of five sessions.

**Intervention.** During the intervention sessions, the procedures of the *Pathways to Literacy* reading program were implemented, including the adaptations based on the UDL meetings and the least-to-most prompting hierarchy. In this phase, the teacher read an adapted version of one of the three books from the reading program following the steps of the task analysis in Figure 1. The length of the session, session frequency, and classroom setting did not differ from the baseline sessions. As described in the baseline phase, instruction was rotated across the three books provided with the reading program.

**Generalization.** To investigate the extent to which the skills acquired during the intervention sessions generalized to other books, two new books were introduced in the shared reading sessions during the generalization phase of the study. As described above, the special education teachers selected three books from which each target student chose two books to read. The two books were alternated from session to session to ensure that each book was presented three times in the generalization phase. Mora and Angela read *The Very Hungry Caterpillar* (Carle, 1989) and *Bugs! Bugs! Bugs!* (Barner, 1999), while Adam chose *The Very Hungry Caterpillar* (Carle, 1989) and *Planting a Rainbow* (Ehlert, 1988). The specific adaptations made to these books are presented in Table 1. Generalization commenced following a demonstration of mastery in the intervention phase, with two or more sessions with over 75% of responses completed independently. During generalization sessions, the structure of the reading interaction remained the same. Because new vocabulary and comprehension questions were introduced in this phase, prompting and reinforcement continued.

Table 2.  
*Social Validity Coding Scheme*

	Code	Definition
Benefits	Positive features of the program	Comments about features of the program the teachers particularly liked (e.g., the objects in the book or the plans for adapting books). Includes comments about the systematic nature of the program.
	Value for students	Comments suggesting the teachers see benefits for students in the classroom – both those with IEPs and those without.
	Ease of use for other adults	Comments about training other staff or parents to use the materials.
Challenges	Impractical features of the reading program	Comments suggesting that the reading program was impractical or uncomfortable to use. This could range from materials being “boring” to discomfort with the subject matter being controversial (this happens primarily for Tar Beach, which discusses racism), to critiques that that a feature of the reading program is too abstract.
Fit with ECSE	Fit with other instruction and materials	Comments about the way the reading program may extend or compliment other instructional practices or materials already in use.
	Recommendations for other teachers	Suggestions regarding the types of ongoing classroom activities in a typical inclusive early childhood classroom in which the reading program can be used. Can include changes (such as adapting it to use in circle) or using as is.
	Recommendations for changes	Explicit descriptions of ways the teachers would change the program to make it more appropriate for ECSE. These recommendations indicate a view that the reading program can be used flexibly to meet the needs of the teacher, classroom, and students. These can also include critiques of the program, such as indicating that the books were inappropriate or steps that teachers would not include in the task analysis.
	Plans for continued use	Comments suggesting the teachers plan to use the materials after the study.

**Social validity interviews.** The purpose of the social validity analysis was to develop an understanding of special education teachers’ perceptions of the *Pathways to Literacy* reading program, including its ease of use, appropriateness for preschool culture, practicality, and relevance for all students enrolled in their programs. This question was addressed using pre- and post-intervention semi-structured interviews with the special education teachers (Appendices A



and B). To analyze these interviews, audio recordings of the interviews were first transcribed. The primary investigator then completed an initial reading of the transcripts to generate preliminary codes related to the questions and common themes that arose in the interviews. Next, the primary investigator and a second reviewer analyzed the transcripts separately using these codes to highlight illustrative quotes. Codes were considered appropriate when both reviewers chose similar quotes to include under the code and did not code the same quote using separate codes. Codes were collapsed if there was a high level of overlap in the quotes selected to illustrate two or more codes. The final list of codes was broken into three categories: (a) benefits, which included codes indicating perceived or experienced benefits of the reading program; (b) challenges, which indicated perceived or experienced challenges with the reading program; and (c) fit with early childhood special education (ECSE), which included codes regarding the teachers' perceptions of the way in which the reading program fits with other ECSE practices in their classrooms. Definitions of the codes can be found in Table 2.

***Pre-intervention interview.*** After the training session, but before beginning to use the *Pathways to Literacy* program in the classroom, special education teachers were interviewed about (a) their initial perceptions of the components of the curriculum that were of the highest interest to them; (b) the challenges they anticipated; (c) their perceptions of the ease to which they would be able to introduce the program into the classroom; and (d) their beginning thoughts about using the program with other students not participating in the study (see Appendix A).

***Post-intervention interview.*** At the end of the study, the teachers were interviewed again to gain an understanding of the benefits and challenges they found with the reading program and what changes they recommended and/or planned to make in order to continue using the reading program upon completion of the study (see Appendix B).

### Chapter 3 Results

The results of the study are described in Figures 4 and 5. Figure 4 presents data documenting the association between implementation of the *Pathways to Literacy* reading program and the percentage of steps of the task analysis (Figure 1) completed independently by the target student. Figure 5 presents data documenting the impact of the reading program on the subset of steps of the task analysis that involve listening comprehension and communication. According to the guidelines set forth by the What Works Clearinghouse (Kratowill et al., 2010), there are two important criteria to demonstrate a functional relationship between implementation of an intervention and changes in the targeted behaviors in a multiple baseline design. First, there must be a noticeable difference between the participant's performance in the final three sessions of one phase and the first three sessions of the next phase. Second, during the phase change for one participant, there should be no apparent change in the pattern of baseline performance for the other participants in the study. These criteria for establishing a functional relationship appear to have been met for the participants' performance on both the total task analysis and the subset of the steps of the task analysis that specifically target listening comprehension and communication.

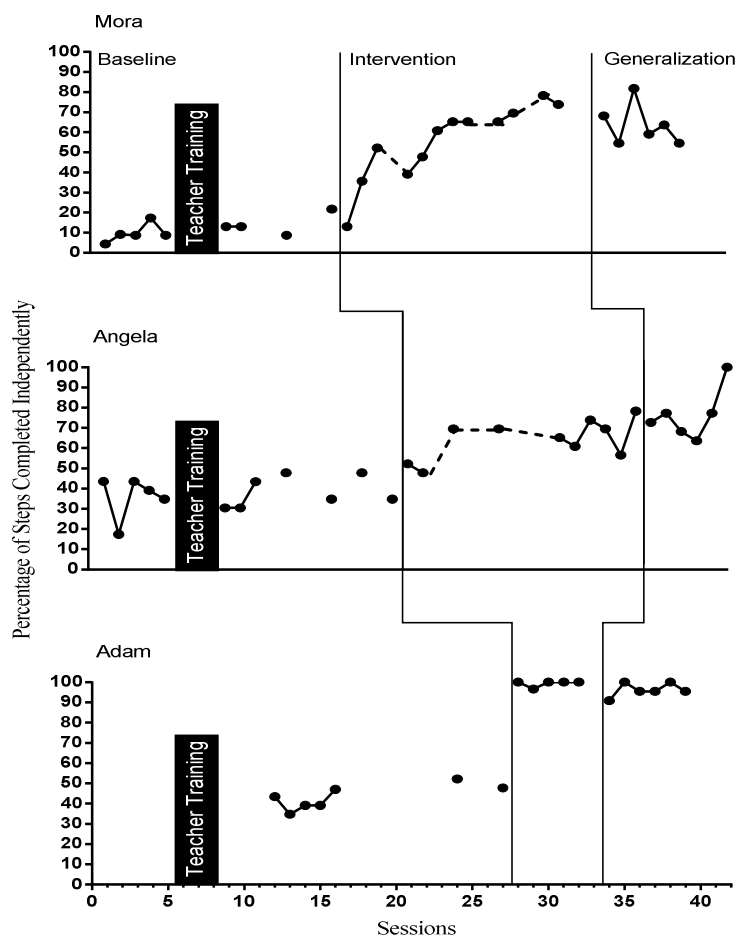


Figure 4. Percent of steps of the task analysis completed independently.

