EFFECTS OF A PEER-DELIVERED SYSTEM OF LEAST PROMPTS INTERVENTION PACKAGE AND ACADEMIC READ-ALOUDS ON LISTENING COMPREHENSION FOR STUDENTS WITH MODERATE INTELLECTUAL DISABILITY

by

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A dissertation submitted to the faculty of
The University of North Carolina at Charlotte
in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in
Special Education

Charlotte

2012

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ABSTRACT

MELISSA ELLEN HUDSON. Effects of a peer-delivered system of least prompts intervention package and academic read-alouds on listening comprehension for students with moderate intellectual disability. (Under the direction of DR. DIANE BROWDER)

Comprehension of text is a strong focus of instruction in general education. Likewise, comprehension of text should be a strong focus of instruction for students with moderate intellectual disability even though they may not be independent readers. Shared story reading is a practice used to access grade-level literature for non-readers. This study used a multiple probe single case design to evaluate the effects of a peer-delivered system of least prompts intervention package and grade-level adapted academic read-alouds on listening comprehension for three participants with moderate intellectual disability. Fifth grade peer tutors delivered the intervention during second literacy block. The intervention included read-alouds of an adapted version of *The Watsons Go to Birmingham - 1963* (Curtis, 1995), a novel currently read by fifth graders without disabilities in the district. The system of least prompts intervention package included rules for answering wh- word questions, opportunities to hear selected text again, and self-monitoring. Participants with disabilities directed the amount of help they received from peer tutors. Results indicated that (a) all participants improved the number of correct listening comprehension responses after text only prompts, (b) the effect of the intervention package on independent unprompted correct listening comprehension responses was mixed, and (c) stakeholders rated the study's procedures, outcomes, and goals as important.

DEDICATION

This dissertation is dedicated to the two people in my life who have provided unwavering support for my dreams. First, this work is dedicated to my mother, Verla Ruth Burns Hicks, who passed away far too young at the age of 59 in 1997. I thank you for raising me to be an independent thinker and for encouraging my inquisitive nature even though it often brought you to the edge of your patience after a long day of hard work. I smile at the memories of you telling me to go and look it up in the encyclopedia after I'd asked one too many times why something was the way it was. I hope you are pleased that my inquisitive nature has not been eroded by the years and that I am still asking questions and investigating answers. I have aspired to honor you in the rearing of your grandchildren and in my life's work. I love you and miss you every day.

Second (but certainly not second place), this dissertation is dedicated to my husband, Bob. Without your support, I would have never been able to achieve this milestone. I can't imagine what went through your head when I said I wanted to move from Kentucky to North Carolina to complete a Ph.D. in special education. I know what went through my head when you replied you wanted to support me in my goals as I had supported you in yours. My gratitude goes beyond words into the space two people who truly love and respect each other share. While words fall far short of expressing what my heart feels, know that I am grateful for your unwavering support, home cooked meals, and patience.

ACKNOWLEDGEMENTS

Completion of this degree would not have been possible without the support of several people and funding sources. First, thank you Dr. Diane Browder, my advisor and dissertation committee chair, for sharing with me her knowledge, passion, wisdom, encouragement, time, and energy over the last three years. Second, thanks to the individuals on my dissertation team for their contributions to this research study: Drs. Charles Wood, Maryann Mraz, Fred Spooner, and Banita Brown. Third, I am grateful for the stipends and summer tuition money provided through the UNC Charlotte Leadership Personnel Preparation Program Grant as well as employment as an graduate research associate on several federally-funded grant projects which made it possible for me to pursue this degree as a full-time student.

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CHAPTER 1: INTRODUCTION

The way students with moderate and severe disabilities access the general curriculum has been a topic of interest for special educators and researchers. General curriculum access includes three components: context, content, and learning (Jackson, Ryndak, & Wehmeyer, 2008-2009). General education is the context, the academic content all students learn is the content, and progress on achieving content standards is the learning. The context in which students with severe disabilities access the general curriculum is debated among special education professionals. Some professionals believe the general education classroom is a better place to access the general curriculum than a self-contained special education classroom and there is some research to support this claim (Helmstetter, Curry, Brennan, & Saul, 1998; Palmer, Wehmeyer, Gipson, & Agran, 2004). When Helmstetter et al. (1998) and Palmer et al. (2004) compared the instruction received by students with disabilities in the general and special education classrooms; they found students received more general curriculum instruction in the general education classroom. Other professionals believe that context is such an integral part of general curriculum access that the general education classroom is the only place the general curriculum can be accessed for these students (Jackson et al., 2008-2009). The general education classroom, however, is an unlikely context for instruction for most students with moderate and severe disabilities because they likely attend a self-contained special education classroom (Smith, 2003).

Whether the general education classroom is required for students with moderate and severe disabilities to access the general curriculum is an empirical question. A small number of studies, however, have investigated academic learning for students with moderate and severe disabilities in the general education classroom. In the last 18 years, 19 studies have evaluated the effects of interventions on academic learning for students with moderate and severe disabilities in general education classrooms (e.g., Browder, Jimenez, Spooner, Saunders, Hudson, & Stevenson, 2011; Collins, Branson, Hall, & Rankin, 2001; Hudson, Browder, & Jimenez, 2011; Jameson, McDonnell, Polychronis, & Riesen, 2008; Jimenez, Browder, Spooner, & DiBiase, 2011; McDonnell, Mathot-Buckner, Thorson, & Fister, 2001; Polychronis, McDonnell, Johnson, Riesen, & Jameson, 2004; Riesen, McDonnell, Johnson, Polychronis, & Jameson, 2003; Wolery, Werts, Snyder, & Caldwell, 1994). This group of inclusive academic studies was conducted with teachers, paraeducators, and peers across school levels (i.e., elementary, middle, and high school) and each evaluated academic learning for students with moderate and severe disabilities (e.g., autism, multiple disabilities, moderate and severe intellectual disability, severe developmental disabilities, Down Syndrome). A total of 157 individuals were involved in this research including 68 students with disabilities, 45 peers without disabilities, 28 general education teachers, 11 paraeducators, and 5 special education teachers. From this research, at least two conclusions can be drawn.

First, these results demonstrate that the people available in schools (i.e., general and special education teachers, paraeducators, and peers) can teach academic skills to students with moderate and severe disabilities in the general education classroom. Ten of these studies were conducted with general education teachers (Collins, Hall, Branson, &

Holder, 1999; Johnson & McDonnell, 2004; Polychronis et al., 2004; Wolery, Anthony, Snyder, Werts, & Katzenmeyer, 1997), paraprofessionals (Browder et al., 2011; Jameson, McDonnell, Johnson, Riesen, & Polychronis, 2007; McDonnell, Johnson, Polychronis, Riesen, Jameson, & Kercher, 2006; Riesen et al., 2003), both general education teachers and paraprofessionals (Johnson & McDonnell, 2004), or general education teachers, paraprofessionals, and peers (Collins, Evans, Creech-Galloway, Karl, & Miller, 2007), and nine studies were conducted with peers without disabilities (Carter, Cushing, Clark, & Kennedy, 2005; Carter, Sisco, Melekoglu, & Kurkowski, 2007; Collins et al., 2001; Hudson et al., 2011; Jameson et al., 2008; Jimenez et al., in press; McDonnell et al., 2001; McDonnell, Thorson, Allen, & Mathot-Buchner, 2000; Wolery et al., 1994). For example, Riesen and colleagues (2003) found that two paraeducators could deliver embedded constant time delay and simultaneous prompting instruction in science, German, and U.S. History general education classes that improved the percent of vocabulary words read and defined correctly for four middle school students with moderate to severe disabilities. Likewise, Wolery et al. (1997) and Johnson and McDonnell (2004) found the embedded constant time delay (CTD) instruction delivered by general education elementary teachers was effective for teaching mathematics, reading, science, and foundational goals for three students with significant disabilities and three students with developmental disabilities. Similar results were found in studies using peer tutors. McDonnell et al. (2000) found peer support delivered in triads (i.e., one student with severe disabilities and two peers) improved spelling test scores for three elementary students with severe disabilities and Jameson et al. (2008) found peer-delivered embedded CTD instruction in general education Health and Art classes was

effective for teaching students with severe intellectual disability health facts and art vocabulary.

The second conclusion drawn from this research is that, while many learning goals in this literature were linked to academic content (e.g., mathematics, science, health, history) and promoted academic learning, the type of questions asked of students was often limited to factual recall. In the Johnson and McDonnell (2004) study, for example, students were asked to identify the greater 2-digit number from a choice of two, sign "help" to request assistance, and identify the functional sight words "exit" and "restroom." Likewise, in the Jameson and colleagues (2007) study, middle school students were asked to identify cooking symbols (e.g., bake, mix, stir); shirt necklines (e.g., v-neck, crew); states of matter (e.g., boil, melt); and teen living symbols (e.g., Roxanne - like yourself). The questions asked of students reflected a narrow range of academic content and depth of learning. While this type of learning is valuable, research is needed that evaluates practices for teaching more complex, higher order questions that are typical of grade-level content.

Of particular interest to this proposal is the use of the system of least prompts procedure to facilitate learning for students with moderate and severe disabilities. The system of least prompts (SLP) is a prompting procedure that is used after the target stimulus is presented and the student has an opportunity to respond independently. If the student responds incorrectly (i.e., an error) or provides no response, the next prompt is delivered (e.g., verbal, model, physical) along with another opportunity to respond. Prompts are delivered until the student responds correctly or the most intrusive prompt (i.e., the controlling prompt) in the prompt hierarchy is given.

Two of the academic studies (Collins et al., 2001; Hudson et al., 2011) conducted in the general education classroom evaluated the effects of system of least prompts on academic learning. First, Collins and colleagues (2001) used an 11-step task analysis and system of least prompts to teach four components of letter writing (i.e., date, greeting, body, and closing) to three high school students with moderate intellectual disability during a 12th-grade general education composition class. Collins et al. found that students were able to complete the letter writing task in 7 - 26 sessions and the general education teacher and peers tutors together were able to implement the system of least prompts intervention.

Second, Hudson et al. (2011) evaluated the effects of a peer-delivered system of least prompts package and read-alouds of adapted grade-level science and social studies chapters on listening comprehension for two students with moderate intellectual disability and one student with moderate intellectual disability and severe physical impairments. The system of least prompts package included opportunities to hear selected text again, opportunities to direct the amount of help from peer tutors, and self-monitoring of independent unprompted correct responses. Hudson and colleagues found the system of least prompts package promoted listening comprehension of adapted grade-level academic content for students with moderate intellectual disability and severe physical disabilities and peers reliably delivered the system of least prompts package during literacy workshop and relooping time in the general education classroom.

There is a strong focus on comprehension of text in the general education classroom because most academic learning requires it. Accordingly, comprehension of text is important for students with moderate and severe intellectual disability. Only one

study in this group of inclusive academic studies, however, evaluated an intervention that focused on comprehension of adapted grade-level academic text (i.e., Hudson et al., 2011). One reason for the few number of studies focused on comprehension of text could be that many students with severe disabilities are nonreaders. Reading requires both decoding and comprehension skills. When students lack decoding skills, a mature reader or an assistive technology device (e.g., text reader) can compensate for skill deficits by reading the text aloud to the student. Deficits in comprehension, or the ability to gain meaning from text, are hard to offset if skills are lacking; therefore comprehension strategies must be taught if a student's understanding of the text they read or have read to them is to improve.

The practice of shared story reading (also called read-alouds) is one way nonreaders or readers who read significantly below grade level can access age-appropriate literature (Browder, Gibbs et al., 2009). In a review of the literature on shared story reading and literacy for students with moderate and severe disabilities, Hudson and Test (2011) found the use of shared story reading to teach literacy to be an evidenced-based practice. Researchers also have found shared story reading and read-alouds effective for teaching comprehension of text for students with severe disabilities (Browder, Trela, Jimenez, 2007; Browder, Mims, Spooner, Ahlgrim-Delzell, & Lee, 2008; Hudson et al., 2011; Mims, 2009; Mims, Browder, Baker, Lee, & Spooner, 2009; Mims, Hudson, & Browder, in press; Spooner, Rivera, Browder, Baker, & Salas, 2009). The comprehension skills taught in these studies included: (a) early comprehension skills (Browder, Trela et al., 2007; Browder, Mims et al., 2008); (b) listening comprehension for students with significant intellectual disabilities and visual impairments (Mims et al.,

2009); (c) listening comprehension for an English language learner with moderate intellectual disability (Spooner et al., 2009); (d) listening comprehension of literal and inferential questions paired with adapted grade-level academic content (Hudson et al., 2011); and (e) listening comprehension of grade-level adapted biographies (Mims et al., in press).

While the intervention packages in these shared story reading studies had different components, each used the system of least prompts in the intervention package. For example, Browder, Trela et al. (2007) used system of least prompts, a task-analyzed literacy lesson plan template, and teacher self-monitoring to teach comprehension, target sound identification, and reading a repeated story line for students with moderate and severe intellectual disability and autism. Likewise, Browder, Mims et al. (2008) used the system of least prompts, team planning for Universal Design for Learning (UDL), and a task-analyzed literacy lesson plan template to teach independent responding and early comprehension, while Mims and colleagues (2009) used the system of least prompts with embedded reread prompts, task-analyzed instruction, and actual objects as noun referents to teach listening comprehension for students with significant intellectual disability and visual impairments. Additionally, Mims et al. (in press) used a system of least prompts package and adapted grade-level biographies to teach listening comprehension for four middle school students with severe developmental disabilities (i.e., severe intellectual disability and autism spectrum disorder).

A limitation of this research (and in much of special education research) is that it was conducted in self-contained special education classrooms. While the practice of shared story reading is effective in promoting comprehension for students with severe

disabilities in self-contained special education classrooms, it is unknown if similar results would be found in general education classrooms. A second limitation of the shared story reading research is that, while the literature used to promote comprehension during shared stories was age-appropriate, all but one study (Mims et al., in press) used novels (e.g., *Call of the Wild*, London, 1903) or storybooks (e.g., *Dirty Bertie*, Roberts, 2003). To fully access the literature in the general curriculum, students need to comprehend a wide variety of expository and narrative text.

A third limitation from this research was the focus on low level comprehension responses. Early shared story reading research focused on student engagement (Browder, Trela et al., 2007) and participation responses (Browder, Mims et al., 2008), but also included some comprehension questions that required prediction (i.e., What do you think this story is going to be about?) and general story comprehension responses (e.g., What was the story about?) from students. Browder and colleagues found that students were able to quickly learn the answers to the comprehension questions and recommended higher expectations regarding comprehension.

To investigate this idea, Mims et al. (2009) conducted a study that exclusively measured listening comprehension at a literal recall level for two students with significant intellectual disabilities and visual impairments using three elementary picture books and found that all students increased the number of correct literal recall questions across all books. In another study, Mims (2009) investigated the effects of a system of least prompts package on listening comprehension that required a range of comprehension responses (i.e., factual recall, sequencing, prediction, application, and synthesis) and

found two students with moderate intellectual disability and one student with multiple disabilities made gains in text-dependent listening comprehension.

Unlike previous research that used age-appropriate fictional stories, Mims et al. (in press) evaluated the effects of a system of least prompts package on text-dependent listening comprehension using grade-level adapted biographies that also required a range of responses from students (i.e., literal recall, sequencing, analysis, evaluation) and found four students with severe developmental disabilities improved listening comprehension. Results from this research indicate that higher levels of comprehension can be taught using the practice of shared story reading with the system of least prompts and grade-level adapted content, but more research is needed, particularly in the area of read-alouds of grade-level adapted academic content. A limitation of this study and that of Mims et al. (2009) was that the dependent variable used to monitor participant progress scored the level of prompting needed by participants to provide a correct response to text-dependent listening comprehension questions. Two of the prompts in the system of least prompts hierarchy were modeled prompts (i.e., prompts where the interventionists said and showed the correct response or physically guided the participant to select the correct response). Because the modeled prompts simply required participants to imitate the interventionist's behavior or to passively comply as the interventionist moved their hand to the correct response, it was unclear if participants were demonstrating gains in comprehension of text following these modeled prompts. The need exists for a dependent variable that more accurately measures gains in comprehension of text after participants are given unmodeled text-only prompts.

Academic competency alone may not be enough to ensure students with severe disabilities are successful in the general education classroom. Research has shown that self-monitoring is an important classroom survival skill for students with severe disabilities (Gilberts, Agran, Hughes, & Wehmeyer, 2001) that involves the ability to observe when a target behavior has occurred and record its occurrence. Gilberts and colleagues found that peer-delivered instruction on self-monitoring strategies helped five middle school students with severe disabilities participate more successfully in Spanish, reading, art, and U.S. History general education classes. Peer tutors taught students 11 classroom survival skills rated important by teachers in their school (e.g., in class when bell rings, in seat when bell rings, greet teacher, look at teacher) and to monitor their use of these survival skills with a self-monitoring sheet. With training from peer tutors, students were able to collect reasonably accurate data on their own behavior and reported an improved classroom "fit." Only one inclusive academic study, Hudson et al. (2011), has included self-monitoring in the intervention package. In the Hudson et al. (2011) study, students used a self-monitoring sheet to record their independent unprompted correct responses to comprehension questions from adapted fourth grade science and social studies chapters. Since the ultimate goal of instruction is student independence, more research is needed in this area.

In summary, a small number of studies have investigated academic learning for students with moderate and severe intellectual disability in general education classrooms (i.e., n=19). Results from this research indicate that (a) general education teachers (e.g., Johnson & McDonnell, 2004), paraeducators (e.g., Jameson et al., 2007), and peers without disabilities (e.g., Jameson et al., 2008) can teach academic skills to students with

moderate and severe intellectual disability in general education classrooms; (b) most of the questions asked of students in this research required simple factual recall and did not represent the range or complexity of questions asked of students in general education; (c) when using the system of least prompts in the intervention, the dependent variable has failed to clearly measure student gains in comprehension of text; and (d) little research has evaluated strategies for promoting self-determination skills, like self-monitoring, that may improve student independence in general education classrooms and generalization of learned skills across academic content.

Comprehension of text is necessary for most academic learning, but little research has evaluated practices that teach comprehension of text for students with severe disabilities within the general education classroom. Research conducted in mostly separate special education classrooms indicate that the shared story reading methodology with the system of least prompts can teach comprehension for students with severe disabilities (e.g., Browder, Trela et al., 2007; Browder, Mims et al., 2008). The number of studies evaluating the effects of the system of least prompts and grade-level adapted academic read-alouds on listening comprehension is few (i.e., Mims et al., in press; Hudson et al., 2011) and only one has evaluated the effects of system of least prompts and grade-level adapted academic read-alouds on comprehension within the context of general education (Hudson et al.). Both of these studies used a dependent variable that measured gains in participant comprehension of text using a prompt hierarchy that included model and physical prompts to help participants select the correct response, but these modeled prompts obscured whether participants were improving their comprehension of the text they heard read aloud or imitating what they saw and heard

from the interventionist. In addition to academic competency, classroom survival skills, such as self-monitoring (Gilberts et al., 2001), may be important for students to be successful in general education.

Significance of this Study

The purpose of this study was to evaluate the effects of a peer-delivered system of least prompts package and adapted read-alouds of grade-level literature on listening comprehension for students with moderate intellectual disability during a general education reading class. The study extended earlier research in four ways. First, this study used read-alouds of adapted grade-level literature from the fifth grade curriculum in the intervention. Second, this study pretrained participants with disabilities on wh- word question concepts, requesting help, and self-monitoring independent responses before the study began. Third, this study conducted extensive peer tutor training on the system of least prompts intervention. Fourth, this study collected data on generalization of intervention effects in the general education reading class. These differences contributed to the literature on academic learning for students with moderate and severe intellectual disability in the general education classroom by providing (a) a model of peer-delivered system of least prompts intervention package within the context of general education and the routines of the general education classroom, (b) a demonstration of general curriculum access that included adapted grade-level reading content, (c) a model for promoting self-monitoring skills with academic content in the general education classroom for participants with disabilities, and (d) a model for training peers to deliver systematic instruction to teach comprehension of adapted grade-level text to students with moderate intellectual disability.

Research Questions

The research questions asked in this study were:

a. What was the effect of a peer-delivered system of least prompts package and read-alouds on unmodeled, text only comprehension responses (i.e., *Text Only Correct*) for participants with moderate intellectual disability?
b. What was the effect of a peer-delivered system of least prompts package and read-alouds on independent unprompted correct listening comprehension responses (i.e., *Independent Correct*) for participants with moderate intellectual disability?
c. Did listening comprehension skills acquired during instruction generalize to the general education reading class (i.e., *Generalized Text Only Correct*)?
d. Did peers' attitudes about students with disabilities improve after students with moderate intellectual disability attended reading class?
e. Did stakeholders rate the procedures and outcomes as important for students with moderate intellectual disability?
f. Did peer tutors' reading grades change during the study's implementation?

Definitions of Terms

Common Core State Standards - standards that define what all students are expected to know and be able to do (Common Core State Standards Initiative, 2010).

Comprehension - the ability to gain meaning from text (National Institute of Child Health and Human Development, Report of the National Reading Panel, 2000).

Constant Time Delay - A response prompting procedure that uses a single controlling prompt that is faded over time by increasing the delay interval for a student to

independently respond from zero seconds to a set interval of time across sessions (Collins, 2007; Snell & Gast, 1981).

Discrete Behavior - a response that consists of a single step (Collins, 2007).

Embedded Instruction – explicit, systematic instruction designed to distribute instructional trials within the ongoing routine and activities of the performance environment (McDonnell, Johnson, & McQuivey, 2008).

Explicit Strategy Instruction - Instruction that makes clear the *what*, *why*, *when*, and *how* of skill and strategy use. (Vacca, Vacca, Gove, Burkey, Lenhart, & McKeon, 2006).

Foundational Literacy Skills - Also referred to as conventions of reading, which includes skills such as choosing between two books, orienting the book right side up, and turning the page at the appropriate time (Browder, Wakeman, Spooner, Ahlgrim-Delzell, & Algozzine, 2006).

General Curriculum - The overall plan of instruction adopted by a school or school system for the purpose of guiding instructional activities and for providing consistent expectations, content, methods, and outcomes across differing classrooms in each school or school system (Center for Applied Special Technology, http://www.cast.org/).

Inclusion – a practice in which students with disabilities are served primarily in the general education classroom under the responsibility of the general education teacher with the necessary supports for academic and social achievement (Mastropieri & Scruggs, 2007).

Inclusive Education - Full-time membership of students with disabilities in their chronologically age-appropriate classrooms with the necessary supports and services to

benefit from educational activities (Lipsky & Gartner, 1992; Ryndak, Jackson, & Billingsley, 2000).

Listening Comprehension - The development of meaning from spoken communication or text from a reader (Browder, Gibbs, Ahlgrim-Delzell, Courtade, & Lee, 2007).

Literacy- The ability to use language to read, write, speak, and listen in order to understand words and concepts (Vacca et al., 2006).

Low Incidence Disabilities - Includes individuals with visual impairments, hearing impairments, simultaneous vision and hearing impairments, significant intellectual disabilities, orthopedic impairments, autism, and traumatic brain injury (2011 Personnel Preparation Grant Application, http://www2.ed.gov/programs/osepprep/2011-325dkt.pdf).

Peer Support Interventions (i.e., peer-mediated instruction) – one or more peers without disabilities provide academic and social support to student with disabilities (Cushing & Kennedy, 2004). Peers are taught to: (a) adapt class activities to facilitate student participation, (b) provide instruction related to IEP goals, (c) provide frequent feedback to students (Cushing & Kennedy, 1997).

Peer Tutoring - Teaming pairs of same-age students to practice academic skills. One-way peer tutoring involves one student teaching another student and reciprocal peer tutoring involves students alternating tutor/tutee roles (Eiserman, 1988).

Peer-Delivered Instruction - Instruction delivered by peers with the support of the classroom teacher. The classroom teacher's role changes from delivering instruction to establishing, monitoring, and improving peer-teaching activities (Utley & Mortweet, 1997).

Reading - Deriving meaning from written or printed text; involves both decoding and comprehension (Carnine, Silbert, & Kame'enui, 1997).

Read-Alouds - The practice of reading text aloud for a listener that facilitates access to age-appropriate readers for nonreaders (Browder, Mims et al., 2008).

Scaffolded Instruction - Providing enough instructional guidance and support for students to that they will be successful in their use of reading strategies (Vacca et al., 2006)

Self-monitoring - Observing when a target behavior has occurred and recording its occurrence (Gilberts et al., 2001).

Separate or Self-Contained Setting - Placement of students with disabilities in a segregated setting for 60% or more of the school day (Collins, 2007).

Shared Story Reading - A repeatable and predictable process of reading a book in an interactive turn taking style, where the student is able to construct meaning from text. Also known as story-based lessons or read alouds (Browder, Gibbs et al., 2007).

Students with Severe Disabilities – IQ 55>, moderate and severe ID, individuals with autism, generally encompasses students with significant disabilities in intellectual, physical, and/or social functioning, including autism (Heward, 2003).

Students with Significant Cognitive Disabilities – one who: (a) requires substantial modifications, adaptations, or supports to meaningfully access the grade-level content; (b) requires intensive individualized instruction in order to acquire and generalize knowledge; and (c) is working toward alternate achievement standards for grade-level content (Browder & Spooner, 2006).

Students with Moderate and Severe Intellectual Disability - a disability characterized by significant limitations both in intellectual functioning and in adaptive behavior as

expressed in conceptual, social, and practical adaptive skills. This disability originates before the age of 18 (American Association on Intellectual Developmental Disabilities, AAIDD, 2008, http://www.aamr.org/content_100.cfm?navID=21).

System of Least Prompts - A prompting strategy that consists of the presentation of a target stimulus, a prompt hierarchy, and an opportunity to respond independently. Once the target stimulus is provided and no response occurs the least intrusive prompt is delivered and the student is given a chance to respond. This continues until all of the prompts in the hierarchy have been delivered or the student correctly responds (Doyle, Wolery, Ault, & Gast, 1988).

Task Analysis - The steps of a chained behavior broken into its component steps (Collins, 2007).

Text-Dependent Listening Comprehension - The use of comprehension questions that may only be answered if the student has been attentive to the passage, as opposed to text independent listening comprehension, which does not require reading or attentiveness to the read passage in order to answer the question (Ahlgrim-Delzell, Browder, Flowers, & Baker, 2008).

Universal Design for Learning - designed by the Center for Applied Special Technology (CAST), UDL uses flexible instructional materials and methods to accommodate a variety of learning differences (Orkwis, 2003).

CHAPTER 2: REVIEW OF THE LITERATURE

This chapter reviews selected research from four areas relevant to the purpose of this proposal: (a) academic learning for students with moderate and severe intellectual disability in general education, (b) comprehension of text, (c) the practice of shared story reading, and (d) peer tutoring. The chapter begins with a brief review of academic learning for students with moderate and severe intellectual disability in general education followed by a discussion of the expectations for learning described in the Common Core State Standards (2010; http://www.corestandards.org/) for all students and how these standards impact instruction for students with moderate and severe disabilities who are nonreaders. Second, selected literature on comprehension of text for students with mild disabilities and students with moderate and severe intellectual disability is reviewed and, from this research, the limitations for teaching comprehension using listening comprehension strategies for students with mild and moderate intellectual disability is discussed. Third, the practice of shared story reading (or read-alouds) is described and the effects of shared story reading on early language and literacy for students without disabilities, students with mild disabilities, and students with moderate and severe disabilities are discussed. Included in this discussion is a review of recent research which indicates that shared story reading may also be an effective practice for teaching grade-level adapted academic content in general education for this population. Last, the impact of peer tutoring on academic learning for students with and without disabilities and the effects of using peer-delivered instruction to teach academic skills for students with

moderate and severe intellectual disability is discussed based on the results of recent research that used peers to teach grade-level adapted academic content to students in general education.

Academic Learning in the General Education Classroom for Students with Moderate and Severe Intellectual Disability

As described in chapter one, 19 studies have investigated academic learning for students with moderate and severe intellectual disability in general education classrooms. This research has helped answer two questions related to instruction in inclusive settings: (a) Who can deliver academic instruction to students with moderate and severe disabilities? and (b) What instructional strategies are most effective? Results of this research strongly support the use of people currently in schools to deliver instruction that promotes academic learning for students with moderate and severe disabilities - namely peers (e.g., Jimenez et al., in press), paraeducators (e.g., Jameson et al., 2007), and general education teachers (e.g., Wolery et al., 1997).

The results of five studies from this group of 19 provide some insight into answering the second question as well. These studies investigated various aspects of instruction for this population, including the acquisition of academic content (Collins et al., 2007), trial distribution schedules (Polychronis et al., 2004), systematic prompting procedures (Riesen et al., 2003), instructional formats (McDonnell et al., 2006), and instructional strategies (Jameson et al., 2007). Three studies compared instruction delivered in a general education classroom with instruction delivered in a special education classroom. When Collins and her colleagues (2007) compared the acquisition and maintenance of functional and core content sight words in the special and general

education settings, they found students learned both functional and core content sight words, regardless of setting or format. Second, when Jameson and colleagues (2007) compared one-to-one embedded instruction in the general education classroom with one-to-one massed practice instruction in the special education classroom, they found both interventions were effective in teaching cooking symbols, shirt necklines, science vocabulary definitions, and teen living symbols. Third, when McDonnell and colleagues (2006) compared one-to-one embedded instruction in the general education classroom with small group instruction in the special education classroom, they found both strategies were effective for teaching students to define key vocabulary from academic content and students were able to generalize their responses to new materials (e.g., worksheets, study guides) developed by the general education teacher for all students.

The other two studies in this group compared aspects of instruction delivered in the general education classroom. First, Riesen et al. (2003) compared embedded CTD instruction with embedded simultaneous prompting (SP) instruction and found both were effective in teaching students to read and define words in the general education classroom. Second, Polychronis et al. (2004) compared within class (i.e., 30 min) and across classes (i.e., 120 min) trial distribution schedules for embedded CTD instruction and found students learned their target skills with both schedules and generalized the skills acquired to typical materials and instructional contexts. These results, along with the results of the two system of least prompts studies described earlier (i.e., Collins et al. 2007; Hudson et al., 2011) indicate that systematic instructional strategies (i.e., SLP, CTD, SP) and instructional formats (i.e., embedded one-to-one instruction) are effective for teaching academic skills in general education classrooms.

Research in this area has raised other questions, one of which relates to the academic content being taught. Half the researchers in this group of studies (i.e., *n* = 9; e.g., Collins et al., 2007; Jameson et al., 2008) described the current focus of most research in this area as a limitation; that is, the focus on teaching a narrow set of discrete skills linked to an academic area (e.g., 10 vocabulary words and definitions from science; e.g., Riesen et al., 2003). It is clear that academic learning in the general education classroom requires more of students than simple factual recall and discrete responses. These new questions ask: (a) What instructional strategies are effective for teaching more complex behaviors that require higher level responses from students? (b) How can academic instruction keep pace with the quickly changing curriculum in the general education classroom? and (c) How can learned skills generalize across academic areas?