As is demonstrated in Figure 4, the introduction of the *Pathways to Literacy* reading program appeared to have a positive effect on independent participation in shared storybook reading for each of the three participants. Mora's performance during baseline was relatively low and stable with a slight positive trend ( $b = 0.62$ ). Her performance ranged from 4.35% to 21.74% ( $M = 11.64\%$ ) of the steps of the task analysis completed independently. When the *Pathways to Literacy* reading program was introduced, there was an increase in level ( $M = 55.51$ ) and trend ( $b = 3.64$ ) in the data. Over the course of the intervention condition, Mora completed between of 13.04% to 78.26% of steps of the task analysis independently. While the first session after the introduction of the *Pathways to Literacy* reading program was similar to her performance during baseline, by the second intervention session she was demonstrating improved performance over baseline and her performance never again returned to baseline levels. Meanwhile, there appeared to be no change in performance for Angela or Adam. Finally, the improved performance appeared to generalize to new books with new vocabulary and comprehension questions, with a range of 54.55% to 81.82% of steps completed independently in the generalization phase of the study ( $M = 63.64\%$ ) and a slight negative trend ( $b = -1.82$ ), although this trend is difficult to interpret as the books were alternated rather than chosen by Mora for each session.

Angela's performance during baseline displayed high levels of variability with a range of 17.39% to 47.83% of steps of the task analysis completed independently ( $M = 37.32$ ) and no trend ( $b = 0.33$ ). Although Angela continued to display variability in responding when the *Pathways to Literacy* reading program was introduced, there was an increase in level ( $M = 64.35\%$ ) and a positive trend in responding ( $b = 1.02$ ), with a range of 47.83% to 78.26% of steps completed independently. Although the first two sessions of intervention demonstrated performance similar to baseline, by the third session there was improved performance which never again dropped to baseline levels. Meanwhile, Adam's pattern of baseline responding remained steady during this transition, meeting the requirements for demonstrating a functional relation. Angela's increased rate of independent participation continued in the generalization phase of the study, with a range of 63.64% to 100.00% (final session only) of steps completed independently ( $M = 76.52\%$ ). Although there appears to be a positive trend in the generalization phase ( $b = 3.77$ ), this is most likely due to the outlier performance in the final session of this phase.

Adam's performance on the total task analysis during baseline was steady with a slight positive trend ( $b = 0.77$ ), with a range of 34.78% to 52.17% of steps completed independently ( $M = 43.36$ ). There was an immediate change in level when the *Pathways to Literacy* reading program was introduced. It would appear that Adam reached the ceiling for responding, with a range of 96.65% to 100.00% of steps completed independently during this stage ( $M = 99.33\%$ ) and no trend ( $b = 0.34$ ). This change occurred immediately following the introduction of the *Pathways to Literacy* reading program. His increased level of independent participation in shared storybook reading persisted into the generalization phase of the study, although there was more variability in his rate of responding, with a range of 90.91% to 100.00% of steps completed independently ( $M = 96.21\%$ ) and a slight positive trend ( $b = 0.65$ ).

Similar changes in participation in shared reading were evident in the subset of steps of the task analysis that targeted listening comprehension and communication. As can be seen in Figure 5, Mora's performance in baseline was low and steady, with a range of 0.00% to 13.33% of steps targeting listening comprehension and communication completed independently and no apparent trend ( $M = 6.73\%$ ;  $b = 0.05$ ). When the *Pathways to Literacy* reading program was

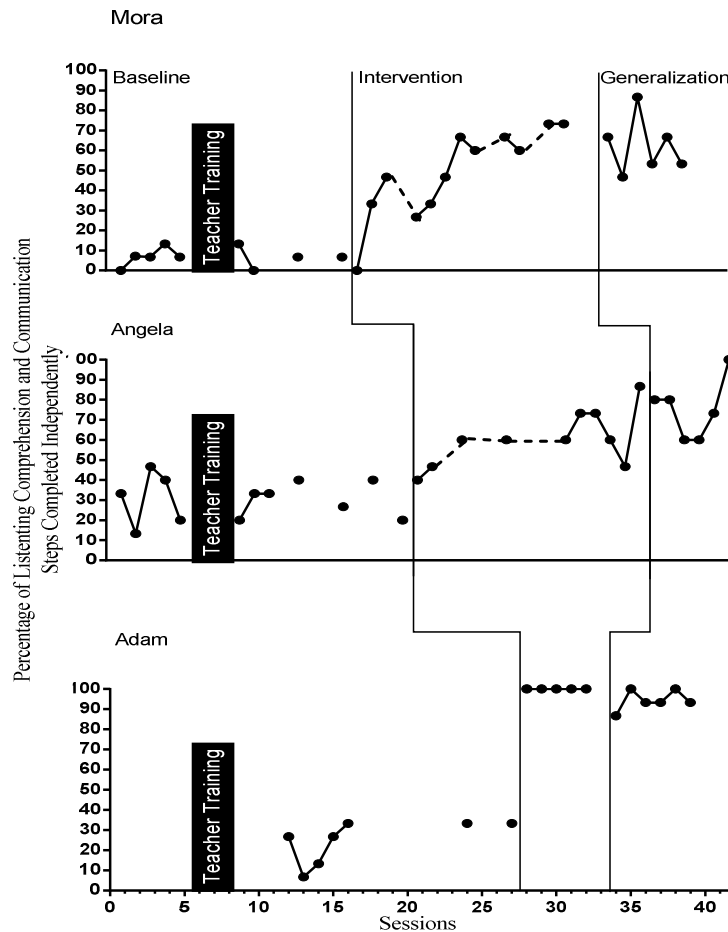


Figure 5. Percent of the subset of steps of the task analysis related to listening comprehension and communication completed independently.

introduced, again there was an increase in level ( $M = 48.89\%$ ) and a positive trend in the data ( $b = 4.16$ ), with a range of  $0.00\%$  to  $73.33\%$  of steps completed independently. Again, the first session following the introduction of the new materials appears to be similar to her performance during baseline, but by the second session her performance improved over baseline and never again returned to baseline levels. Meanwhile, there was no change in the pattern of responding apparent in the graphs of Angela and Adam's responding on the subset of steps related to listening comprehension and communication. Her improved performance on steps related to listening comprehension and communication continued in the generalization phase despite the introduction of new vocabulary and comprehension questions, with a range of  $46.67\%$  to  $86.67\%$  of steps completed independently ( $M = 62.23\%$ ) and a negative trend ( $b = 1.14$ ).

On the subset of steps of the task analysis related to listening comprehension and communication, Angela's performance during baseline was variable and without an apparent trend ( $b = -0.03$ ) and a range of  $13.33\%$  to  $46.67\%$  of steps completed independently ( $M = 30.55\%$ ). When the *Pathways to Literacy* reading program was introduced, her performance on this subset of steps continued to be variable but there appeared to be an increase in level and a positive trend in her performance ( $b = 1.62$ ), with a range of  $40.00\%$  to  $86.67\%$  of steps related to listening comprehension and communication completed independently ( $M = 60.67\%$ ).

Although there was a slight increase in performance on the steps of the task analysis related to listening comprehension and communication when the *Pathways to Literacy* reading program was introduced, her performance in the second session was within baseline levels. By the third session, however, her performance demonstrated improvement over baseline and never again returned to baseline levels. Meanwhile, there did not appear to be a change in the pattern of responding found in the graphs of Mora and Adam's performance on the subset of steps related to listening comprehension and communication. There was some variability when new books were introduced in the generalization phase, although there did not appear to be a change in level compared to the final three sessions of the intervention phase. In this phase, Angela completed a range of 60.00% to 100.00% (final session only) of steps of the task analysis related to listening comprehension and communication independently ( $M = 75.56\%$ ). Although there was a positive trend in the data for the generalization phase ( $b = 2.29$ ), this is most likely due to the outlier in the final session of generalization.

During baseline, Adam displayed more variability in his performance for the subset of steps related to listening comprehension and communication compared to his performance on the total task analysis, with a range of 6.67% to 33.33% of steps completed independently ( $M = 24.76\%$ ) and a positive trend ( $b = 1.13$ ). Again, Adam appeared to reach the ceiling when the *Pathways to Literacy* reading program was introduced, responding independently on 100.00% of steps related to listening comprehension and communication for each session in this phase of the study. This change was apparent immediately following the introduction of the new materials. Meanwhile, there was no change in the pattern of responding found in the graphs of Mora and Angela's performance on this subset of steps. There was increased variability when new books with new vocabulary and comprehension questions were introduced in the generalization phase, with a positive trend ( $b = 0.95$ ). In this phase, there was a range of 86.67% to 100.00% of steps related to listening comprehension and communication completed independently ( $M = 94.44\%$ ).

### **Inter-Observer Agreement**

Inter-observer agreement (IOA) averaged 95.09%, with a range of 82.61% to 100.00% agreement. IOA was consistent across participants and phases of the study. IOA for Mora averaged 96.14% (range, 86.96% to 100.00%). For Angela, IOA averaged 93.24% (range, 82.61% to 100.00%). For Adam, IOA averaged 96.52% (range, 91.20% to 100.00%). Meanwhile, in baseline IOA averaged 95.11% (range, 86.95% to 100.00%). During intervention, IOA averaged 93.68% (range, 82.61% to 100.00%). Finally, during generalization IOA averaged 98.91% (range, 95.65% to 100.00%).

### **Treatment Fidelity**

Treatment fidelity was high and consistent across phases although there appeared to be some discrepancy across teachers. Total treatment fidelity averaged 98.96% (range, 91.67% to 100.00%). Treatment fidelity averaged 98.17% (range, 91.67% to 100.00%) during baseline, 99.40% (range, 93.55% to 100.00%) during intervention, and 99.40% (range, 95.83% to 100.00%) during generalization. Jamie appeared to implement the treatment with a higher level of fidelity than Geri. She implemented treatment with 100.00% fidelity across all sessions. Geri implemented treatment with 97.32% fidelity across all sessions (range, 91.67% to 100.00%).

With repeated encouragement from the special education teachers, peers were able to delay their responses until after the target students' 96.04% of the time (range, 83.87% to 100.00%). They were more likely to emit responses prior to the target students during baseline than during intervention or generalization sessions. During baseline, peers delayed their responses 93.91% of the time (range, 83.87% to 100.00%). During intervention, peers delayed their responses 97.34% of the time (range, 88.00% to 100.00%). During generalization, peers delayed their responses 97.02% of the time (range, 91.67% to 100.00%). Peers in both classrooms were able to delay their responses equally. In Jamie's classroom, peers delayed their responses 96.87% of the time (range, 87.10% to 100.00%). In Geri's classroom, peers delayed their responses 94.74% of the time (range, 83.87% to 100.00%).

## **Social Validity**

The two reviewers were able to come to agreement on the codes presented in Table 2. Agreement was established when both reviewers included a representative quote from either a pre- or post-intervention interview under a particular code. The resulting codes included perceived benefits of the *Pathways to Literacy* reading program, perceived challenges, and comments regarding the way in which the reading program fits with existing inclusive early childhood special education practices.

Several benefits of the *Pathways to Literacy* reading program were identified by the teachers, including positive features of the program, value for students, and ease of use for other adults (such as other staff or parents). The special education teachers noted several *positive features of the program*. Representative quotes about the positive features of the program included comments indicating that the teachers were excited about the potential for the adaptations and systematic instruction to help the target students engage in shared reading. For example, in her pre-intervention interview, Jamie commented, "I think the thing that I'm most excited to use is just to continue to adapt the books for her, and add the objects into the books. Because I feel like that's the only way, that's where we're at right now, and it's the best way for her to be learning what the objects are, and making the connection from we're talking about this, this is in this book, and this is what we're learning." In her pre-intervention interview, Geri also commented that she was excited about specific adaptations, including the inclusion of physical objects and tactile objects on pictures attached to the books with hood-and-loop fasteners and the raised title on the book. Additionally, she commented that she appreciated that the materials had been gathered for her the *Pathways to Literacy* reading program, stating, "I usually have to collect the objects when I'm [using other curricula] with my students. So it's all ready to go, so it makes life a whole lot easier." Both teachers continued to appreciate these features after using the *Pathways to Literacy* reading program in their classrooms. Jamie commented that embedding the objects and pictures supported both Mora and Adam's engagement in the shared reading interaction for different reasons, noting "I think, especially for Mora, it really allowed her to engage with the story and get interested in the story, and I think that for Adam, that was a fun component for him, so it also allowed him to engage." Geri echoed this comment, saying, "I liked the Velcro on the pages. I liked, on the word card, there was actually an object." Finally, both teachers indicated that the systematic nature of the reading program appealed to them. Geri summed up this appreciation in her post-intervention interview by saying, "Well I like that it was systematic. That it gave me a nice way to kind of introduce comprehension."

Furthermore, both teachers identified that the reading program had a *value for students*. Specifically, they noted that the program appeared to be beneficial for the target students and predicted that the reading program would be beneficial for other preschoolers in their classrooms not enrolled in the study. In her pre-intervention interview Jamie commented, “We have a really big range of learning styles in my classroom, and I think that incorporating the objects and the repetition, is beneficial for a lot of our kids that are typical, that are just kind of developing a little bit slower.” Both teachers commented that some preschoolers, both those with and without identified needs, would benefit from explicit instruction. In her pre-intervention interview, Geri commented, “They [the Head Start program] read a book in large group, and you can ask a few questions and often during transition you can ask them, but they really don't get it. You really need to do that small group to get the idea about you listen to a story, and there's certain things you tune into.” This sentiment appeared to continue after the teachers had the opportunity to use the *Pathways to Literacy* reading program materials. In her post-intervention interview, Jamie commented that she planned to use the reading program with other preschoolers in her program. “They are children that are having difficulties with receptive language. I think that that would allow them to better comprehend the aspects of the stories by providing those visuals because they are visual learners, and just having the ability to be able to manipulate the objects might help them progress.” Geri commented that she would “definitely” be using the materials with some of the preschoolers who were English language learners. “It’s good for EL strategies, too.... They don’t comprehend and they need those concrete objects. I’m quite sure if I had objects they would start getting the comprehension.” Finally, given the way peer selection occurred in Jamie’s classroom, with the target students choosing their peers, Jamie saw the introduction of the *Pathways to Literacy* reading program as a way to increase the target students’ desirability as play partners for the rest of the members of the class. In her post-intervention interview, she noted, “I think that helped the kids strengthen their relationships, because everyone wants to do reading group. It's a really fun thing, and it made those kids a little bit more desirable to want to play with and get to know, and I've seen that translate in the classroom as now kids are seeking them out to come play with them.”

Finally, another benefit Geri identified on several occasions was the *ease of use for other adults*. She predicted that the *Pathways to Literacy* reading program would be readily adopted by her staff and, potentially, by parents. In her pre-intervention interview, she commented, “I also see it doesn't have to be done by me. I can easily see training a volunteer just even instructionally, that I know, ‘This is what you're going to do 10:00 every day,’ with so-and-so or two kids.” In the post-intervention interview, she commented that she planned to have her classroom paraprofessional take over the reading program instruction during the upcoming extended school year session. Jamie did not make comments about her perceptions regarding the ease of use for other staff or parents.

Despite the perceived benefits described above, both teachers had some concerns about the *Pathway to Literacy* reading program, including *impractical features of the reading program*. Before introducing the reading program, Jamie indicated that she was concerned that the program was “a little bit boring. I think that it's the way [the program is] so repetitive... you lose a little bit of interest, or the kids lose a little bit of interest....” She also voiced that she was worried that the program would not fit with the rest of the classroom curricula, given how systematic the instruction was. However, when asked in her post-intervention interview if she remained concerned about the over-repetitive or systematic nature of the program, she indicated that this has not been an issue in practice. Geri did not voice concerns about the reading program

being boring during her pre-intervention interview, but she did comment in her post-intervention interview that the structure of the task analysis may have interrupted the flow of the interaction during the shared reading sessions. She said, “I understand they needed the practice of the turning pages. But I felt like that got in the way when I was really trying to get her to comprehend.” She indicated in the future she planned to focus on subsets of the steps, emphasizing comprehension. For skills such as turning the pages of the book, she would recommend targeting those during more casual reading interactions, such as when the student chooses a book to read in free choice. In both the pre-intervention and post-intervention interviews, Geri and Jamie were in agreement that the books included with the *Pathways to Literacy* reading program materials were inappropriate for preschoolers. During her pre-intervention interview, Jamie commented, “they’re too long for kids this age, even typical children this age. I think they’re too long, and also, which goes along with it, is the meanings of the stories are very abstract.” Geri echoed these sentiments in the pre-intervention interview, mentioning in particular that *Tar Beach* included language about race relations that made her uncomfortable. Both teachers mentioned the books being too advanced and too abstract during the post-intervention interviews.