In contrast to most studies in this group, five studies implemented interventions in which academic learning targets changed along with the academic content being taught in the general education class (Browder et al., 2011; Hudson et al., 2011; Jimenez et al., in press, McDonnell et al., 2000, 2001). Two studies used peer interventions (i.e., classwide peer tutoring, partner learning) implemented by general education teachers in elementary and junior high schools. First, McDonnell et al. (2000) implemented partner learning for three elementary students with severe disabilities and three peers in fourth or fifth grade classrooms. Partner Learning was modified to include a student with disabilities by changing the typical dyad arrangement to a triad. All students participated in Partner Learning the first 20 minutes of spelling class two times a week. Students rotated between three roles: word wizard (i.e., wrote and verbally spelled the words); word conjurer (i.e., selected a word from the appropriate list, presented the word to the speller,

and provided feedback to the speller); and word keeper (i.e., held the word lists, checked the written and verbal spelling of the word, and showed the written word from the list to the speller for error correction if there was a mistake). Two students' spelling words were taken from the general education spelling curriculum (no grade level was specified) and a third student's words came from the Edmark reading program (Austin & Boekman, 1990). The number of words included in each student's weekly spelling lists ranged from 5-20 words and was adjusted by their teachers based on their previous weekly spelling performance. Students' mean percent of words spelled correctly increased from baseline by 11%, 40%, and 62% for students 1, 2, and 3, respectively. A limitation of the research is that the spelling content was not grade-level for the one student whose words came from the Edmark reading program (Austin & Boekman, 1990); however, this study provides an example of how a cooperative learning strategy, (i.e., Partner Learning), can be used to keep pace with general education curriculum while still differentiating instruction for students with moderate and severe intellectual disability.

In another study by McDonnell and his colleagues (2001), classwide peer tutoring (CWPT; Fister, 1992) was implemented as a supplement to instruction in pre-algebra, physical education (PE), and history classes for three junior high school students with moderate intellectual disabilities. Classwide Peer Tutoring was modified to include a student with disabilities by changing the typical dyad arrangement to a triad. Classwide Peer Tutoring sessions were conducted two times a week for 15 min and members rotated through one of three roles: tutor, tutee, and observer each session. Students took posttests once a week that covered the general education content learned that week. Weekly posttests in pre-algebra had from 8-20 problems that required solving each problem and

providing a written response (e.g., write .98 as a percent). Weekly posttests in PE followed the same format as peers without disabilities (e.g., chest pass the ball to a peer from three feet away, dribble the ball with one hand for 20 feet). Weekly posttests in history consisted of 5-15 questions that required matching objects or pictures, or pointing to a picture of the concept being taught (e.g., point to the Conestoga wagon). Students' mean posttest scores were 71% (range of 54-100), 33% (range of 0-57), and 68% (range of 57-100). Through the use of a multi-element curriculum and accommodations, the grade-level curriculum was used for this study. A limitation of the research was that baseline data were not collected before the intervention, so no causal relationship could be established. Despite the lack of a demonstration of a functional relationship, this research is an example of how learning targets can change in tandem with the academic content being taught in the general education classroom.

The remaining three studies in this group have gone a step further in their investigations by making a strong connection to grade-level content. In doing so, these studies offer insight in how to increase the complexity of the content being taught to students. Two of these studies used peer tutors to implement the interventions (Hudson et al., under review; Jimenez et al., in press) and one used special education teaching assistants (TAs; Browder et al., 2011). First, Browder et al. (2011) embedded CTD instruction to teach early numeracy skills (e.g., making sets, in-line counting) within third, fourth, and fifth grade general education mathematics classes for seven students with moderate intellectual disability (i.e., 2 third grade students, 2 fourth grade students, and 3 fifth grade students). TAs delivered embedded CTD instruction during general education mathematics classes, and daily lessons and materials were adapted as needed.

Opportunities to teach targeted skills within mathematics class were identified through ongoing collaboration between the TA, project research associate for the class, and general education mathematics teacher. Additionally, students received instruction concurrently from special education teachers on the same early numeracy skills using the Early Numeracy Skills Builder curriculum (Jimenez, Browder, & Saunders, in press) in the special education classroom. This research is an example of how early numeracy skills can be generalized and applied in meaningful ways within the grade-level content (e.g., using the skill of making sets to solve a multiplication problem in 3rd grade and to find the perimeter of a polygon in fifth grade). While early numeracy skills were the learning targets, the context in which they were taught was grade-level mathematics.

Next, Jimenez et al. (in press) taught grade-aligned science skills from three science units to five middle school students with moderate intellectual disability using peer-mediated CTD instruction embedded into general education inquiry science class. Peers embedded constant time delay intervention into ongoing science class instruction at their discretion. Learning targets included science vocabulary definitions (e.g., technology, kinetic energy), science concept statements (e.g., kinetic energy is the energy of motion), and the use of a KWHL sheet (i.e., **K**=what do you **K**now?; **W**=**W**hat do you want to know? **H**=**H**ow will you find out?; **L**=what did you **L**earn?). Science responses were taken directly from the unit of instruction occurring in the general education science classroom using the state's adopted 6th grade science text. In addition, peers embedded the CTD procedure to teach the use of a KWHL chart as the general education science teacher led the class to fill in their charts. A detailed checklist of the 28 steps involved in implementing the CTD procedures was used by peers to self-monitor their instruction.

All five students learned science responses across three units of science; however, three students required additional instruction from the special education teacher to keep pace with the changing content of the general science class. One reason extra support was needed for some students may have been the large amount of content targeted for student learning which sharply contrasts with past research. This study provides an example of how students with moderate intellectual disability are able to participate fully in hands-on science activities, learn science vocabulary and concepts, and keep pace with the general class format of using a KWHL chart. In addition, this research highlights the fact that some students may need individualized instruction in addition to the instruction they receive in the general education classroom.

Last, Hudson et al. (2011) used a peer-delivered system of least prompts package and read-alouds of adapted fourth grade science and social studies chapters to teach comprehension for two students with moderate intellectual disability and one student with moderate intellectual disability and severe physical impairments (i.e., student used a wheelchair for ambulation and a yes/no response on an eye gaze board for communication). Two peer tutors delivered the scripted lessons individually to students during literacy workshop in the general education classroom. The peer tutor scripts contained the SLP intervention embedded within a read-aloud of the adapted science or social studies chapter currently being taught to students without disabilities in the fourth grade class. At predetermined points in the read-aloud, the peer stopped to ask one of six comprehension questions created for the chapter. Four questions required students to recall a fact from the page just read (i.e., literal recall) and two questions required inference (i.e., the answer required additional information from the student). To support

students' responding of inferential questions, the prompts contained "think alouds" that modeled for students how to arrive at a correct response when the answer was not directly stated on the page. Students were given opportunities to ask for help after each question and received more information each time they did so (i.e., system of least prompts), as well as a six-item response board and the adapted academic chapter to support their responding.

Points were given for all correct responses and the number of points earned was determined by the amount of help needed to provide the correct response (i.e., range of five points to one point). For example, independent correct responses with no prompts earned five points; correct response after four prompts earned one point. Points were totaled at the end of the session to determine a session score. In addition, students used a self-monitoring sheet to record their unprompted *Independent Correct* responses and returned in the afternoon for science or social studies class throughout the course of the intervention. With the peer-delivered SLP package and read-alouds, all students improved listening comprehension responses across four chapters of grade-level adapted science content. This study provides an example of a way to teach higher level academic skills (i.e., inferential comprehension) using grade-level adapted academic text while keeping pace with the content being taught in the general education classroom. In addition, teaching students to use "think alouds" to answer comprehension questions requiring inference and to direct the amount of help given from peers are strategies that can be applied across academic contexts.

These last three studies (Browder et al., 2011; Hudson et al., 2011; Jimenez et al., in press) represent a shift in instructional focus for inclusive academic research - from

discrete sets of learning targets linked to the core content to more complex academic targets from grade-level curriculum being taught in real time with general education. While the results of this research are promising, more research is needed to determine and refine effective instructional strategies with this new focus.

Common core state standards. The Common Core State Standards (CCSS; the Standards) define what all students are expected to know and be able to do by the time they graduate from high school (Common Core State Standards Initiative, 2010; http://www.corestandards.org/). The Standards for English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects is an integrated model of literacy in which general, cross-disciplinary literacy expectations are defined for individual grade levels for K-12 and grade bands for grades 9-10 and 11-12. For K-5, the Standards include expectations for reading, writing, speaking, listening, and language. Within the area of reading, standards are described for literature, informational text, and foundational skills.

The goal of reading is comprehension and there are many factors that contribute to the understanding of written material. For example, Blachowicz and Ogle (2008) describe reading comprehension as: motivated and purposeful, socially and individually constructed, self-monitored and self-regulated, skillful and strategic, with use of big strategies supported by smaller skills. A strategy is a plan developed by a reader to assist in comprehending and thinking about texts when reading the words alone does not give the reader a sense of the text's meaning. A core set of seven reading comprehension strategies are used to increase students' ability to understand challenging texts more independently: (a) activating background knowledge to make connections between new

and known information, (b) questioning the text, (c) drawing inferences, (d) determining importance, (e) creating mental images, (f) repairing understanding when meaning breaks down, and (g) synthesizing information (Pearson, Roehler, Dole, & Duffy, 1992).

A fifth grade reading curriculum (i.e., *Imagine It!*, Level 5, 2008) was considered when researching the strategies and skills needed by general education students to be successful learners. In fifth grade, general education students will read up to 13 different genres of literature, including expository text, biographies, diaries, fantasies, plays, interviews, tall tales, historical fiction, realistic fiction, mysteries, fables, and folktales. To comprehend different kinds of narrative and expository text, students need to use a variety of comprehension strategies and develop comprehension skills. For example, one comprehension strategy students are taught is to ask questions about things or events in the text as they read, then look for the answers as they continue reading the selection (i.e., asking questions or question generation). Another comprehension strategy taught is to make predictions about what they think will happen later in the text, then checking to see whether their predictions were confirmed (i.e., predicting). A third comprehension strategy is to make connections as they read between what they know and what they are reading (i.e., making connections). Other comprehension strategies include visualizing (i.e., imagining the characters and events in your mind as you read), adjusting reading speed (i.e., comprehension monitoring), and summarizing the text read. In addition to the comprehension strategies described in the fifth grade curriculum (i.e., *Imagine It!*, 2008), the NRP (2000) recommends cooperative learning, graphic and semantic organizers, and question answering as effective strategies for teaching comprehension.

Along with comprehension strategies, general education students also learn comprehension skills to help them make meaning from what they read. For example, being aware of cause and effect helps to understand how one event in a story leads to another and thinking about the sequence helps to understand the order of events in the text. Being able to identify the author's main idea and the details used to support the main idea is another important comprehension skill. Other comprehension skills needed for comprehension are the ability to make inferences, distinguish facts and opinions, and draw conclusions from text. In addition to literature, the Standards also emphasize comprehending informational text as well as literature. Features of informational text that general education students will encounter in their reading include charts, line graphs, bar graphs, headings, diagrams, captions, and time lines, and strategies for understanding these features are also needed to be a successful fifth grade learner.

Teaching English and language arts/reading content to students with disabilities who are nonreaders. The Common Core State Standards (2010; http://wwwcorestandards.org/) do not define for teachers how they should teach, but leave great latitude in the instructional strategies and materials teachers choose. Instead, the Standards encourage teachers to use appropriate accommodations to ensure maximum participation from students with special education needs and to interpret concepts like reading, writing, speaking, and listening broadly to be inclusive of students with disabilities.

Students who are nonreaders need to access the same grade-level narrative and expository literature as their peers (e.g., folk tales, historical fiction, biographies) as well as receive explicit systematic instruction and ample practice using comprehension

strategies and skills with a variety of text. Because they are not independent readers, nonreaders rely on text being read aloud, either by a person or an electronic device (e.g., text reader). Comprehending text read aloud differs significantly from comprehending text read independently. For instance, when text is read aloud, the listener depends on the reader to read the text accurately and in an understandable way. This means the listener depends on the reader to use an appropriate pace, a voice loud enough to be heard clearly by the listener, and to read the text with appropriate expression and fluidity that the author's intent is conveyed. Unlike independent readers who are able to scan ahead and look back in the text to aid their comprehension, nonreaders are limited to what they can remember about what they heard read to them. The strategies recommended by the NRP (2000) may be effective to promote comprehension of text for nonreaders, but only one strategy (i.e., question answering) has been evaluated in the research (for a review of the reading instruction literature see Browder, Wakeman, et al., 2006). It remains an empirical question if other strategies (i.e., comprehension monitoring, cooperative learning, graphic and semantic organizers, question generation, and summarizing) can promote comprehension for nonreaders with disabilities. Because so few research studies have been conducted in the area of comprehension of text for students with severe disabilities, the first step in expanding the research is to identify what has been effective for other populations.

Comprehension of Text. In 1997, the National Institute of Child Health and Human Development (NICHD) formed the National Reading Panel (NRP), a 14-member panel to review the research on reading practices and determine the effectiveness of various approaches to teaching reading. Reading was defied as reading real words in

isolation or in context, reading psuedowords that can be pronounced but have no meaning, reading text aloud or silently, and comprehending text that is read silently or orally. The panel concluded effective reading instruction included instruction in phonemic awareness, phonics, fluency, vocabulary, and comprehension strategies.

Strategies for teaching comprehension of text for students with moderate and severe intellectual disability are the focus of this research proposal; therefore, the results of the NRP's review of the research on comprehension are described. The NRP reviewed 205 studies focused on comprehension and identified 16 strategies for teaching comprehension. Of these strategies, the NRP found seven to be most effective for teaching comprehension to readers without disabilities, including: (a) comprehension monitoring, (b) cooperative learning, (c) graphic and semantic organizers (e.g., story maps), (d) question answering, (e) question generation, and (f) summarizing. While this research provides important guidance for teaching reading to all students, reading instruction addressing comprehension for students with moderate and severe disabilities has been mostly limited to question answering (for a comprehensive review of reading instruction for this population, see Browder, Wakeman, et al., 2006). The effectiveness of other strategies for teaching comprehension for this population remains an empirical question.

Reading comprehension instruction for students with mild disabilities. Over 100 studies have investigated the effects of reading comprehension interventions for students with learning disabilities (Jitendra, Cole, Hoppes, & Wilson, 1998; Mastropieri, Scruggs, Bakken, & Whedon, 1996; Talbott, Lloyd, & Tankersley, 1994). Recently, Berkeley, Scruggs, and Mastropieri (2011) conducted a meta-analysis of reading

comprehension instruction for students with learning disabilities (LD) that included research published after the Mastropieri et al. (1996) meta-analysis to determine if effect sizes were similar to past research and to highlight any differences in past and current practices (e.g., types of treatments). Berkeley et al. identified 40 studies published between 1995 and 2006 that met criteria for the meta-analysis. Information about each study was collected and interventions were classified into four reading comprehension categories similar to Mastropieri et al. (i.e., questioning/strategy instruction, text structure, fundamental reading skills, and other). In total, 1,734 participants received instruction across settings (elementary, *n*=15 studies; middle school, *n*=18 studies; high school, *n*=6, residential facility, *n*=1) with most treatments delivered by teachers (47.0%) or researchers (40.0%) in large groups (42.5%), small groups (35.0%), and one-to-one instruction (22.5%).

Most studies reviewed (*n*=27) investigated questioning/strategy instruction (e.g., teaching students comprehension strategies), six interventions investigated text enhancements (e.g., graphic organizers), five investigated fundamental reading skills training (e.g., the Behavioral Reading Therapy Program; Burns & Kondrick, 1998), and two interventions were described as "other" (e.g., school-wide cooperative learning program). Berkeley et al. (2011) calculated weighted mean effect sizes for criterion-referenced tests (CRT) vs. norm-referenced tests (NRT). Researchers found reading comprehension interventions were very effective for both CRT (M_{es} = 0.70) and NRT (M_{es} = 0.52) and the mean treatment effect for middle and high school students (0.80) was higher than elementary students (0.52). Interestingly, no statically significant difference was found between studies using classroom peers to deliver the intervention

and those that did not, but studies incorporating a component of self-regulated strategy (e.g., self-monitoring combined with a main idea strategy; Jitendra, Hoppes, & Xin, 2000) had higher weighted mean effect sizes than those that did not.

The effect sizes for reading comprehension interventions found in this meta-analysis align with the results of previously published meta-analyses (Mastropieri et al., 1996; Talbott et al., 1994), although the authors found more whole class and general education classroom administered interventions than previous research, as well as more teacher-implemented (rather than researcher-implemented) treatments and peer-mediated interventions. The authors concluded that even though reading comprehension instruction is being conducted more often by teachers and peers in larger, whole class settings, reading comprehension interventions are still effective for students with learning disabilities. In addition, the large effect sizes for reading comprehension interventions across settings and instructional formats indicates that instruction can greatly improve reading comprehension for students with learning disabilities.

Reading comprehension instruction for students with moderate and severe intellectual disability. Reading instruction for students with moderate and severe intellectual disability has been limited in scope. In a comprehensive review of reading instruction for individuals with significant cognitive disabilities, Browder, Wakeman, et al. (2006) reviewed 128 studies (i.e., 88 single subject research design and 40 group research design) conducted between 1975 and 2006. A total of 1,123 individuals participated, including 743 with moderate and severe intellectual disability (i.e., 66%). Most participants were school-aged (i.e., 5-21 years, *n*=569) and most studies were conducted in research or separate special education classrooms (*n*=86). The NRP's (2000)

recommended areas of reading instruction (i.e., phonemic instruction, phonics, vocabulary, comprehension, and fluency) were used to code the studies and results of the review indicated that most studies targeted vocabulary acquisition, specifically functional sight words (e.g., Lalli & Browder, 1993); however, 23 studies measured or taught comprehension to individuals with moderate and severe intellectual disability.

In these studies, students demonstrated comprehension by using a sight word in the context of a functional activity (e.g., Browder & Minarovic, 2000; Fiscus, Schuster, Morse, & Collins, 2002) or by matching a word to a picture (e.g., Mechling, Gast, & Langone, 2002). For example, Fiscus et al. (2002), taught four elementary students with moderate to severe cognitive disabilities to make waffles, cheese with crackers, and chocolate milk using CTD and a picture recipe book. Related nontargeted information embedded in the prompt included expressive and receptive identification of the words and sentences found in each step of the picture recipe and non-related nontargeted information included the names of kitchen utensils. The interventionist developed the sentences and pointed to each word as she said the task direction. During probe sessions, students were asked to touch the card that says [target sentence, word, or kitchen utensil] and expressed their responses verbally or selected a card from an array of three. Results indicated that three of four students learned some sentences and words contained in the sentences, as well as non-related kitchen utensils. Interestingly, one student who responded both receptively and expressively demonstrated greater comprehension when responding receptively.

In another study, Mechling et al. (2002) taught four students (one male and three female; aged 9 -17 years) with moderate intellectual disability to use grocery store aisle

signs to locate items in actual grocery stores from a photograph shopping list and a typed word shopping list using system of least prompts and a computer-based video program. During computer-based video instruction, students viewed a photograph display of each overhead aisle sign on the computer. The interventionist asked, "Do you see the word ____?" and waited for the student to respond. If the student did not respond, the interventionist delivered the system of least prompts intervention until the student completed the six-step task analysis for locating items in the grocery store on the computer (e.g., locate the first item on the grocery list, touch the word on the corresponding aisle sign for positive examples). Correctly selecting words on the aisle signs, items on the shelf, and moving the shopping cart to a new aisle were followed by descriptive verbal praise (e.g., "Yes, pizza is on this aisle") and a 10-s viewing of a video of the step being completed in the store. Results indicated all four students increased the number of items located across three stores using both the photograph and written shopping lists, but students had greater gains during grocery store generalization sessions with the written list than the photograph list. Sessions with the written list, however, always followed the photograph list, so it is possible students remembered some items from the first generalization session when using the written list.

Given the emphasis of functional skills during the 31years covered by the review of reading instruction literature conducted by Browder, Wakeman, and colleagues (2006), it is not surprising that most of the studies taught or measured comprehension in the context of a functional activity in a separate or community setting. For example, three adults in a group home used photographs of themselves completing daily activities to plan their day with a photograph activity schedule (Anderson, Sherman, Sheldon, &

McAdam, 1997) and eight adults with moderate intellectual disability in an institution completed daily living tasks (i.e., cooking, doing laundry, and using the telephone) by following the steps in instruction booklets (Browder, Hines, McCarthy, & Fees, 1984). In other studies conducted in community settings, individuals demonstrated comprehension by using a checklist to self-initiate tasks at work (Browder & Minarovic, 2000), locating guide words (e.g., baking needs, canned fruit) in a local grocery store (Kyhl, Alper, & Sinclair, 1999), and using grocery aisle signs to locate items on a grocery list (Mechling & Gast, 2003; Mechling et al., 2002). Most of the studies conducted in special education classrooms also involved functional and self-help skills, including reading and defining key words from cooking product labels (Collins et al., 1995), following a recipe to prepare a snack (Fiscus et al., 2002), and identifying local and federal service and government agencies and over-the-counter medications (Doyle, Gast, Wolery, Ault, & Farmer, 1990). A limitation of this research, and most others conducted at the time, is the focus on learning a small set of sight words associated with a functional or self help skill rather than academic learning from the general curriculum.

Recent research on reading instruction for students with moderate intellectual disability (Allor, Mathes, Roberts, Jones, & Champlin, 2010) and significant developmental disabilities (Browder, Ahlgrim-Delzell, Courtade, Gibbs, & Flowers, 2008) have taken a broader approach to reading instruction and have evaluated the effects of comprehensive reading curricula on early reading and language skills for these students. For example, in one of the first studies to use standardized assessments modified for nonverbal responses for this population, Browder and colleagues (2008) used a randomized control group design to evaluate the effects of an early literacy

curriculum on language and early literacy skills (e.g., concept of print, vocabulary, comprehension, phonemic awareness, phonics). Twenty-three primary students with significant developmental disabilities (i.e., mean IQ of 41, range of 20-54) in kindergarten through Grade 4 participated.

Students were randomly assigned to the treatment (i.e., *n*=11) or control (i.e., *n*=12) group within each classroom. Students in the experimental group received instruction using *The Early Literacy Skills Builder* curriculum (ELSB; Browder, Gibbs, et al., 2007). The ELSB is a scripted reading curriculum which uses systematic instruction (i.e., time delay and system of least prompts) and direct instruction to teach reading skills across five levels. Students in the control group received sight word or picture instruction using the Edmark reading program, a commercial sight word curriculum (Austin & Boekman, 1990), or sight words and pictures that related to the students' needs and preferences. Both groups participated in read-aloud events of grade-appropriate adapted literature called story-based lessons. Teachers received training to engage students in reading and comprehending adapted books during story-based lessons, including teaching early literacy skills (e.g., turning pages, identifying the author) and comprehension and vocabulary development (e.g., answering a prediction question, pointing to/saying a vocabulary word). Gains in reading were assessed using the *Nonverbal Literacy Assessment* (Ahlgrim-Delzell et al., 2008) and *Early Literacy Skills Assessment that is a component of the ELSB* (Browder, Gibbs, et al., 2007), both developed by the authors. Researchers found students in the treatment condition made greater gains than those in the control group and that those gains were statistically significant. Similar results were found by Browder, Ahlgrim-Delzell, Flowers, and Baker (2010). In this study, 93

students with severe development disabilities in kindergarten through fourth grade received instruction with the ELSB or Edmark Sight Word curriculum (Austin & Boekman, 1990). Students in the ESLB condition had significantly higher mean literacy scores than students in the sight word condition.

In another study, Allor et al. (2010) used a pretest/posttest group design to evaluate the effects of *Early Interventions in Reading* (Allor, Mathes, & Jones, 2010; Mathes & Torgesen, 2005ab) on reading outcomes (i.e., phonemic awareness, alphabetic knowledge, word recognition/phonemic decoding, and oral language/comprehension) for 28 elementary students with moderate intellectual disability (i.e., IQs between 40-55). Students participated in the intervention for one and one half years and were randomly assigned within schools to either treatment group (i.e., n= 16) or contrast group (i.e., n=12). Students in the treatment group received 40-50 min of daily systematic and explicit instruction in multiple content strands (i.e., concepts of print, phonological and phonemic awareness, oral language, letter knowledge, word recognition, vocabulary, fluency, and comprehension) in small groups of one to four students. Students participated in story book read-alouds in which they made predictions, checked their predictions, summarized the story's main idea, and identified story grammar elements (narrative) and new information learned (expository text).

Students in the contrast group received typical special education. The researchers found statistically significant differences between the groups in the areas of phonemic awareness, phonics, word recognition, and comprehension. In contrast to the reading skills demonstrated in previous research (see Browder, Wakeman, et al., 2006 for a review of this literature), these results provide evidence that students with moderate

intellectual disability can learn far more than sight words when provided systematic, explicit comprehensive reading instruction. Additionally, both the Browder, Ahlgrim-Delzell, et al. (2008); Browder, Ahlgrim-Delzell, et al. (2010) and Allor et al. (2010) studies used read-alouds of narrative and expository text and question answering to teach comprehension for students with moderate intellectual disability and significant developmental disabilities.

Listening comprehension for students with severe disabilities. Students with moderate and severe developmental disabilities may not be able to read texts for their assigned grade. For nonreaders and individuals with minimal literacy skills, spoken words assume the role and importance of written words for readers (Fletcher & Clayton, 1994). Listening comprehension is the ability to make meaning from spoken communication or text read aloud (Browder, Gibbs, et al., 2007). Assessing listening comprehension differs from reading comprehension in that it is most often done orally. The listener cannot scan ahead or look back for answers and must rely on what they remember from what they heard to answer questions or complete an activity. One way listening comprehension has typically been assessed for students with severe disabilities is through receptive target words. For example, Guess and Baer (1973) conducted two experiments to evaluate generalization of rules for making plurals by adding "s" and "es" following receptive and productive language training for four individuals (male, aged 11-21 years) with severe intellectual disability who lived in a state institution for the mentally retarded. In the first experiment, two participants were trained to use -s-ending plurals productively and respond to -es-ending plurals receptively. The other two participants were trained to use -es-ending plurals productively and respond to -s-ending

plurals receptively. For receptive training, one or a pair of objects was placed in front of the participant and the investigator asked them to "point to [doll/dolls]". For productive training, one or a pair of objects was placed in front of the participant and the investigator asked them, "What's this?"Generalization of rules for making plurals was measured with untrained objects. Results indicated that participants were able to provide the correct plural (i.e., with "s" and "es") following concurrent training, however only one student demonstrated generalization of trained rules to probes of the same rule in the opposite modality; that is, following receptive training for objects made plural with "s," the student was also able correctly label a pair of objects made plural with "s."

In a second experiment, Guess and Baer investigated the effects of reinforcement on rule generalization across modalities. Procedures were the same as the first experiment except correct responses to probes were reinforced. The results of the second experiment demonstrated that by reinforcing correct responses during probes, the other three participants were able to generalize their use of plural rules across modalities. The researchers concluded that students with severe intellectual disability can learn rules for making plurals after receptive and productive training, but generalization of plural rules across modalities was unlikely to occur automatically and needed to be specifically trained. A limitation of this type of assessment for listening comprehension is that many academic responses require more than a single word response.

Another way listening comprehension has been assessed for students with disabilities is by asking oral questions. For example, in a study using a five-way factorial design, Reis (1986) evaluated the effects of information presented auditorily on listening comprehension for 64 students with mild intellectual disability (*M* = 15.4 years, SD

=1.50; IQs between 50-70) and 64 students without disabilities (*M* = 10.3 years, SD = 1.13). Students were randomly assigned to one of four experimental conditions: (a) knowledge, (b) purpose statements, (c) knowledge plus purpose statements, and (d) control. Three between group factors (i.e., group, treatment, and order of condition) and two within group factors (i.e., placement of information and question type) were evaluated. During individual 35-40 min sessions, students listened to a tape recording of two stories read aloud. After listening to each story, students were asked 24 comprehension questions and given one of three response options from which to select an answer, also presented orally using a tape recording. Eight of the comprehension questions evaluated central content (i.e., questions about major events or characters), noncentral content (i.e., questions about embellishments to the story's main theme), and implied content (i.e., questions in which the answer was not explicitedly provided in the text).

Before listening to the tape recorded read-alouds, students in the knowledge group were given information about concepts to be presented in the story (e.g., "This part of the story talks about a raccoon. Let me explain what a raccoon looks like. . .). Students in the purpose statements condition were given information about key events (e.g., Listen to find out what Mrs. McGinnis wishes for and what she leave for the raccoon every night.) Students in the knowledge and purpose statements condition received information about both, and students in the control condition received no supplemental information before listening to the story.

A significant main effect was found for group (F (1, 112) = 132.73, $p < .01$), treatment (F (3, 112) = 9.49, $p < .01$), and questions (F (2, 224) = 122.06, $p < .01$).

Students without disabilities answered more comprehension questions correctly than students with disabilities. Students who were given the most information (i.e., knowledge plus purpose statements) had the highest mean scores (M = 5.46, SD = 1.90), followed by students in the knowledge condition (M = 4.73, SD = 1.91), purpose statements condition (M = 4.41, SD 1.95), and control condition (M = 4.20, SD 2.18). Students answered more questions correctly related to central content (M = 5.62, SD = 1.92) than noncentral questions (M = 4.51, SD = 1.95) and implied questions (M = 3.98, SD = 1.91). The authors concluded that when students had information about story concepts (i.e., knowledge condition) and a purpose for listening (i.e., purpose statements), their listening comprehension improved. Interestingly, both students with and without disabilities answered central content questions (i.e., questions about the main idea) better than noncentral content question or implied questions. In fact, implied questions were answered correctly the least for both groups, suggesting that inferential questions are harder for all students and may require a different type of instruction than that described in this research.

Retelling the story or message is third way listening comprehension has been assessed for students with disabilities; however, research indicates that unassisted (or free) recall of stories often underestimates what individuals with disabilities understand and remember of what they have heard (e.g., Luftig & Johnson, 1982). For example, Fletcher (1993) found that individuals with intellectual disability responded with appropriate emotion to stories they heard (e.g., laughed at humorous incidents), but could retell very little of the story. To determine if verbal prompts (i.e., questions about story elements) or visual prompts (i.e., story cards) would improve story retelling, Fletcher and

Clayton (1994) compared the effects of three different measures of comprehension of a taped story (i.e., unassisted story recall, verbally prompted story recall, and visually prompted story recall) on the performance of adolescents with moderate intellectual disability. Thirty-five adolescents with mild and moderate intellectual disability (mean IQ of 55, range of 40-75) between the ages of 12-17 years participated in the study. After students individually listened to tape recordings of three folk tales, they were asked to recall the story using each of the methods (i.e., one method for each story).