Finally, both teachers mentioned desiring more flexibility in implementing the reading program. During her pre-intervention interview, Jamie mentioned that the order of some of the steps, particularly the placement of the repeated line on some of the pages, felt awkward to her. Meanwhile, in her post-intervention interview, Geri mentioned a desire to give more choices to Angela during the reading sessions, including introducing more comprehension questions and possibly changing books. Both teachers indicated that these issues with flexibility were primarily related to the design of the study. Both planned to make alterations to suit the needs of their students and classrooms when the study was completed. As Geri noted, “It was something [Angela] had to do because you were here and taping,” but in the future she would change the task analysis to meet her needs.

Despite these challenges, both teachers appeared to feel that the *Pathways to Literacy* reading program meshed well with other practices used in early childhood special education and in inclusive early childhood classrooms. They also appeared to view the reading program as a starting point for their instruction, planning to make changes in the way the materials were presented to address their concerns and challenges faced. When asked about how well the *Pathways to Literacy* reading program fit with other instruction and materials used in their classrooms, Jamie commented in her pre-intervention interview that she thought “it will supplement it,” particularly as “so much of what we do [in the classroom] is story based.” During Geri’s pre-intervention interview, she commented that “it really compliments the CROWD technique,” referencing the acronym used to remind teachers of the various ways to elicit student engagement in dialogic reading (Zevenbergen & Whitehurst, 2003). In her post-intervention interview, Geri commented that an easy way to adapt the reading program for early childhood education would be to use books from the Common Core recommended Kindergarten booklist, suggesting that she saw the techniques used in the reading program as adaptable for use with materials readily available in the classroom.

Both teachers had *recommendations for other teachers* regarding the types of ongoing classroom activities in a typical inclusive early childhood classroom in which the reading program can be used. Both found it relatively easy to embed the *Pathways to Literacy* reading program into small group activities. In her pre-intervention interview, Jamie indicated that she would like to try adapting the program for use during the class’s larger circle time, when books



were read to a group, supplying Mora and Adam with “An adapted version of whatever we're reading in the circle.” During the post-intervention interview, however, she indicated that “Our classroom is very large, and we have a very tight schedule, and so I think that the best way that it would work is in a small group.” In both her pre-intervention and post-intervention interviews, Geri indicated she would recommend using the materials in small groups or one-on-one instruction.

Both teachers had several *recommendations for changes* to the reading program to overcome the challenges they encountered with the program and allow it to fit better with their instruction. As noted above, both teachers felt the books including with the *Pathways to Literacy* reading program materials were inappropriate for their students; both teachers recommended choosing different books in their pre- and post-intervention interviews. Specifically, Geri recommended using the lists of recommended books from the Common Core State Standards to generate a library of adapted books for the classroom. Jamie indicated that she would increase the number of objects used throughout the book as she thought “they're really important in understanding the story” and with longer books the students had “to listen for so long and there's not that much to keep [their attention] or clarify their learning.” Jamie and Geri also recommended removing the step of the task analysis in which students were asked to find their names and match them to the book. Jamie summed up both teachers view of this step in her post-intervention interview, saying “I think identifying their name is an important skill, and I think that both kiddos were able to do that, but the concept of putting your name on the book doesn't really have any relevance to what they're doing.” Both teachers also discussed ways of increasing the participation of the peers in the reading sessions, including using them as peer models, addressing their own comprehension needs, or using the groups as an opportunity to teach ability awareness. In her post-intervention interview, Jamie indicated that she might increase the number of participants and focus on teaching peers how to wait for their turns. As she said, “Just because you're learning very fast or you know the answers, you have to be able to wait and give other kids an opportunity. I think that that would be a really good teaching strategy....” Meanwhile, in her post-intervention interview Geri mentioned she may “If I have extra copies of the book, I may do more than one copy so we don't have to take turns. Like for the tray or objects.” This way, she predicted, the peers would be able to demonstrate their emerging comprehension skills. If increasing the number of participants in a group, Geri predicted she may only present an array of two objects, so that she can hold them up to each preschooler more easily.

With these changes, both teachers indicated that they *planned to continue to use* the *Pathways to Literacy* reading program in their classrooms. Mora and Adam would continue in Jamie's class until the following fall. She indicated she planned to continue adapting books for Mora using the guidelines for Level 3 and to introduce Levels 4 and 5 with Adam using books from the classroom. Meanwhile, she would introduce the reading program to other preschoolers she had identified as struggling with listening comprehension or engagement in shared reading. Although the Head Start program did not include a summer session, the preschoolers with visual impairments enrolled in Geri's program were eligible for extended school year services. They would be meeting for a month during the summer prior to transitioning to Kindergarten in the fall. Geri noted that she planned to use the *Pathways to Literacy* reading program during her small group rotation over the summer and that she would be exploring the other levels of the program to determine which met the needs of her incoming students.

## **Chapter 4**

### **Discussion**

Federal education policy through IDEA (2004) and NCLB (2002) have made clear the expectation that students enrolled in special education have access to the general education curriculum. The joint statement of the IRA and NAEYC (1998) and the report from NELP (2008) indicate that shared reading is a critical component of any comprehensive early childhood literacy curriculum as it serves as one of the most natural contexts in which to embed instruction on oral language development, including listening comprehension, and print awareness. Meanwhile, the current state of the research literature does not provide teachers working with preschoolers with significant developmental disabilities guidance on methods to introduce interactive shared reading with their students (Browder et al., 2006; Hudson & Test, 2011). Instead, the preponderance of the research base on the introduction of shared reading to students with moderate to severe developmental disabilities has examined the impact of interventions for elementary-aged students, indicating that these students are entering kindergarten behind their peers in literacy development (Hudson & Test, 2011).

As was emphasized in the IRA/NAEYC (1998) report, it is risky to assume that instructional methods used with older students are appropriate and effective for preschoolers. Lacking an evidence base for shared reading instruction for preschoolers with moderate to severe developmental disabilities leaves early childhood special educators in the precarious position of either ignoring this important component of early literacy instruction or introducing developmentally inappropriate instructional methods that are incongruous with existing evidence-based preschool practice, such as that outlined in the 2009 NAEYC position statement on developmentally appropriate practice or the Council for Exceptional Children's Division for Early Childhood's (DEC) 2014 statement on recommended practices for early childhood. While ignoring shared reading instruction allows preschoolers with significant delays to fall further behind their peers, using inappropriate instructional practices, such as repetitive drilling or didactic instruction, puts preschoolers at risk of becoming disengaged from formal schooling at an early age (NAEYC, 2009).

In order to avoid the introduction of inappropriate instructional methods for young children, any literacy curriculum for preschoolers with significant disabilities must consider the unique needs of preschoolers and preschool environments. While it is vital for preschool programs to address literacy at the earliest ages so that students are prepared for the rigors of academic instruction as they enter kindergarten and beyond, it would be inappropriate to transform the preschool environment into a carbon copy of the instructional environments found in early elementary school. Recognizing that inclusive early childhood settings often have very different cultures and philosophies compared to those found in K-12 classrooms (Willis, 2008), curriculum developers must develop literacy curricula that align with recommended early childhood practices and examine the effectiveness of their programs in this environment. At the same time, researchers must assess teacher attitudes toward new curricula. Without teacher buy-in and support, it is unlikely they will implement the program after researchers leave their classrooms (Wehby, Maggin, Moore Partin, & Robertson, 2012; Wolf, 1978).

## **The *Pathways to Literacy* Reading Program and Recommended Practices**

The reports from NAEYC (2009) and DEC (2014) on recommended developmentally appropriate practices in early childhood offer suggestions for appropriate instructional techniques and content. Despite the fact that the research base for the *Pathways to Literacy* reading program exclusively employed older students as participants, it would appear that the final product meets many of these recommendations. Because of the correlation between vocabulary knowledge and later reading comprehension, the NAEYC (2009) report emphasizes the value of developing vocabulary knowledge in young children. The DEC (2014) report reminds practitioners that goals of instruction must encourage young children at risk for or identified with delays to be independent in inclusive environments; as such, they should be linked to the goals of general early childhood education. The *Pathways to Literacy* reading program targets vocabulary development in two ways. First, an anticipatory set is introduced prior to reading. This is designed to prime students about the meaning of key words in the text. Next, listening comprehension questions are interspersed throughout the text, allowing teachers to embed instruction on vocabulary and listening comprehension within the context of shared reading.

The NAEYC (2009) report also recommends that early childhood educators be proactive by introducing vocabulary and more complex linguistic structures through the use of shared reading in small group instructional settings. Despite this recommendation, both special education teachers that participated in this study reported that their programs only addressed shared reading during whole group activities (e.g., at circle time) or when preschoolers spontaneously asked to read during free choice times. They both responded that the small group structure of the *Pathways to Literacy* reading program was crucial to meet the needs of the target students and was beneficial for their peers who might not engage fully during whole group instruction. In this way, the introduction of the *Pathways to Literacy* reading program in these classrooms brought the instructional techniques used in these environments in line with recommended early childhood practices.

At the same time, the report from NAEYC (2009) cautions against the introduction of didactic instruction at early ages. Instead, it recommends early childhood curricula emphasizing active learning through interactions with adults. These interactions should take place in small group settings with instruction individualized to meet the needs of each preschooler. Meanwhile, DEC (2014) explicitly recommends that early childhood special educators use the principles of UDL to increase accessibility within inclusive environments. Interactive shared reading requires active engagement on the part of the listener, but without proper accommodations preschoolers with significant developmental delays may be unable to join in these meaningful exchanges. For example, without the necessary communicative supports required by a student who does not use verbal language, he or she will be unable to answer questions about the text. Through the use of UDL, the *Pathways to Literacy* reading program guides teachers to adapt the shared reading context in such a way that the preschoolers can demonstrate their competence, thus allowing them to engage in the type of active engagement deemed most beneficial for students this age.

Finally, and perhaps most importantly, while constructivist perspectives have long dominated early childhood pedagogy – with an emphasis on child-led activities facilitated but not directed by the teacher – the NAEYC report acknowledges the benefit of teacher-directed activities for those students who may need more support to access the curriculum (NAEYC, 2009). The recommendation to employ teacher-directed instruction within natural contexts such as shared reading aligns with the recommendations from DEC (2014) that include the use of

systematic instruction, UDL, and explicit feedback to address young children's instructional goals within natural, inclusive contexts. The use of task analyses to guide instruction, systematic prompting, and clear instructional feedback for students who would otherwise not engage in shared reading interactions in the *Pathways to Literacy* reading program clearly align with these recommendations.

### ***Pathways to Literacy* in the Inclusive Early Childhood Classroom**

The results of this efficacy study suggest that the *Pathways to Literacy* reading program was effective in increasing the engagement, listening comprehension, and communication for three preschoolers with significant disabilities who were members of inclusive preschool classrooms. In addition, the special education teachers reported that, with a few modifications, indicated they felt the program would be appropriate to use in their classrooms for students with and without disabilities.

As can be seen in Figures 4 and 5, after the reading program was introduced each participant demonstrated increased independence in total task engagement and in the sub-set of steps of the task analysis that emphasized listening comprehension and communication. In the graph of the steps of the entire task analysis completed independently (Figure 4), each participant demonstrated increased independence within three sessions after the introduction of the reading program. Furthermore, at no point did any of the participants return to baseline rates of responding, despite the introduction of new adapted books with new vocabulary and comprehension questions in the generalization phase. Thus, the study met the criteria for demonstrating a functional relationship between the intervention and dependent variables as set forth by the What Works Clearinghouse (Kratochwill et al., 2010). Similar findings can be seen in Figure 5, the graph of the sub-set of steps of the task analysis emphasizing listening comprehension and communication completed independently.

While the target students demonstrated increased rates of responding after the introduction of the *Pathways to Literacy* reading program and did not return to baseline levels over the course of the study, there was a higher level of variability in responding during the generalization phase than was found in the intervention phase of the study. This is most likely due to the introduction of new vocabulary and comprehension questions during the generalization phase. The fact that the rate of responding on this sub-set of steps did not return to baseline rates indicates that the UDL adaptations introduced with the *Pathways to Literacy* reading program were successful in supporting independent responding and allowed the preschoolers to demonstrate competence in the area of listening comprehension and communication when confronted with new information.

As Wolf (1978) reminded us, the most effective interventions are unlikely to be widely adopted if practitioners do not agree with the goals, procedures, and effects of the intervention package. As discussed above, despite the fact that the *Pathways to Literacy* reading program was developed based on research with older students, it appeared to align with recommended practices. Still, it was critical to assess preschool special education teachers' attitudes to the program and obtain feedback regarding recommended changes for future implementation of the program in inclusive preschool settings. This issue of social validity was addressed through pre- and post-intervention interviews with the special education teachers. During these interviews, teachers were asked to share their perceptions of the reading program's ease of use, appropriateness for preschool culture, practicality, and relevance for all students. They were also

asked to recommend changes to the program they felt would allow them to successfully implement the reading program in their classrooms.

Both special education teachers' overall impressions of the *Pathways to Literacy* reading program were favorable. Jamie and Geri indicated that they had been searching for approaches to shared reading that would meet the needs of their preschoolers with significant developmental disabilities and delayed communication development. This suggests that the goals of the reading program to increase engagement, listening comprehension, and communication during shared reading interactions are aligned with the goals of the teachers who would want to use it, specifically preschool special education teachers. At the same time, both teachers indicated that prior to implementing the reading program in their classrooms, they had not been able to engage in shared reading with the target students due to the preschoolers' lack of interest in reading or engagement in idiosyncratic routines around books. This implies that, despite both teachers' acknowledgement of the importance of shared reading as an instructional context, they were lacking the tools to introduce shared reading to the participants of this study. Without the introduction of the reading program the participants of this study would have moved on to kindergarten without experience with shared reading, putting them at risk for falling further behind their peers in the domain of literacy development.

While Jamie and Geri valued shared reading and saw promise in using shared reading to address both early literacy and communication goals, both reported that the approach to shared reading that they currently were using as general classroom practice failed to meet the needs of the participating target students and possibly their peers. In each program, despite the recommendations from the IRA/NAEYC (1998), NAEYC (2009), and DEC (2014), shared reading was formally addressed exclusively during whole group interactions such as circle time. Shared reading was also addressed incidentally, but only if the preschoolers showed interest in books and reading during free choice times. The reliance on whole group shared reading activities in each program did not allow for the level of individualization required for the target students to access the activity and demonstrate their competence within the activity. Their peers were also frequently disengaged during whole group book reading, suggesting that they were not benefiting from this type of instruction as well. Despite recognizing the limitations to the existing approach to shared reading in their programs, both teachers indicated they had little guidance to develop the needed accommodations and instruction that the preschoolers in their programs with significant developmental disabilities would need. Both special education teachers indicated that the target students required systematic instruction, which was difficult to implement in large group settings due to the pace of instruction necessary to maintain the attention of the other preschoolers and the target students' general lack of engagement in large groups. Incidental teaching during free choice time also failed to meet the needs of the target students as they either did not show interest in reading during free choice or their interest in books was characterized by idiosyncratic routines and rituals.