For unaided recall, students told what they knew about the story in their own words. For verbally prompted recall, participants were asked 10 questions about story categories (e.g., setting, initiating event; Stein & Glenn, 1979). For visually prompted story recall, participants were given a set of cartoon picture cards and asked to put the cards in order, and then retell the story. Researchers found that none of the methods for retelling a story was effective in promoting comprehension and neither verbal prompts (i.e., questions) or visual prompt (i.e., story cards) were significantly more effective than unaided recall. Of the few participants who were able to arrange the story cards in correct order (an indication that they understood what happened in the story), few were able to retell the story verbally. Fletcher and Clayton concluded that strategies like those used by Reis (1986; i.e., providing relevant story concepts and contextual information) before listening to a story may be necessary to improve students' understanding of the text they hear. Additionally, the researchers concluded that because verbal responses can underestimate comprehension for students with disabilities, students need other ways to demonstrate comprehension that do not require them to verbalize responses (e.g., receptive responses).

In summary, comprehending text read orally is important for individuals who are nonreaders or who have few literacy skills to read text independently for themselves. Assessing the effectiveness of listening comprehension strategies is difficult. Typically listening comprehension is assessed by receptive target words (e.g., Guess & Baer, 1973), retelling a story (Fletcher & Clayton, 1994), and answering oral questions (Reis, 1986). This research is limited in several ways. First, using receptive target words (e.g., point to [target word]) limits what students are able to demonstrate unless questions include a range of complexity. Second, Fletcher and Clayton (1994) found that having verbal and visual prompts did not help students with mild and moderate intellectual disability retell a story and retelling a story verbally was often not an accurate picture of their comprehension (as demonstrated by the students who could put the story cards in order, but could not retell the story with them). These results highlight the fact that many students will need a method of demonstrating competence that does not require a verbal response. Third, in a study conducted with students with mild intellectual disability (Reis, 1986) found that when students were given information about concepts in the yet-to-be-heard story and told what to listen for (i.e., purpose statements), they improved the number of comprehension questions they were able to answer correctly. While this research is limited to narrative stories delivered via tape recordings, it provides some evidence that using comprehension strategies, like question answering, within a structured framework (e.g., advanced organizers) can improve listening comprehension.

In summary, listening comprehension was a recognized but not recommended strategy for teaching comprehension (NRP, 2000). In contrast, the NRP was not focused on students who must rely on listening skills because that is their only means to access

texts used in their grade level. Considering the lack of recommendation by the NRP (2000), the limitations described in the literature regarding listening comprehension for these students, and the language and communication deficits of many students with moderate and severe intellectual disability, it seems prudent to use strategies available for teaching comprehension instead of listening comprehension. En pointe, the research on shared story reading with SLP interventions where question asking is embedded in the read-alouds may offer an effective alternative.

Shared Story Reading

Reading aloud to young children is a familiar activity for most adults. The adult and child look at a picture book together and the adult reads the words aloud, stopping throughout the story to point out something interesting on a page or ask a question about the story or illustration. After asking a question, the adult looks expectantly at the child waiting for a response and, if one is not forthcoming, provides additional information or models the correct response. When the child responds, the adult happily affirms (e.g., You're right! That's the moon.), and possibly elaborates on the response (The moon is far, far away). Within the context of sharing a story, the goal is for the child's foundation for reading to be laid, vocabularies to be expanded, beginning literacy skills to be acquired, and a love of reading to be ignited.

To achieve these goals, educators have developed a variety of shared reading interventions that foster children's early language and literacy development (Justice & Lankford, 2002; Lonigan, 1994; van Kleeck, 2004). The term *shared reading* (Holdaway, 1979) was first used to describe a model for teaching children beginning literacy skills (e.g., one-to-one tracking of text, letter-sound relationships). A broader definition of

shared reading was used by the authors of the 2008 National Early Literacy Panel's (NELP) report on shared story interventions that included a variety of shared story reading interventions and other engagements with books (e.g., dialogic reading, Whitehurst et al., 1988; Reach Out and Read interactive reading for parents and infants; Sound Foundations, Byrne & Fielding-Barnsley, 1992). The report's authors (Lonigan, Shanahan, & Cunningham, with the National Early Literacy Panel, 2008) conducted a meta-analysis of 19 experimental or quasiexperimental experimental studies to determine the effects of shared story reading interventions on young children's early literacy skills. The studies included interventions in which parents, teachers, or both parents and teachers implemented shared reading with children individually or in groups. All studies had outcome measures that included conventional literacy skills (e.g., decoding, reading comprehension, or spelling) or skills that NELP identified as predictors of later conventional literacy skills. The researchers found a moderate effect size for shared-reading interventions, oral language skills, and print knowledge. Too few studies were included in the review to evaluate the effects of shared story reading on phonological awareness, general cognitive ability, alphabet knowledge, print knowledge, reading readiness, or writing to calculate effect sizes. The NELP panel found shared-story interventions were equally effective for children who were not at risk for later academic difficulties, as well as for older and younger children.

Dialogic reading is an interactive shared book reading practice (cf. Crain-Thoreson & Dale, 1999; Lonigan, Anthony, Bloomfield, Dyer, & Samwel, 1999; Whitehurst et al., 1988) in which the adult and child switch roles so that the child learns to become the storyteller with the assistance of the adult who is an active listener and

questioner (What Work Clearinghouse, WWC, http://ies.ed.gov/ncee/wwc/). While reading books with children, adults use five types of prompts represented by the acronym CROWD, including (a) **C**ompletion (i.e., child fills in blank at the end of a sentence), (b) **R**ecall (i.e., adult asks questions about a book the child has read), (c) **O**pen-ended (i.e., adult encourages child to tell what is happening in a picture), (d) **W**h- (i.e., adult asks wh-questions about the pictures in books), and (e) **D**istancing (i.e., adult relates pictures and words in the book to children's own experiences outside of the book). These prompts are used by the adult in a reading technique called PEER, an acronym for: **P** - adult *prompts* the child to say something about the book, **E**- adult *evaluates* the response, **E**- adults *expands* the child's response, and **R** - adult *repeats* the prompt. As the child becomes more familiar with a book, the adult reads less, listens more, and gradually uses more higher level prompts to encourage the child to go beyond naming objects in the pictures to thinking more about what is happening in the pictures and how this relates to the child's own experiences. WWC found Dialogic Reading to have positive effects on oral language and no discernible effects on phonological processing (see the WWC Intervention Report, http://ies.ed.gov/ncee/wwc/pdf/WWC_Dialogic_Reading_020807.pdf).

Two other related shared story reading practices are Shared Book Reading (Box & Aldridge, 1993; Lonigan et al., 1999) and Interactive Shared Book Reading (Justice & Ezell, 2002). First, Shared Book Reading is a general practice that involves an adult reading a book to one child or a group of children without requiring extensive interaction from them. Box and Aldridge (1993) used a group experimental design to evaluate the effects of shared book reading on children's concepts about print and story structure with

4-year-olds attending a Head Start program. Children were randomly assigned to one of three groups of 24 and either received a shared reading experience (i.e., treatment), normal instruction (control), or movement instruction (i.e., placebo). The treatment group participated in shared reading experiences with predictable books. The control group received the usual instruction with units and learning centers. The placebo group participated in movement activities with their regular teacher. Two instruments were used to measure growth (i.e., Concepts About Print, Clay, 1985; Early School Inventory - Preliteracy, Nurss & McGauvran, 1987). After eight weeks, Box and Aldridge found the children who received shared story reading intervention scored significantly higher (F=24.64, $p < .0001$) on the Concepts About Print than the other two groups, but no significant difference was found between the groups on Story Structure. WWC has evaluated the use of Shared Book Reading to promote language and literacy skills and found mixed effects on oral language and potentially positive effects on phonological processing (WWC, http://ies.ed.gov/ncee/wwc/pdf/WWC_Shared_Book_092806.pdf).

Second, Interactive Shared Book Reading involves an adult reading a book to a child or group of children and engaging the child in the text through interactive techniques before, during, or after reading the text (e.g., the adult asks the child to point to the title or make a prediction about what might happen in the book). While reading, the adult asks questions, gives explanations, poses prompts, or calls on a child to answer a question. The adult focuses on modeling reading to the children and helping them with various aspects of print awareness, (e.g., learning that text is read from top to bottom and left to right). After reading, the adult discusses the book with the children and draws

connections between events in the story and the children's lives. Reading sessions are brief and frequent.

Justice and Ezell (2002) used a pretest-posttest control-group research design to evaluate the impact of two different kinds of interactive shared book reading on print awareness for 30 at-risk children (15 male, 15 female; aged 41-62 months) attending one of four classes at a Head Start center. Six measures of print awareness were assessed (a) Print Concepts, (b) Print Recognition, (c) Words in Print, (d) Letter Orientation/Discrimination, (e) Alphabet Knowledge, and (f) Literacy Terms. Participants completed 24 reading sessions over eight weeks. In the experimental group reading sessions, the adult reader posed nine prompts (requests or questions) about print that included print conventions, concept of word, or alphabet knowledge. The control group's reading sessions focused on pictures and were conducted in the same way, except the prompts focused on character, perception, or action. Justice and Ezell found that the children in the print-focus group outperformed the control group on three measures of print awareness (i.e., Words in Print, Print Recognition, and Alphabet Knowledge) and overall performance.

Shared story reading and students with mild disabilities or at risk for disabilities. Coyne et al. (2009) described five direct instruction strategies in listening and reading comprehension (i.e., conspicuous strategies, mediated scaffolding, strategic integration, primed background knowledge, and judicious review) that can be used to enhance comprehension among students at very different points in reading development. Coyne et al. illustrated each direct instruction strategy with examples from two research projects: the Story Read Aloud Project (Baker, Chard, & Edwards-Santoro, 2004) and the

Embedded Story Structure Routine (Faggella-Luby, Schumaker, & Deshler, 2007). The Story Read Aloud Project (Baker et al., 2004) focused on listening comprehension for first-graders using informational and literary texts and the Embedded Story Structure Routine (Faggella-Luby et al., 2007) focused on reading comprehension for secondary students using content area instruction. Baker, Chard, Santoro, Otterstedt, and Gau (2006) evaluated the effects of direct instruction on listening comprehension for 210 at-risk and average achieving first-grade students in the Story Read Aloud Project. Baker et al. found that read alouds improved comprehension for first grade students in experimental classrooms and interviews with 42 first-grade classroom teachers delivering the read aloud intervention indicated that teachers found the read aloud approach to be very beneficial for their students' understanding of texts.

In a recent synthesis and meta-analysis on the effects of read-aloud interventions on early reading outcomes for children at risk for reading difficulties, Swanson et al. (2011) examined five read-aloud interventions (i.e., dialogic reading; repeated reading of stories; story reading with limited questioning before, during, and/or after reading; computer-assisted story reading; and story reading with extended vocabulary activities). Swanson and colleagues included only studies in which teachers delivered the interventions and students at risk for reading difficulty were the focus. Preschool through third grade participants were included and all early reading and language outcomes were considered. Twenty-nine studies met criteria for the synthesis and 18 studies were included in the meta-analysis. The researchers found significant, positive effects for read-aloud interventions on children's oral language, phonological awareness (unlike the NELP report), print concepts, comprehension, and vocabulary outcomes. Strong evidence

from dialogic reading interventions indicate that extended child-adult dialogue and questioning around storybooks is a valuable practice. A limitation of shared story reading interventions described by Swanson et al. and other researchers is the dearth of studies evaluating the contributions of shared reading to higher level comprehension (NELP report; Schickedanz & McGee, 2010; Swanson et al., 2011; van Kleeck, Vander Woude, & Hammett, 2006).

In one of the few studies to evaluate the effects of shared story reading on higher level comprehension, van Kleeck and her colleagues (2006) used a randomized pretest-posttest control group design to investigate the effects of a scripted book-sharing intervention on literal and inferential language skills for low-income preschoolers. Thirty children (17 boys, 13 girls; 22 African American, 8 Caucasian; aged 3-5 years) with language impairments were randomly assigned to either the control group (i.e., no treatment) or treatment group (i.e., received intervention twice a week). Trained graduate and undergraduate research assistants read books and asked both literal and inferential questions about the books using scripts that were embedded throughout the text in 15-min sessions twice a week for eight weeks. The books used in the intervention were Frank Asch's *Mooncake* (1987) and *Skyfire* (1990). Three sets of 25 scripted questions (i.e., 70% literal recall, 30% inferential) and answers were created for each book and subsequent prompts were added to support student responding. The three different versions of questions allowed repeated reading of the same two stories while varying the questions asked. The scripts were embedded in the books at the point at which the question was to be asked and were markedly different in font style and size to distinguish them from the text of the book. The control group did not participate in the shared story

reading, but did complete the pretest and posttest measures with the Peabody Picture Vocabulary Test -III (Dunn & Dunn, 1997) and the Preschool Language Assessment Instrument-2 (Blank, Rose, & Berlin, 1978). The authors found that the children in the treatment group had greater growth in literal and inferential language. These results add to the growing evidence that book-sharing intervention can foster inferential as well as literal language skills, but more research is needed.

Shared story reading and students with moderate and severe intellectual disability. Shared story reading has also been used to teach early language and literacy skills for students with moderate and severe intellectual disability. In a study conducted in homes with mothers and their daughters with Rett syndrome, Koppenhaver, Erickson, and Skotko (2001) used a single case research design to evaluate the effects of a multielement intervention (i.e., resting hand splints, basic assistive communication devices, parent training, access to communication symbols, and shared storybook reading) on the frequency of symbol use, appropriate switch use, and inappropriate symbol use for four girls with Rett syndrome, aged 3, 6, and 7 years. Mothers were taught to (a) attribute meaning to communication attempts, even if meaning was uncertain; (b) prompt use of communication devices or symbols through questions and comments rather than demands; (c) provide sufficient wait time and a hierarchy of support after asking a question; and (d) ask questions and make comments that maximized use of available symbols and voice output messages. Koppenhaver and colleagues found that all four girls increased their use of voice-output message devices for symbolic communication and decreased their use of other symbolic communication (e.g., eye pointing or point to pictures) during storybook reading with their mothers.

In another study, Browder, Mims, et al. (2008) used a multiple probe single case design across participants to evaluate the effects of collaborative team planning using UDL, system of least prompts package (i.e., system of least prompts, lesson plan template that included individualized student responses), and read-alouds of adapted age-appropriate books on student participation in shared story reading. Three elementary students (two male, one female; aged 7 - 10 years) with severe/profound delays who had few to no responses during literacy lessons, inconsistent use of AAC, and for whom intentionality of nonsymbolic communication was hard to interpret were included in the study. In addition to severe/profound delays, one student's diagnosis included spina bifida, cranial shunts, hydrocephalus, and seizures; a second student's diagnosis included cerebral palsy, seizures, and scoliosis; and a third student's diagnosis included cytomegalovirus, cerebral palsy, microcephaly, spastic quadriplegia, seizure disorder, and hemiplegia. All students were nonambulatory and used a wheelchair, and either a single switch or a head switch.