Given the influence of constructivist theory on early childhood education pedagogy (NAEYC, 2009), it is unsurprising that the culture in both classrooms emphasized following the lead of the preschoolers. This approach, in which the teacher waits to see what the child chooses to engage with and then enters into an interaction about the child's chosen activity, is recommended in both early childhood education and early childhood special education as it allows teachers to make the most of preschoolers' natural curiosity (Kaiser et al., 1996; Kim & Mahoney, 2004; Leifield & Sanders, 2007; Prizant & Wetherby, 2008). Despite the ubiquity of this approach, the NAEYC (2009) and DEC (2014) caution that this approach may not be

appropriate for all instructional goals for all students. When following the child's lead does not allow teachers to target critical skills, both reports indicate that it may be necessary for teachers to introduce teacher-directed instructional opportunities to ensure that these skills are addressed in the classroom. Jamie and Geri reported that they appreciated that the *Pathways to Literacy* reading program assisted them to focus their instruction during shared reading and to use UDL to develop adaptations to increase student's engagement in the activity. They also noted that the incorporation of UDL increased the preschoolers' interest and engagement with the books. Perhaps because these adaptations allowed Angela to engage in an activity that had been previously inaccessible for her, Geri noted that she began requesting access to the books from the study on days that did not have scheduled reading sessions. In this way, what was initially a teacher-directed instructional opportunity turned into a child-led activity when the study ended.

Finally, both teachers indicated that the use of task analyses and systematic prompting in the reading program were necessary for them to meet the instructional needs of the target students. According to the teachers, the task analysis provided useful guidance on targets for instruction, even if in the future they would modify the task analyses to more heavily emphasize listening comprehension or engagement depending on the needs of their students. They also appreciated the easy-to-follow guide for adapting classroom books using a UDL framework, which they noted helped them think through the individual needs of each preschooler. Even with thoughtfully developed adaptations increasing access within the reading sessions, both teachers cited the need for systematic prompting to encourage the target students to engage in shared reading. They specifically mentioned that such prompting would have been difficult to complete during large group reading sessions, even if the books used in large groups were adapted. In summary, the participating teachers considered the procedures laid out in the *Pathways to Literacy* reading program to be acceptable and appropriate for preschool instruction and effective in meeting the needs of the target students.

Both teachers were impressed by how readily the target students had generalized their new skills to new adapted books and felt confident that they would be able to continue to make such adaptations to other classroom books. As was noted in the introduction, previous studies had not examined the ability of participants to generalize their new skills to new adapted books, and there was reason to believe the target students could return to baseline levels of responding for steps involving new vocabulary and comprehension questions. An examination of Figures 4 and 5 shows that both Mora and Angela required a relatively long period of intervention before demonstrating mastery of Level 3 of the reading program, but neither returned to baseline levels of responding when new books were introduced. The fact that this did not happen suggests two things: first, that the adaptations based on UDL provided an adequate level of support for the target students to access the new books and demonstrate competency with new materials; second, that target students are learning generalizable skills through exposure to this reading program. Because the participants were able to generalize their new skills to new adapted books, the special education teachers were motivated to expand their use of the reading program with other preschoolers, including those who were English language learners.

Because Mora and Angela required a longer intervention phase to master Level 3 of the *Pathways to Literacy* reading program, both teachers planned to continue using Level 3 as a guide for introducing new adapted books to these girls. Jamie foresaw that Mora would continue to work on Level 3 with an emphasis on generalizing her skills to new adapted books for several months before moving on to Level 4. She was impressed by the fact that Mora had demonstrated such noticeable improvement in the area of listening comprehension and communication,

including consistently answering the final comprehension question correctly, given the fact that Mora did not have a functional communication system in place prior to the commencement of the study. While there had been some success in encouraging Mora to use one-word utterances to make requests in class over the course of the study, Jamie noted that the format of the reading program allowed her to target other functions of communication such as commenting and responding to questions. Geri also foresaw that Angela would continue to work on Level 3 with new adapted books for several more months, although she planned to emphasize listening comprehension and communication by increasing the number of comprehension questions asked with each book and removing some of the steps of the task analysis related to engagement such as turning the page of the book or matching the student's name to the book. Geri noted that the adaptations developed as part of the reading program had allowed Angela to demonstrate her competence in shared reading despite lack of light perception and high levels of distractibility. Because of this, she planned to include adapted books as part of Angela's IEP. She also planned to share videos from the reading sessions with Angela's kindergarten teacher.

Given Adam's success with Level 3 of the reading program, Jamie indicated that she anticipated that he would progress through Levels 4 and 5 (the use of increasingly more abstract symbols) with new adapted books in upcoming months. In particular, she saw the program as beneficial for addressing Adam's listening comprehension needs, something which had not been adequately addressed during specialized one-on-one instruction times despite his growing vocabulary. The differences in planned future use of the reading program for both teachers and for individual preschoolers underscores the fact that, despite the scripted nature of *Pathways to Literacy*, teachers quickly mastered its use and were able to expand upon the structure it provided to meet the unique needs of individual students.

### **Recommendations for Future Implementation in Inclusive Preschool Classrooms**

While the special education teachers agreed that the goals, procedures, and effects of the *Pathways to Literacy* reading program were appropriate and acceptable for preschool culture, they did have several recommendations for changes. According to the teachers, these changes would make the reading program more appropriate for all students and would align the program with preschool culture. Two major recommendations for change related to the selection of books for the reading program and the identification of goals to meet the needs of the target students.

**Book Selection.** The primary recommendation from both special education teachers was to change the books used with the program. The three books included with the *Pathways to Literacy* reading program were deemed to be too abstract, too boring, and potentially offensive given some of the language used in *Tar Beach* (Ringgold, 1996). As was noted in the discussion on book leveling in the chapter on methods, however, there is little guidance available in selecting books for shared reading (Shanahan, 2014). The existing frameworks for matching students to texts discussed – the Lexile® (MetaMetrics, 2014) and DRA2+ (Beaver & Carter, 2006) – are designed to determine appropriate texts for independent reading. Because shared reading does not require mastery of decoding skills, the main question then becomes whether or not the stories, heard aloud, will be accessible to the students. Herein lies the rub: what makes a story accessible? Can a book with more complex language be more accessible if the pictures and subject matter grabs the preschoolers' interest? Or is it necessary to choose books with simple language regardless of the book's content and visual presentations? This question has not been adequately addressed in the research literature, although there is a push to use so-called

“frustration level” texts, or texts that are substantially above the students’ grade level, during shared reading (Burkins & Yaris, 2014; Dougherty Stahl, 2012). A critical question in this discussion is what the point of the shared reading interaction is. As was noted in the introduction, shared reading interactions can look very different based on the expectations of the readers. The benefits of shared reading on oral language development, print awareness, and motivation to read are derived not from the simple act of reading aloud to a child but from the intentional use of shared reading as a context in which to build oral language, print awareness, and motivation. It would seem, therefore, that the driving factor in matching books to students for shared reading should be how well a teacher can support the student in developing the targeted skills.

As can be seen in Figures 4 and 5, the teachers were able to use the books provided with the reading program to support the development of engagement, listening comprehension, and communication despite their concerns regarding the complexity of the texts. Despite this success, neither teacher planned to continue to use these books with other preschoolers. Perhaps a related concern, not articulated by the teachers, may be the match between the texts and the ongoing themes addressed in the classroom. Early childhood classrooms often use thematic units to introduce new concepts and ideas; in this way, what happens during circle should relate to what happens during free choice, and what happens during arts and crafts. Both of the classrooms used in this study made use of thematic units to address a wide variety of subjects, from holidays (Passover and Easter), to authors (Dr. Seuss), to seasons (Spring), to scientific concepts (such as insects and textures). When given the opportunity to choose books related to their classroom’s ongoing theme, both teachers were excited about the link between the reading sessions and the activities occurring in the rest of the class. Jamie indicated that she was planning on adapting books for each theme addressed in her classroom in the future, suggesting that this may be more appropriate for preschool culture. When given the opportunity to choose books, both teachers chose common preschool books that used simple and repetitive language. Something that was missing in these texts, however, was a strong storyline. *Bugs! Bugs! Bugs!* (Barner, 1999) was the most lacking in this regard; it used the same sentence structure on each page to introduce a single bug (e.g., “The grasshopper goes hop, hop, hopping by”). While *The Very Hungry Caterpillar* (Carle, 1989) and *Planting a Rainbow* (Ehlert, 1988) introduce simple storylines, there is little in the way of conflict, character development, or story arc. Despite lacking strong story lines, these books were successfully employed to encourage engagement, listening comprehension, and communication skills during shared reading. An important question that remains is whether or not there is a benefit for choosing simple texts over complex texts or if it is possible that complex texts are better suited for addressing particular skills during shared reading. Future studies are needed to determine how books should be selected to support the development of specific goals within the context of shared reading interactions. For now, the recommendation would be to choose books that relate to the classroom’s ongoing theme in order to make this reading program fit in with other early childhood special education practice; however, teachers might consider selecting theme-related book with an interesting storyline.

When discussing potential solutions to the challenge of text selection, Geri suggested that other teachers or researchers may want to use the lists of text exemplars provided with the supporting materials for the Common Core State Standards (National Governors Association Center for Best Practices, 2010) to guide text selection. It should be noted that the book lists provided with the Common Core State Standards materials begin at the kindergarten/first grade level and include suggestions for stories, poetry, and informational texts to be used in either



independent reading or read-alouds. The books suggested for read-alouds for this age group, including Frank L. Baum's (1900/2000) *The Wonderful Wizard of Oz* and Laura Ingalls Wilder's (1932/2007) *Little House in the Big Woods*, would probably be deemed too abstract for shared reading in preschool as well, unless these texts were well-illustrated and broken in to shorter sections for use during shared reading. The books suggested for independent reading, however, including P. D. Eastman's (1960) *Are You My Mother?* and Dr. Seuss's (1960) *Green Eggs and Ham*, may be considered more appropriate at the early childhood level, may fit with common instructional themes, and would lend themselves to use with the task analyses provided by the *Pathways to Literacy* reading program.

**Goal Identification.** Both special education teachers also recommended that teachers should consider which steps of the task analysis are necessary to include and which the teacher may want to emphasize more. For example, both considered the second step of the task analysis, placing a card with the child's name on the book, to be unnecessary. Because name recognition is a common goal for all preschoolers, there were many existing opportunities for the preschoolers to identify and use their names in each classroom. Embedding an additional opportunity for name identification during shared reading was deemed unnecessary and distracting from the flow of the interaction. At the same time, both teachers indicated that they saw value in emphasizing listening comprehension and communication and planned to emphasize this more through the introduction of additional comprehension questions when using the reading program in the future.

Geri specifically mentioned her desire to incorporate other dialogic reading prompts when introducing new adapted books in her classroom. The dialogic reading prompts include completion prompts, recall prompts, open-ended prompts, wh- prompts, and distancing prompts (Zevenbergen & Whitehurst, 2003). Completion prompts ask listeners to finish a sentence in the same way the target students were asked to finish the repeated storylines. Steps eight through 10 of the task analysis, *Participates in reading by completing repeated story line using a switch or spoken words*, use this type of prompt. Recall prompts ask listeners to recall information in the book in the same way *Pathways to Literacy* asks listeners to respond to predication and comprehension questions. This type of prompt is used in the reading program in step five, *Makes a prediction when asked, "What do you think this story is about?"*; steps 17 through 19, *Selects object to answer comprehension questions about text*; and step 23, *When asked what the story was about, select the object that goes with the book*. Open-ended prompts ask students to describe the pictures in the books before the page is read. While this type of prompt was not present in the reading program, the step in which students find the object on the page that they will help read about (steps 14-16, *When shown an object related to the text, locates the object on the page to "read" with teacher*) could be conceptualized as a precursor to more complex open-ended prompts. Geri mentioned that the open-ended prompts were often difficult for students with low vision, and impossible for her students with no vision, but given the adaptations suggested in the *Pathways to Literacy* reading program – specifically to introduce physical objects – she thought it might be possible to incorporate such prompts into the shared reading experiences for all of her students. Wh-prompts begin with what, where, when, why, or how and are often used to ask listeners to identify objects in pictures or expand upon previous comments. The *Pathways to Literacy* reading program exclusively uses "what" questions for the literal comprehension questions embedded in the book, but there is no reason to assume that other wh- questions would not be appropriate within the framework provided so long as appropriate adaptations could be introduced to address these more complex questions. For example, if a teacher wanted to target "who" questions, he or she could use pictures of characters from the book to ask questions.

Finally, distancing prompts ask listeners to relate the content of the book to experiences in their lives. This type of prompt is not addressed in the reading program. If teachers adapt classroom books related to the ongoing classroom theme, however, it would not be difficult to link the material in the books to ongoing events in the classroom. Future investigations of adapted shared reading programs should consider the ways in which these prompts can be addressed using the UDL framework.

It is important to note that, despite the agreement between these two special education teachers regarding removing the step of matching one's name to the book and increasing the emphasis on comprehension, these recommended changes should not be considered set directives for other early childhood educators seeking to adopt the reading program. Instead, they illustrate the way in which other teachers may want to approach the task analysis as a flexible guide rather than a strict script for shared reading interactions. Teachers should consider the way that the task analysis supports their goals for instruction and the needs of the students. It is not surprising, therefore, that Jamie and Geri did differ on a couple of recommendations. For example, Jamie did not view steps 11 through 13, in which her students were asked to locate the embedded picture after having completed the repeated storyline in steps eight through 10, to be valuable for her students. She felt that it threw off the pacing of the book and was not a skill necessary for her students to master. Geri, on the other hand, appeared to view these steps as valuable for Angela. To Geri, this step appeared to be a precursor for Angela's future literacy goals as she linked the word spoken to the word printed in Braille on the picture card. Additionally, Geri suggested she might only focus on listening comprehension and communication steps in her structured reading sessions, while Jamie did not say that this was something she would consider.

Despite the recommended changes to the reading program, both teachers were still excited to continue using it with their students. As noted above, both teachers indicated that they had struggled to address early literacy and listening comprehension for preschoolers with significant developmental delays. While they felt that the reading program helped them find a starting point for instruction, they also saw possibilities to use the structure of the *Pathways to Literacy* reading program that extended beyond the scope of the program as it is published. These included introducing new books, emphasizing different sets of skills as necessary (e.g., engagement vs. listening comprehension and communication), addressing listening comprehension for all preschoolers enrolled in their programs, and generalizing skills to large group reading experiences. Both teachers planned to continue to use the *Pathways to Literacy* task analyses to focus their shared reading instruction for those students who had difficulty engaging in shared reading, although they may modify the task analyses to emphasize the skills they found to be most important. Despite their criticism regarding the book selection provided, the overall impression from the teachers suggests that the teachers viewed the *Pathways to Literacy* reading program as appropriate for preschool culture, relevant to their students, and easy enough to use and adapt to their own needs.

## **Limitations and Future Directions**

As discussed above, the books included with the *Pathways to Literacy* reading program were deemed to be inappropriate for preschool students by the special education teachers. The initial decision to use these books in the current study was based on both the books' Scholastic, Inc.'s (2014a) Interest Levels and a desire to determine the acceptability of the package, as published, in preschool environments. The mismatch between the books used during the

baseline and intervention phases of the study and the text difficulty level of books recommended for preschool students leaves open the possibility that the target students would have responded differently to books typically read in preschool classrooms. Because preschool classrooms often structure their curricula around thematic units, in which vocabulary is repeated across activities and concepts are introduced in several ways, it is possible that the target students may have responded to the comprehension questions faster and with fewer supports than were needed when using books unrelated to the content in the classroom. The books used in the generalization phase were related to the ongoing classroom theme, which may explain in part why the target students were able to generalize the skills from to the new books so quickly. To address this limitation, future studies should investigate the use of the *Pathways to Literacy* reading program with adapted books based on the classroom theme and with the same difficulty level. The students' rate of responding to the embedded literal comprehension questions could be compared to the rate of responding to similar questions in other adapted preschool books unrelated to the classroom theme to determine whether the instruction in the thematic unit might support listening comprehension during shared reading interactions.