Three age-appropriate books were adapted (i.e., *Dirty Birtie*, Roberts, 2003; *Joseph had a Little Overcoat*, Taback, 1999; *Alexander and the Terrible, Horrible, No Good, Very Bad Day*, Viorst, 1972) by shortening the story (i.e., removing pages or lines from the story), adding objects and picture symbols to the text (e.g., a pack of gum was velcroed to the page to represent the gum Alexander got stuck in his hair), adding a repeating story line of the story's main idea, substituting students' names for characters in the book, and adding a surprise element near the end of the story (e.g., when the light burned out in the story, the light were turned off in the classroom). Correct responses for each step of the lesson plan were individualized for each student and focused on early

book awareness. Browder and colleagues found that all students increased active responding and early comprehension skills, despite the fact that participants had fewer communication and responding skills than participants in previous studies using shared story reading to promote literacy.

In the first study to focus on increasing students' participation in a story-based lesson using adapted grade-appropriate middle school literature, Browder, Trela, et al. (2007) used a single case multiple probe design across participants to evaluate the effects of teacher training on student participation and early literacy skills for six students with moderate and severe developmental disabilities. The intervention package included a lesson plan template (i.e., task analysis for implementing shared story reading), systematic instruction (i.e., time delay and system of least prompts), and adapted grade-level literature. Participants included three middle school special education teachers and six middle school students (aged 12-14 years, IQs 42-50) with moderate intellectual disability (*n*=2), severe intellectual disability (*n*=2), and autism (*n*=2). Four students were non verbal, one student had limited verbal skills, and one student was verbal. All students were nonreaders (i.e., read less than 20 words).

Eight novels from the middle school reading list (e.g., *Call of the Wild*, London, 1903; *Island of the Blue Dolphin*, O'Dell, 1987) were rewritten to a listening comprehension level of grades 2-3 (i.e., Lexile Framework for Reading, 2004, http://www.lexile.com/) by summarizing the main ideas using controlled vocabulary, providing picture symbol support for key vocabulary, and embedding definitions of new or unfamiliar words as they appeared in the story. Teachers were taught to follow a lesson plan template of the shared story reading steps, use systematic prompting (i.e., time delay

and system of least prompts), and self-monitor their use of the lesson plan (e.g., presenting an opening attention getter; providing students opportunities to answer comprehension questions). Browder and colleagues found that teachers were able to implement the steps of the lesson plan following training and continued to implement the lesson plan steps with new books after the intervention ended. Additionally, all students made gains in lesson participation and early literacy skills (i.e., answering comprehension questions, identifying target sounds, and reading the repeated story line). Results from this research highlighted the need for research that included questions requiring higher comprehension skills of students.

Shared story reading focused on listening comprehension. Although prior studies included consideration of comprehension in student participation measures (cf. Browder, Trela, et al., 2007), some recent shared story research has focused specifically on student comprehension during shared story reading for students with severe disabilities (Mims, 2009; Mims et al., 2009). In the first study with this focus, Mims et al. (2009) used a single case multiple probe design across materials to evaluate the effects of system of least prompts package and shared story reading on listening comprehension for two elementary students (one male, one female; aged 6 and 9 years) with significant intellectual disability and visual impairments. The system of least prompts package included a reread prompt (i.e., selections of the text were read again), task analytic instruction, and actual objects used as noun referents during shared story reading. One student was diagnosed with developmental delays, multihandicaps, cortical visual impairment, cerebral palsy, and bronchopulmonary dysplasia. The second student was diagnosed with developmental delays, multihandicaps, severe visual impairment/cerebral

palsy, microcephaly, and seizures. Both students used a wheelchair to ambulate and were non verbal.

Three elementary picture books (i.e., *Dirty Bertie,* Roberts, 2003; *I Missed You Every Day*, Taback, 2007; *Alexander and the Terrible, Horrible, No Good, Very Bad Day*, Viorst, 1972) were adapted for the intervention as previously described and five objects representing noun referents were embedded in the story by velcroing them to the pages of the book. Ten comprehension questions requiring literal recall (i.e., the answer is found on the page) were developed for each story (e.g., What did Bertie pick up off the ground and eat?). The interventionist read the story aloud and paused at predetermined points to ask a comprehension question. For pages that contained objects embedded on the page, the interventionist asked students to "read" with her by touching the objects on the page as she read aloud. To answer a comprehension question, students selected the correct object from two - one object was from the page and the other was a distracter object from a different story. Researchers found that both students increased the number of correct responses to literal recall comprehension questions across three books and one student maintained the skills gained. A limitation of this study was that only literal recall comprehension responses were measured.

Building on the work of Mims et al. (2009), Mims (2009) used a single case multiple probe design across materials (i.e., books) with concurrent replication across students to evaluate the effects of system of least prompts package and read-alouds of grade-appropriate elementary story books on listening comprehension for students with moderate and severe intellectual disability. Participants in the study included four elementary students (all male; aged 10 - 11 years; IQs 44, 42, 30 and unknown) including

three students with moderate intellectual disability and one with multiple disabilities, one special education teacher, and two teaching assistants. Three picture books (i.e., *Jamaica's Find*, Havill, 1986; *Don't Wake Up the Bear*, Murray, 2006; *Alexander and the Terrible, Horrible, No Good, Very Bad Day*, Viorst, 1972) were adapted by eliminating some nonessential pages and lines of text, placing pictures representing key vocabulary or main ideas throughout the book, and adding a repeated story line for the main idea. A range of listening comprehension questions were developed for each book (e.g., prediction, sequencing, application, analysis, synthesis) and the system of least prompts was modified to include repeated opportunities to hear selected text again (i.e., reread prompts). Students progressed from requiring more intrusive prompting (e.g., physical, model) to less intrusive prompting (e.g., verbal) or no prompting at all in order to correctly answer the comprehension questions and the use of the reread prompt in the system of least prompts was effective in promoting generalization of skills to untrained stories. A limitation of this study was that only picture books were used in the intervention.

Shared story reading with grade-level academic content. Building on the research using shared story reading and age-appropriate fictional literature (e.g., Browder, Trela, et al., 2007; Mims, 2009; Mims et al., 2009), Mims et al. (in press) used a single case multiple probe design across participants to evaluate the effects of system of least prompts package and adapted sixth grade biographies on listening comprehension for middle school students with severe developmental disabilities (i.e., severe intellectual disability and autism spectrum disorder). Participants included four students (three male, one female; aged 12-14 years; two African American, two Caucasian). One student used

speech to communicate; the others used pictures, objects, or gestures. All students had comprehension goals on their IEP and attended a separate class for students with Autism Spectrum Disorders in a large, middle school. The system of least prompts package included a system of least prompts procedure, opportunities to hear selections of the passage again (i.e., general and specific reread prompts), wh- question rules, sequence graphic organizer (i.e., what came first? next? last?), and wh- question T-chart. The first prompt level of system of least prompts was modified to include a rule for answering wh-questions (e.g., *When you hear who, listen for a person*) and a reread of selected text.

Five biographies (i.e., John Brown, Gary Paulsen, Harriet Tubman, Matthew Henson, and Amelia Earhart) from the sixth grade literature textbooks were selected in collaboration with the sixth grade language arts teacher. Adaptations to the biographies included rewriting the original to a listening comprehension level of grades 2-3 (i.e., Lexile Framework for Reading, 2004, http://www.lexile.com/) by summarizing the main ideas using controlled vocabulary, providing picture symbol support for key vocabulary, and embedding definitions of new or unfamiliar words as they appeared in the story. Eleven wh- comprehension questions (i.e., who, what, why, when, where) were created for each biography that required a variety of comprehension levels to answer (e.g., literal recall, sequencing, analysis).

Two graphic organizers were created to provide visual support and to teach the use of a strategy that could be used by the participants in other settings (e.g., general education class) with other academic content (e.g., mathematics, science). The first graphic organizer was adapted from a sequence graphic organizer used by peers in language arts class. The organizer contained three squares with the word "first", "next",

and "last", and arrows directing the reader from left to right. The participants used this organizer for their responses to the sequence questions (i.e., What came first? What came next? What came last?). The second graphic organizer was a T-chart with icons for the wh-questions on one side and rules for answering the questions on the other. The interventionist pointed to the rule on the graphic organizer when saying the rule in the first level prompt. Both graphic organizers and a printed copy of the biographies were available to the participants throughout the study. The researchers found that all students improved their listening comprehension skills across five biographies and three of four students answered more comprehension question correctly with new biographies before they were used in the intervention. A limitation of this study was that it was conducted by a researcher in a self-contained setting. Whether the results of the intervention package would generalize to an inclusive context was unknown.

Peer-delivered read-alouds of grade-level academic content in the general education classroom. Building on this research, Hudson et al. (2011) used a single case multiple probe design across participants to evaluate the effects of a peer-delivered system of least prompts intervention and read-alouds of adapted academic science and social studies text on listening comprehension for students with moderate intellectual disability in a fourth grade general education classroom. Special education participants included two students with a moderate intellectual disability and one student with moderate intellectual disability and severe physical disabilities (one male, two female; aged 10-11 years; IQs 47, >50, and unknown). The student with physical disabilities was non verbal, used a wheel chair for ambulation, and a yes/no response on an eye gaze board to communicate and respond to comprehension questions during intervention. All

special education participants received the majority of their instruction in a self-contained classroom for specialized academic curriculum (SAC), but attended lunch and special classes with their peers.

Peer tutors included two fourth grade general education students (one male, one female; aged 10-11 years). One peer tutor was a student for whom English was a Second Language and one was described by the classroom teacher as an underachiever. Both peer tutors were above grade level in reading and science and on grade level in mathematics. Neither student had previous experience as a peer tutor. Eighteen other fourth grade students completed a presurvey and postsurvey regarding their attitudes about including students with disabilities in their fourth grade science and social studies class.

Chapters adapted for the intervention were taken from the fourth grade science and social studies curriculum and adapted following the procedures previously described so that each chapter could be read aloud in approximately 10 minutes by the peer tutor. Peer scripts were created in which the system of least prompts procedure was embedded into all adapted chapters. Participant books were also created for participants that contained the adapted chapter. A new chapter was introduced every three sessions to keep pace with the content being taught in the general education classroom. Six comprehension questions were developed using a question template for each chapter; four of the questions were literal recall questions (i.e., the answer is on the page) and two questions were inferential (i.e., the answer is from your head). The use of a question template allowed the questions to be specific to the academic text being taught, but similar across content and chapters. The system of least prompts included four levels of

prompts. Prompts for inferential questions differed from the prompts for questions that could be found directly in the text.

Before intervention, peer tutors were individually trained to criteria for procedural fidelity and participants with disabilities were taught to ask for help and to monitor their independent unprompted correct responses on a self-monitoring sheet. All correct responses earned 1-5 points based on the number of prompts needed (i.e., an independent unprompted correct response earned 5 points; a correct response after four prompts earned 1 point). Ongoing probe data were collected before each new chapter was introduced into intervention. The results indicated that the peer-delivered system of least prompts package was effective in promoting listening comprehension for all participants across four adapted academic chapters; however, generalization of comprehension skills to new adapted academic chapters did not occur for two of three participants. Additionally, the peer tutors delivered system of least prompts intervention package with high fidelity. A limitation of this study was the lack of generalization data collected in general education science and social studies class to evaluate if comprehension skills learned during peer-delivered instruction generalized to the science and social studies class.

System of least prompts procedure. Most of the research on shared story reading have used system of least prompts procedure as one part of the intervention package to teach students participation and early literacy skills (Browder, Mims, et al., 2008; Browder, Trela, et al., 2007) or listening comprehension (Mims et al., 2009; Mims, 2009; Mims et al., in press; Hudson et al., 2011). The system of least prompts procedure is a response prompting procedure commonly used to teach students with disabilities (see

Wolery, Ault, & Doyle, 1992) that involves (a) securing the learner's attention, (b) delivering a task direction (e.g., asking a comprehension question), (c) if no independent response provided by the student during response interval, the next least intrusive prompt delivered from set prompt hierarchy, and (d) delivering consequences (i.e., descriptive verbal praise for correct responses, error correction procedure for errors or no responses). The system of least prompts uses a prompt hierarchy (i.e., prompts that differ in the amount of support or information provided to the learner, rather than relying on a single prompt) and gives the interventionist the opportunity to use each prompt of the hierarchy during each instructional trial.

The interventionist begins by providing the opportunity for the student to respond independently. If a correct response does not occur after a preset response interval (e.g., three to five sec), the interventionist delivers the least intrusive prompt from the hierarchy (e.g., verbal prompt) then again waits the same response interval for the student to respond. Instruction proceeds in this manner with the interventionist delivering increasingly intrusive prompts from the hierarchy (e.g., model prompts, physical prompts) until the student responds correctly. Data are recorded on the type of prompt necessary to perform a correct response, but typically only independent unprompted correct responses are graphed and count toward skill mastery. The use of system of least prompts allows students to be as independent as possible by only providing the amount of assistance necessary for the student to elicit the correct response.

Typically the system of least prompts has focused on providing increasing levels of assistance for a student to make a motor response (e.g., completing the steps for making a sandwich, selecting the correct response card from an array); however, prompts

have been modified for use in shared story interventions that teach comprehension skills. For example, Mims (2009) modified the first prompt by adding a reread prompt in which a portion of the text containing the answer was read again and Mims et al. (in press) inserted a rule for answering wh- word questions in the first level prompt along with a reread prompt. The rule cued students to listen for certain information when a particular wh- word question was asked (e.g., When you hear *who,* listen for a *person*). After SLP intervention, three of four students answered more listening comprehension questions correctly with read-alouds of new biographies before they were used in intervention. Because the wh- word question rules were one part of several in the intervention package, no causal relationship can be determined for the strategy and increased correct student responding, but the use of wh- word question rules in the system of least prompts to promote generalization of learned skills is an area for future research to examine.

A limitation of this study and that of Mims et al. (2009) was that the dependent variable used to monitor participant comprehension progress scored levels of prompting that included modeled prompts. Two of these prompts were verbal and physical prompts in which participants were told, shown, or physically guided to select the correct answer to the comprehension question. Because the modeled prompts simply required participants to imitate the interventionist's behavior (i.e., verbal and model prompts) or to passively comply as the interventionist moved their hand or arm to select the correct response (i.e., physical prompt), it was unclear if participants comprehension of text was improving. The need exists for a dependent variable that more accurately measures gains in comprehension of text after participants are given unmodeled text-only prompts.

Summary of shared story reading research. Since shared reading was first described by Holdaway in 1979 as a way of teaching children beginning literacy skills, numerous interventions using shared story reading have emerged. Three of the most commonly used shared story reading interventions include Dialogic reading (Whitehurst et al., 1988), Shared Book Reading (Box & Aldridge, 1993; Lonigan et al., 1999) and Interactive Shared Book Reading (Justice & Ezell, 2002). As a whole, this group of interventions has been used to promote early language and beginning literacy skills for students at risk for reading difficulties (for a synthesis of read-aloud interventions see Swanson et al., 2011; Justice & Ezell, 2002) or language impairments (van Kleeck et al., 2006).

A fourth method is emerging for students with severe disabilities that uses systematic instruction to promote comprehension. Browder, Trela, et al. (2007) first operationally defined the task-analyzed steps of shared story reading in a lesson plan template. The system of least prompts procedure has been used as one part of an intervention package to promote student participation in literacy lessons and early literacy skills (Browder, Trela, et al., 2007; Browder, Mims, et al., 2008) as well as listening comprehension with age-appropriate adapted fictional literature (Mims, 2009; Mims et al., 2009) and grade-level adapted academic content (Mims et al., in press; Hudson et al., 2011). Although systematic prompting provided an important innovation for teaching comprehension, the degree to which students were relying on the text versus a teacher model is unknown due to the way the dependent variable was defined.