Another limitation of the current study relates to the needs of inclusive early childhood classrooms. Although the current study examined the use of the *Pathways to Literacy* reading program in inclusive preschool classrooms, the study design required that the peer not participate until after the target student had responded. This was to ensure that the target student's response was not prompted by the peer. This restriction, however, lead Geri to ask what was the point of asking peers to join in the group. However, Jamie did not question the inclusion of the peer in the reading group. Because the peers were chosen by the target students, she found that including peers increased the level of interaction the target students had with peers outside of the reading group. According to Jamie, because the peers saw the group as a special activity they could join only if chosen by the target students, they sought to interact with the target students throughout the day to increase their chances of being chosen. Notwithstanding the success Jamie had with increasing peer interactions outside of the shared reading sessions, future research should look at ways to incorporate the peer into the shared reading interaction, either as a model for responding or to receive instruction specific to his or her needs alongside the target student.

The final major limitation of the study was the exclusion of general education teachers as participants. Special education and general education teachers often have different views on the appropriate goals, methods, and outcomes of their instruction (Cochran-Smith & Dudley-Marling, 2012; Friend & Cook, 2006; Gately & Gately, 2001). While special education teachers are trained to determine student goals based on assessments and direct observation and to use systematic, teacher-directed instructional techniques, general education teachers in early childhood education are trained to follow the child's lead to support child development (NAEYC, 2009). It is possible that general education teachers would be uncomfortable with the systematic nature of the *Pathways to Literacy* reading program. As was described in the joint report of the IRA and NAEYC (1998), it is possible that general education teachers hold a maturational view of child development and would suggest that explicit instruction in literacy be withheld until preschoolers demonstrate readiness to benefit from the instruction and/or display an interest in interacting with books. Future research on the use of the *Pathways to Literacy* reading program should include general education teachers alongside special education teachers. If appropriate for the classroom structure, general education teachers may be trained on the use of the reading program or they may simply be involved in planning instruction and observing reading sessions.

## In Summary

The current study addressed three limitations in the literature on the use of the adapted shared reading program for students with significant disabilities published as *Pathways to Literacy*: (a) the lack of research using preschool-aged children; (b) the failure to demonstrate generalization of skills to new adapted books; and (c) the implementation of the reading program in special education versus inclusive classrooms. Because shared reading is a recommended practice in early childhood education (DEC, 2014, IRA/NAEYC, 1998; NAEYC 2009; NELP, 2008) and IDEIA (2004) requires that students enrolled in special education are given access to the general education curriculum, it follows that adapted shared reading should be introduced at this age. As the IRA/NAEYC (1998) joint statement cautioned, it should not be assumed that the instructional practices used with older students are appropriate or effective for younger children. Additionally, if the skills learned in the reading program failed to generalize to new adapted books, questions would be raised about the usefulness of the reading program in promoting literacy as defined by Browder et al. (2009) and Hudson and Test (2011). As discussed in the introduction, both definitions emphasize the importance of shared reading and listening comprehension as a means for students to access texts. Finally, IDEIA (2004) requires that students in special education be placed in the least restrictive environment; this often involves enrollment in an inclusive classroom. Curricula developed for students with significant disabilities, therefore, should examine the appropriateness of any curriculum in this setting. Given the historical differences in approaches toward curriculum design and instruction in special education and general education, and because inclusive classrooms blend the pedagogies of both disciplines, it cannot be assumed that what was appropriate in a special education classroom would fit into the context of an inclusive classroom (Cochran-Smith & Dudley-Marling, 2012; Friend & Cook, 2006; Gately & Gately, 2001).

The current study addressed these limitations by implementing the shared reading program with preschool students in inclusive classrooms settings and systematically evaluating the extent to which skills developed during the intervention phase of the study generalized to novel books selected by the special education teachers. Pre- and post-intervention interviews with the special education teachers indicated that the goals, procedures, and outcomes of the reading program were appropriate for inclusive early childhood classrooms. Although the special education teachers recommended some changes to the reading program as published, particularly changing the books included with the published materials, in general the teachers found the reading program to be acceptable and appropriate for the culture of their inclusive classrooms.

These results suggest that special education teachers working in inclusive early childhood classrooms should consider the use of the *Pathways to Literacy* reading program to organize their instruction on shared reading for students with significant disabilities enrolled in their programs. While teachers should substitute the books included in the published reading program with books related to the ongoing classroom themes, the implementation guide included with the materials provides detailed instructions on adapting books to be used with the task analyses. The teachers found this guide to be easy to follow and helpful with generating ideas for adaptations based on students' needs. After becoming familiar with the task analyses, teachers should also consider which steps of the task analysis need emphasis. As recommended by the teachers in this study, some steps may be removed and others added based on the needs of the students and emphasis of instruction in the classroom. With its attention to individualization, the *Pathways to Literacy* reading program addresses critical emergent literacy skills while targeting oral language

development, thus preparing students with significant disabilities for the next level of literacy instruction as they enter kindergarten.

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## Appendix A

### Semi-Structured Pre-Intervention Interview/Universal Design for Learning Interview Protocol

*After completion of initial training and brainstorming session, the special education teachers participating in the study will be asked for feedback on the Pathways to Literacy reading program and their concerns about how to use it in the classroom. Additional questions may be added during the interview if clarification is needed.*

Thank you for working so hard during this training! Now that you are familiar with the reading program, I want to gather some information from you about how you think the reading program might be used in your classroom. As I mentioned before, this reading program has not been used in programs like yours before, so it is entirely possible that we need to make some changes in order for it to be used in your class.

1. Now that you've finished this training, what components of the reading program are you excited to use in the classroom?
  - a. How easily do you think you will be able to incorporate *Pathways* into your day?
  - b. How does this reading program compare to other curricula you use in your program?
  - c. In what ways do you think that your students will benefit from your use of this program?
2. What challenges do you anticipate?
  - a. Which components appear to be impractical to you? What changes do you propose?
  - b. Do you feel uncomfortable about any aspects of the reading program?
3. In what ways do you think the reading program will fit in with the rest of your teaching?
  - a. During which time of day are you planning on using the reading program?
4. At this time, have you thought about whether or not you might use these materials with other students in the class, who are not participating in the study?
5. Now let's look at each step and think about what the teacher is asked to do, what the child is asked to do. Please let me know if you have any concern about the step and how it might need to be changed for your class or for [child]. Then, we will discuss how [child] will demonstrate independence on that step.
6. Finally, we need to determine the appropriate prompts for [child] to ensure he is successful.
  - a. One type of response is physical (e.g., turning pages, pointing to objects, etc.).
  - b. Are there any other types of responses that need another type of prompt? (E.g., spoken responses)?

## Appendix B

### Semi-Structured Post-Intervention Interview Protocol

*After completion of the intervention phase, the teachers participating in the study will be asked for feedback on the Pathways to Literacy reading program and their concerns about how to use it in the classroom. Additional questions may be added during the interview if clarification is needed.*

Thank you for your hard work on the study! Now that you've had a chance to use *Pathways* in your classroom, I'd like to get more feedback from you about it. Like I said at the beginning of the study, this is the first time it's been used in a program like yours, and we want to find out if there are any changes you think need to be made to it in order for other teachers to use it in their programs.

1. Which components of the reading program worked well for you?
  - a. Before the study began, you said you [felt X] about your ability to incorporate *Pathways* into your day. Now that you've been using it, do you feel the same way? In what ways has your perception changed?
  - b. Which other students in your classroom benefited from your use of this reading program?
2. What challenges did you face?
  - a. At the beginning of the study, you said [component X] seemed impractical to you. How do you feel about that component now? What changes do you propose?
  - b. Did you feel uncomfortable using any component of the reading program throughout the study?
3. In what ways did the reading program fit in with the rest of your teaching?
  - a. What time of day would you recommend for other teachers to use this reading program?
4. Did you use these materials with other students in the class, who did not participate in the study?
5. What changes did you see in the students' behaviors during shared reading as a result of their engagement in the *Pathways to Literacy* program?
6. Do you plan to continue using this reading program now that the study is over?
  - a. Will you make any changes to how you use it, compared to how you used it in the study?