Shared story reading interventions have been successfully implemented in special education classrooms by special education teachers (e.g., Browder, Trela, et al., 2007)

and special education teaching assistants (Mims, 2009), as well as in a fourth grade general education classroom by peer tutors (Hudson et al., 2011). In addition, shared story reading interventions have been successfully implemented with students who have a variety of disability labels (i.e., moderate and severe intellectual disability; multiple disabilities; autism; moderate and severe developmental disabilities; severe motor impairments; significant intellectual disability and visual impairments) in elementary schools (i.e., *n*=12), middle schools (*n*=10), and homes (*n*=3).

While the body of research evaluating the use of shared story reading to teach literacy for students with severe disabilities has been carefully developed, there are several limitations in the research to date. First is the need for more research evaluating the use of shared story reading to teach comprehension skills with grade-level academic content in general education. Second is the need for more research to evaluate strategies for generalizing learned skills to other academic content and general education classes such as the use of rules, graphic organizers, and reread prompts.

Peer Tutoring

Peer tutoring is an instructional strategy in which one student (i.e., the tutor) has responsibility for teaching another (i.e., the tutee; Greenwood, Carta, & Hall, 1988) that has benefits for both students (see Allen, 1976; Cohen, Kulik, & Kulik, 1982; Rohrbeck, Ginsburg-Block, Fantuzzo, & Miller, 2003). Peer tutoring typically involves students in the same grade, but can also be used with students of different grade levels (i.e., cross-age tutoring), with older students assuming the role of tutor and younger students assuming the role of tutee (Barbetta & Miller, 1991). In reciprocal or two-way tutoring, students alternate between tutor and tutee roles (Eiserman, 1988), whereas in class-wide

peer tutoring, students are taught by peers who are trained and supervised by the classroom teacher; a form of intra-class, reciprocal peer tutoring where students alternate tutor and tutee roles during tutoring sessions (Greenwood, Maheady, & Delquadri, 2002).

Using peer tutoring to teach academic skills. There are many examples in the literature in which peer tutoring has been used to teach mathematics, science, and reading to students across grade levels and tutoring arrangements. For example, Allsopp (1997) found classwide peer tutoring improved algebra problem-solving skills for high school students and Topping, Campbell, Douglas, and Smith (2003) found cross-age peer tutoring promoted mathematics vocabulary, strategic dialogue, and self-concept for 7- and 11-year old students. In addition, Simpkins, Mastropieri, and Scruggs (2009) compared traditional instruction (i.e., teacher-led instruction and discussion, textbook reading, and worksheet exercises) and differentiated curricular enhancements that included classwide peer tutoring with elementary students and found the differentiated curricular enhancements group had higher test scores. Also, in a comprehensive review of 15 years of reading research, McMaster, Fuchs, and Fuchs (2006) found classwide peer tutoring improved reading performance for high-, average-, and low-performing students, including students with disabilities, from kindergarten to high school.

Peer tutoring and students with mild disabilities. Students with mild disabilities have also benefitted from peer tutoring. For example, Mastropieri et al. (2006) compared the effects of classwide peer tutoring and differentiated hands-on activities or teacher-directed instruction on the academic outcomes of students in 13 inclusive eighth-grade science classes. Of the 213 students involved in the study, 44 were students with disabilities (i.e., 37 with learning disabilities and seven with emotional/behavioral

disorders). Classrooms were matched by classroom teacher and randomly assigned to either the experimental or control condition so that each lead teacher taught at least one experimental and one control classroom. Five classes were cotaught by a general education teacher and a special education teacher and eight classes were taught by a single teacher (i.e., six general education teachers and two special education teachers). Mastropieri and colleagues found that students learned more science content on posttests and state high-stakes tests when taught with a combination of collaborative hands-on activities and peer tutoring than with traditional instruction without peer-mediated learning activities.

In a review of the literature, Stenhoff and Lignugaris/Kraft (2007) evaluated the effects of peer tutoring in secondary settings on students with mild disabilities (i.e., specific learning disabilities, behavior disorders, and mental retardation) including the demographics of tutors and tutees, the content and skill areas where peer tutoring has been used with students with mild disabilities, tutor training, and the effect of tutoring on tutee and tutor performance. The researchers found that peer tutoring in secondary settings: (a) was effective across settings (i.e., general education classrooms, n=5; resource classrooms, n=5; self-contained classrooms, n=8; other, n=2); (b) was used to teach a variety of basic academic and social skills (e.g., reading, vocabulary, spelling, mathematics, feedback to peers, anger management); (c) generally resulted in improved academic student performance; and (d) is an evidence-based practice.

Kourea, Cartledge, and Musti-Rao (2007) investigated the impact of CWPT on reading for six African American students, aged 7-8 years, receiving special education services for learning disabilities (n=1), at-risk for disabilities (n=4), or learning

disabilities and attention deficit hyperactivity disorder (*n*=1) in an inclusive second/third grade class. All students were low performing on four standardized subtests of the *Woodcock-Johnson-III Tests of Achievement* (Woodcock, McGrew, & Mather, 2001) including letter-word identification, reading fluency, passage comprehension, and word attack. The study focused on four measures of student learning: sight-word acquisition, reading fluency, comprehension, and maintenance. Participants received one peer tutoring training session before CWPT began. Peer tutoring sessions were conducted three times a week for 30 min. Weekly pretests were used to identify 10 unknown words, including five of the teacher's sight words and five unknown words from basic word vocabulary lists (e.g., Dolch). Lists for the rest of the class were determined by the teacher. Peer tutoring sessions included a tutor huddle, practice, testing, charting, and rewarding (cf. Cooke, Heron, & Heward, 1983). Kourea et al. found that five of six participants increased their sight-word acquisition during total class peer tutoring compared with teacher-led classroom instruction; however, students did not improve in fluency or comprehension.

This selected research demonstrates the effectiveness of peer-delivered instruction for students with mild disabilities; however, several limitations are apparent. First, there are few studies conducted in the general education classroom (e.g., Stenhoff & Lignugaris/Kraft, 2007). Of the 20 studies included in the review by Stenhoff and Lignugaris/Kraft (2007), only five studies were conducted in the general education classroom and only two of these were implemented in content classes (i.e., social studies and driver education). The other three were basic skills classes (i.e., reading, mathematics, and social skills). A second limitation of this research is that the content

peer tutors were often used to teach was basic academic or social skills (e.g., Kourea et al., 2007; Stenhoff & Lignugaris/Kraft, 2007). None of the five general education studies from the Stenhoff and Lignugaris/Kraft review used peers to teach more complex content syntheses or content applications, but rather focused peer tutor instruction on factual knowledge. As noted by Smith, Polloway, Patton, and Dowdy (2004), when students enter secondary settings, the academic focus shifts from basic skills to content knowledge. Results of this research indicate that peer tutoring is an effective strategy for students with disabilities to obtain additional academic instruction, but instruction is mostly limited to basic skills.

Using peer tutoring to teach academics for students with moderate and severe intellectual disability in separate settings. Peer tutoring has also been effective in teaching academic skills to students with moderate and severe intellectual disability in special education classrooms. In one of the first studies to use peer tutors as the primary teacher and the classroom teacher as a supervisor, Kamps, Locke, Delquadri, and Hall (1989) used a multiple baseline design across tasks to evaluate the effects of peer-delivered instruction on students' with autism academic learning (i.e., money skills, expressive language, and oral reading/comprehension skills). Two elementary students with autism (aged 9 and 11 years; IQs of 50) and two students without disabilities from the fifth grade participated in the study. Tutors received extensive training on teaching the tasks (i.e., twelve 30-min tutoring sessions occurred followed by individual tutoring sessions) and demonstrated successful performance in training before tutoring. Tutors had great latitude in teaching the target skills (i.e., they selected the activities from a planned list, and decided when to provide models, prompts, feedback and consequences)

and tutoring sessions occurred three times a week for 30-min in the special education classroom (i.e., 20 min teaching followed by 10 min social time). Kamps et al. found that students with autism learned academic skills from peers and peer tutors allowed more academic instructional time for students with autism. Limitations of the study included the great amount of time invested in training the peer tutors, the separate setting used for peer-delivered intervention, and the arbitrariness of the skills targeted for instruction (i.e., no connection to the grade-level core content).

In a similar study, Kamps and Walker (1990) used an alternating treatments design to compare the effects of instructional arrangements (i.e., one-to-one and group formats) and instructional agents (i.e., peers, teacher, and classroom aide) on sight word recognition for students with autism. The participants included three elementary students with autism (male; aged 8, 8, and 11 years; IQs of 50, 53, 39), fifth grade students trained as peer tutors (see Kamps et al., 1989), the special education teacher, and classroom teaching assistant. The peers, teacher, and classroom aide were trained to deliver instruction on sight words from the Dolch Basic Sight Word list using a discrete trial presentation. The researchers found peer-delivered instruction was effective, but students learned faster in the one-to-one adult-student format and small group format when instruction was delivered by the classroom teacher. A limitation of this research was the lack of generalization of the sight words learned to academic content.

In one of the first studies to train peers to implement a prompting strategy, Collins et al. (1995) used a multiple probe design across cooking product word sets to evaluate the effects of peer-delivered constant time delay (CTD) intervention on reading and defining cooking product labels for students with moderate intellectual disability. Four

high school students (two male, two female; aged 16, 16, 16, and 18 years; IQs 50, 48, 57, and 36) and 26 peer tutors from an 11th grade Advanced English class participated. Peer tutors were trained over several sessions by the lead researcher and special education teacher. Key words were selected from food products likely to be prepared by adolescents (i.e., instant hot chocolate, muffin mix, microwave popcorn) across product brands (e.g., add, hot, water) and definitions created for each (e.g., Add means you need to put something else in). Peer tutors conducted probe and instructional CTD sessions in a one-to-one format in the special education classroom, and worked with different students during the course of the intervention. The special education teacher conducted generalization probe sessions in the kitchen of a nearby home. Researchers found the use of peer-delivered CTD intervention effective in teaching students with moderate intellectual disability to read and define key words using actual product labels and students were able to generalize the skill to the actual cooking event. Peer tutors delivered the intervention with fidelity, but were inconsistent in pairing the definitions with praise for correct responses (a problem also noted by Jameson et al., 2008 in their study using peers). A limitations of the study was the under ambitious learning targets (key words) for at least one student who could read 100% of the words in 2/3 sets in baseline.

In an efficacy study using peers, Miracle, Collins, Schuster, and Grisham-Brown (2001) used an alternating treatment design to compare the efficiency of teacher-delivered and peer-delivered instruction on basic sight word recognition for high school students with moderate intellectual disability. Four students (male; aged 14, 15, 17, and 20 years; IQs 46, 40, 48, and 43) and five peer tutors participated. The peer tutors were

senior female students who were enrolled in a peer tutoring course. Peers received three 30-min trainings and demonstrated the CTD procedure with no more than one incorrect step (i.e., 86% criterion). All instructional sessions were conducted in the special education classroom. Peers and the teacher each taught students one set of five sight words commonly found in the grocery store (e.g., brownie, tuna, ice). Results indicated that both teacher-delivered and peer-delivered CTD interventions were effective in teaching sight words to secondary students with moderate intellectual disability.

Unlike most studies in the literature that focused on teaching discrete responses, Godsey, Schuster, Lingo, Collins, and Kleinert (2008) included peers to teach a chained task. Godsey et al. used a multiple probe across subjects and behaviors design to evaluate the effects of peer-delivered CTD intervention on food preparation for secondary students with moderate intellectual disability. Four students (male; aged 15, 16, 17, 20 years) with moderate intellectual disability participated. In addition to moderate intellectual disability, one student had a diagnosis of Down syndrome and another moderate hearing impairment and severe visual impairment. Eleven students (two male, nine female; aged 16-18 years) enrolled in the same high school participated as peer tutors. Peer tutors received two 90-min training sessions in which the tutors learned to implement the CTD procedure and to record student responses. Peers were required to demonstrate accurate data collection, perform the steps of the intervention with at least 90% accuracy, and score at least 90% correct on a written test to participate. One peer failed to meet criteria for participation. Peer tutors delivered the intervention in pairs, alternating between prompter and data collector. Peers also collected reliability data on the independent and dependent variables.

Food preparation tasks included making a: milkshake (27 steps), grilled cheese sandwich (32 steps), toaster waffle (27 steps), and frozen orange juice (25 steps). The first session was conducted at 0-s delay; all others at 5-s delay. Results indicated all students learned to prepare all chained food tasks and maintained skills up to 22 sessions after meeting criterion and peer tutors generalized the skills acquired during training across different students and different tasks within the cooking curricular area with chained tasks. Additionally, peer tutors reliably implemented CTD procedures for chained task instruction, but failed to consistently deliver descriptive verbal praise after correct responses (also noted in Collins et al., 1995; Jameson et al., 2008). A limitation of this research was that two peer tutors were needed to deliver the intervention.

The research on peer-delivered academic instruction for students with moderate and severe intellectual disability in separate special education classrooms is positive (e.g., Godsey et al., 2008; Kamps et al., 1989). Results demonstrate students with moderate and severe intellectual disability can learn academic content taught by peers and generalize learned skills to new settings and individuals (e.g., Collins et al., 1995), and both students with and without disabilities found the experience enjoyable (Kamps et al., 1989, 1990). Likewise, peers can implement interventions that include systematic prompting strategies (e.g., CTD) with high fidelity (e.g., Miracle et al., 2001) and generalize their instruction to new students and new tasks (e.g., Collins et al., 1995; Godsey et al., 2008).

On the other hand, there are limitations in this research. First, several studies demonstrated peer tutors can implement CTD interventions with high fidelity (e.g., Godsey et al., 2008; Miracle, et al., 2001), but research is needed to evaluate methods of teaching peer tutors other prompting procedures (e.g., system of least prompts). Constant

time delay can be used to teach both discrete (e.g., Miracle et al., 2001) and chained skills (e.g., Godsey et al., 2008); however, other prompting strategies are well-suited for teaching higher level skills like comprehension of text. For example, the prompts in the system of least prompts are easily modified to include reread prompts and rules, both of which have improved comprehension skills for students with moderate and severe intellectual disability (c.f., Mims et al., 2009, 2011).

Second, the type of academic skills taught by peer tutors has mostly been simple discrete responses (e.g., identifying sight words; Kamps & Walker, 1990) and the skills targeted for instruction had little connection to the general curriculum(e.g., reading food product labels; Collins et al., 1995). While functional skills are important, the special education field has many years of research demonstrating how to teach functional reading and mathematics skills to students with moderate and severe disabilities. Research is needed to evaluate the use of peer-delivered strategies that teach students with moderate and severe intellectual disability more complex academic skills, like comprehension of grade-level adapted academic text.

Third, the results of these studies indicate that peer tutoring is an effective strategy to teach students with moderate and severe disabilities. In fact, in a systematic review of the effects of the peer assistance interventions on academic outcomes for youth with disabilities, Winokur, Cobb, and Dugan (2007) found a large effect size (g=4.79) for students with moderate and severe disabilities; twice as large as the effect size of students with specific learning disabilities, emotional disturbance, or behavior disorders (i.e., g = 2.34). This research indicates that peer tutoring may be even more effective for students with moderate and severe disabilities than other students with disabilities. Practices that

are effective in separate special education classrooms and that are similar to those found in the general education classroom are good practices to use when implementing instruction in the general education classroom for students with moderate and severe disabilities (Copeland & Cosbey, 2008-2009). Thus, research is needed to evaluate peer-delivered interventions that teach grade-level adapted academic content in the general education classroom.

Using peer tutors to teach academic skills for students with moderate and severe intellectual disability in the general education classroom. Peer tutoring is a familiar strategy that is often used in the general education classroom (e.g., McMaster et al., 2006) and over half of the inclusive academic studies have used peer tutors to teach academic skills for students with moderate and severe intellectual disability in the general education classroom (Carter et al., 2005, 2007; Collins et al., 2001, 2007; Hudson et al., 2011; Jameson et al., 2008; Jimenez et al., in press; McDonnell et al., 2001, 2000; Wolery et al., 1994). The two Carter et al. (2005, 2007) studies focused on social interactions and academic engagement for students with moderate and severe intellectual disability; however no specific academic goals were targeted for instruction, so they will not be reviewed in this section. Additionally, with the exception of the Wolery et al. (1994) study, the other studies have been reviewed in detail in other sections of this proposal. Therefore, only the Wolery et al. study will be reviewed in detail here and the others briefly summarized.

The earliest study to focus on inclusive academic learning also used a peer-delivered intervention. Wolery et al. (1994) used a multiple probe design across behaviors to evaluate the effectiveness of a peer-delivered CTD intervention to teach

expressive word naming and recognition of correct spellings. Participants (one male, two female; aged 8-10 years, IQs of 65, 54, 59) included three students with substantial disabilities (i.e., mild or moderate intellectual disability with Down syndrome and visual impairments for one student, a diagnosis of avoidant disorder of childhood and phobic-like behaviors for a second student, and a seizure disorder for a third student). Thirteen peer tutors from the second and fourth grade class delivered scripted lessons in the second and fourth grade general education classrooms. Learning targets included sight words (i.e., push, girls, pull, danger, exit, boys, seven, three, five, nine, six, eight) and identifying correct spelling of words (i.e., pencil, crayon, calendar, notebook, orange, surprise). Peer tutors for each child rotated across days and taught one word pair to criterion before beginning instruction on subsequent pairs. Wolery and colleagues found the peer-delivered CTD intervention was effective in teaching two students to read words and one student to identify the correctly spelled word.

McDonnell and colleagues (2000, 2001) conducted a pair of studies using classwide peer interventions. The first evaluated partner learning on academic engagement, competing behaviors, and spelling test performance of students with severe disabilities. Three elementary students with severe disabilities and three peers without disabilities were grouped into heterogeneous partner learning triads. Students rotated between word wizard, word conjurer, or word keeper roles during partner learning two times each week. Students took weekly spelling tests; two from the grade level spelling curriculum and one from the Edmark reading program. McDonnell and colleagues found that partner learning increased the rate of academic responding, decreased the rate of

competing behaviors, and increased the percentage of words spelled correctly for students with disabilities.

In a similar study, McDonnell et al. (2001) evaluated the effects of CWPT combined with a multi-element curriculum and accommodations on academic responding and competing behaviors for junior high school students with moderate or severe disabilities in general education pre-algebra, physical education, or history class. Members rotated the roles of tutor, tutee, and observer each session. Weekly posttests measured academic gains for all students. McDonnell et al. found that students with disabilities increased their academic responding and decreased their competing behaviors during general education class after CWPT, but weekly post-tests were not administered before intervention, so no causal relationship between intervention and post-test scores could be determined - a limitation of this study.

In the first inclusive study to investigate a chained task, Collins et al. (2001) evaluated system of least prompts and a task analysis on letter writing for students with moderate disabilities in a secondary composition class. Four components of letter writing (i.e., date, greeting, body, and closing) were taught using an 11-step task analysis and system of least prompts. Collins et al. found that students with moderate and severe disabilities learned to write letters using a task analysis and system of least prompts in a secondary composition class in 7 - 26 sessions and together the general education teacher and peers were able to implement system of least prompts intervention effectively.

Jameson et al. (2008) evaluated peer-delivered CTD instruction in health and art classes for students with significant cognitive disabilities and found that peer-delivered embedded CTD instruction was effective in teaching students health (e.g., effects of

smoking on the body) and art (e.g., definitions related to hand building ceramic forms) goals. In addition, peer tutors delivered both trained and generalized sets (instructional targets in which peer tutors were not trained and received no materials to teach) with high fidelity.

In one of the first inclusive studies to teach grade-aligned academic skills, Jimenez et al. (in press) evaluated the effects of peer-mediated embedded instruction on inclusive inquiry science for students with moderate intellectual disability. Jimenez et al. found that peers were able to implement embedded time delay instruction during inclusive science lessons and students with moderate intellectual disability were able to acquire science responses across three units of science and use a KWHL chart across science units. Limitations of this research was that the format used for measuring comprehension provided students with a 33% chance of guessing the correct response and that three of five students needed additional instruction from the special education teacher to keep pace with the changing content in the general education science class.

The final inclusive study reviewed in this section is a study conducted by Hudson et al. (2011) used a peer-delivered system of least prompts intervention with read-alouds of grade-level adapted academic science and social studies content to evaluate listening comprehension for elementary students with moderate and severe intellectual disability in a fourth grade general education classroom. Students were taught to ask for help and to monitor their independent unprompted correct responses to comprehension questions about the academic content. Results indicated that all students increased their correct responses to comprehension questions, but did not generalize comprehension skills to new adapted chapters. Additionally, peer tutors delivered the SLP intervention package

with high fidelity. A limitation of this study was the lack of generalization data collected in the general education science/social studies class.

The positive impact of peer tutors on academic learning for students with moderate and severe intellectual disability in the general education classroom is evident. Peers tutors have taught students to read sight words and recognize correctly spelled words (Wolery et al., 1994); write letters (Collins et al., 2001); achieve goals related to health and art (Jameson et al., 2008); read vocabulary words from history class and function sight words from a job application (Collins et al., 2007); acquire science vocabulary, definitions, concepts, and use of a KWHL chart during inquiry science (Jimenez et al., in press); answer comprehension questions related to grade-level adapted science and social studies text (Hudson et al., 2011) as well as improve their partner's spelling scores (McDonnell et al., 2000).

While positive, these outcomes reveal two limitations in the research. First is the lack of inclusive academic studies that have been conducted using peers. Even though half of the studies investigating inclusive academic learning for students with moderate and severe intellectual disability have involved peers, the total number of studies using peers is 10. More research is needed that evaluates the use of peer tutoring to teach academic skills to students with moderate and severe intellectual disability in general education.

Second, while the focus of peer-delivered instruction has changed from measuring academic engagement (McDonnell et al., 2000, 2001) to measuring academic goals aligned with the general curriculum (e.g., Jameson et al., 2008), the content taught in most of the studies was mostly comprised of narrow sets of discrete skills for each child

(e.g., Jameson et al., 2008). While this is common in the literature (Wolery, Anthony, Caldwell, Snyder, & Morgante, 2002), this practice does not reflect the kind of learning students typically encounter in the general education classroom. Researchers need to focus on instructional strategies that make the most of students' time in general education class. This involves considering not only the academic content most important for students, but also considering how student can generalize what they learn to other content areas. Two of the current studies taught students to use strategies that taught generalization of academic skills as well (Jimenez et al., in press; Hudson et al., 2011). Jimenez et al. (in press) taught students to use a KWHL graphic organizer during inquiry science class and Hudson et al. (2011) taught students to use think alouds to answer inferential questions. Future research needs to evaluate both effective strategies for teaching students academic skills as well as effective strategies for generalizing learned skills across content areas (or possibly combinations of strategies).

Summary of peer tutoring research. The selected peer tutoring research reviewed indicates that peer tutoring is an effective strategy for teaching academic skills to students without disabilities (e.g., Allsopp, 1997; Topping et al., 2003; Simpkins et al., 2009), students with mild disabilities (e.g., Kourea et al., 2007; Mastropieri et al., 2006; Stenhoff & Lignugaris/Kraft, 2007), as well as students with moderate and severe intellectual disability (e.g., Collins et al., 1995; Kamps et al., 1989; Kamps & Walker, 1990; Miracle et al., 2001; Godsey et al., 2008; Hudson et al., 2011; Jimenez et al., in press). In fact, Stenhoff and Lignugaris/Kraft (2007) concluded from their review of secondary peer tutoring studies that peer tutoring is an evidenced-based practice for students with mild disabilities.

Results of research also indicate that a variety of peer tutoring formats are effective across students. For example, among the peer tutoring studies reviewed for students without disabilities and students with mild disabilities, CWPT was the peer tutoring arrangement used by most (i.e., Allsopp, 1997; Kourea et al., 2007; Mastropieri et al., 2006; Simpkins et al., 2009). This was different from the type of peer tutoring arrangements used in the studies involving students with moderate and severe disabilities. All the studies in this review conducted in the separate special education classroom with these students used individual peer tutoring arrangements (e.g., Kamps et al., 1989, 1990); however, one study did use pairs of peers to deliver the intervention (i.e., Godsey et al., 2008). Conversely, a variety of peer tutoring arrangements were used in the general education classroom, including Partner Learning (i.e., McDonnell et al., 2000), CWPT (i.e., McDonnell et al., 2001), and individual peer tutors (e.g., Collins et al., 2001). More of the studies were conducted in high school classrooms (n=21), followed by middle school classrooms (n=12), and elementary school classrooms (n=8). The settings included in the McMaster et al. (2006) review spanned kindergarten to high school and were not included in these numbers.

Similar limitations can be found across the peer tutoring literature for students with and without disabilities. First, despite the relatively large number of peer tutoring studies conducted (e.g., McMaster et al. 2006), few peer tutoring studies have been conducted in the general education classroom (e.g., Stenhoff & Lignugaris/Kraft, 2007), including a paucity of studies involving students with moderate and severe intellectual disability. Research is needed that evaluates the effectiveness of peer tutoring for students with and without disabilities, but given the need to access the general curriculum, the

need may be most urgent for students with moderate and severe intellectual disability. Second, the academic skills being taught by peer tutors were most often discrete sets of factual knowledge (e.g., Jameson et al., 2008; Stenhoff & Lignugaris/Kraft, 2007) that do not reflect the complexity of the general curriculum. Three studies in this group focused on more complex comprehension learning goals for students with disabilities (Hudson, et al., 2011; Jimenez et al., in press; Kourea et al., 2007) with mixed results. Jimenez et al. (in press) noted that by assessing comprehension receptively (i.e., providing students response options from which to select their answers), students had a one in three chance of guessing the correct response to comprehension questions and three of the students required additional instruction from the special education teacher to achieve learning goals in science. Additionally, when Kourea et al. (2007) measured fluency and comprehension after total class peer tutoring, they found no substantial increases in student performance for students with mild disabilities, possibly due to the fact that the passages used in the assessment contained few of the sight words students had practiced during peer tutoring. Likewise, students in the Hudson et al. study learned to answer more comprehension questions after peer-delivered intervention, however, skills did not generalize to new, untrained adapted science chapters. Research is needed that evaluates the effects of peer tutoring on more complex academic learning behaviors.

This leads to a third limitation in the peer tutoring research - the lack of focus in research on generalizing learned skills across general education content. Research is needed to develop strategies, like graphic organizers or rules, which teach students ways of organizing information that facilitates student learning across academic content.

A final limitation in the peer tutoring literature is the need for more research evaluating the effects of the system of least prompts. Seven of the peer tutoring studies reviewed used CTD in the intervention package (e.g., Jimenez et al., in press); conversely two used system of least prompts (e.g., Collins et al., 2001). Peers were reliable implementers of both systematic instructional procedures (e.g., Collins et al., 2001; Jameson et al., 2008), but as researchers strive to indentify strategies of teaching more complex, higher level academic skills for students with moderate and severe disabilities, research evaluating other prompting strategies, like the system of least prompts, is needed.

Synthesis of Literature

Academic learning in the general education classroom for students with moderate and intellectual disability requires comprehension of a variety of grade-level text. Research conducted in mostly separate special education classrooms has used the practice of shared story reading with the system of least prompts to teach comprehension for these students. Most of the shared story research conducted with this population has used fictional stories; however, a few studies have used other literature, including adapted grade-level biographies (Mims et al., in press) and adapted science and social studies chapters from the fourth grade curriculum (Hudson et al., 2011) to teach comprehension, including inferential comprehension in a self-contained special education classroom (Mims et al., in press) and in the general education classroom (Hudson et al., 2011). Shared story reading is a good strategy for teaching comprehension skills to students who are nonreaders because effective strategies, like question asking, can be used with adapted, grade-level read-alouds of academic text. In addition, the system of least

prompts strategy, the systematic instructional procedure most often used with shared story reading can be modified to teach comprehension of text by teaching rules or using reread prompts (Mims et al., in press; Hudson et al., 2011).

Peer tutoring is a familiar strategy in general education (McMaster et al., 2006) and an effective strategy for teaching academic skills for students with moderate and severe intellectual disability in general education (Collins et al., 2007; Hudson et al., 2011). To date, peer-delivered interventions have mostly focused on teaching narrow sets of responses (e.g., five sight words) that do not reflect the complex responses needed by students in general education, but recent research has focused on more complex learning for students that changes with the content of the general education class (Hudson et al., 2011; Jimenez et al., in press). While the results of this research indicate that students can learn more complex skills, like inferential comprehension (Hudson et al., 2011), researchers have noted that strategies also are needed that help students generalize learned skills to new content. In response to the need raised by this literature review, a study is proposed that will evaluate the use of peer-delivered system of least prompts package intervention and grade-level adapted read-alouds of fifth grade literature on listening comprehension for fourth or fifth grade students with moderate and severe intellectual disability in a fifth grade general education classroom.

CHAPTER 3: METHOD

This study evaluated the effects of a peer-delivered system of least prompts package and read-alouds of adapted grade-level literature text on listening comprehension for students with moderate intellectual disability. The independent variable was a system of least prompts package that included a peer-delivered system of least prompts intervention, rules for answering wh- word questions (i.e., who, what, why, when, and where), opportunities to hear text read again, opportunities for special education students to direct the amount of help received from peer tutors, and self-monitoring. Data were collected on three dependent variables: *Text Only Correct; Independent Correct,* and *Generalized Text Only Correct.* The primary dependent variable, *Text Only Correct*, was the number of unmodeled correct comprehension responses after hearing the text read aloud. *Text Only Correct* responses included correct responses after the first reading of the text (i.e., no prompts), correct responses after hearing selections of the text read aloud (i.e., first prompt), and correct responses after hearing a sentence containing the answer read aloud (i.e., second prompt). At each of these levels, participants had an equal chance of being right or wrong as the prompt did not reveal the correct answer. To be scored as *Text Only Correct*, participants with disabilities answered correctly without a modeled prompt from the peer tutor. Modeled prompts included prompts where the correct response was said (i.e., third prompt) or said and shown (i.e., fourth prompt).

A secondary dependent variable, *Independent Correct*, was the number of independent unprompted correct responses to listening comprehension questions.

Independent Correct responses were correct responses after the first reading of text with no prompting from the interventionist. The first response could either be an independent unprompted correct (i.e., *Independent Correct*), an error, or a request for more help. Two kinds of errors were recorded: incorrect responses (i.e., participant selects the wrong answer) or no response errors (i.e., participant failed to initiate a response within the time designated). Both kinds of errors were scored as errors. A multiple probe across participants design was used to demonstrate a functional relationship between the independent variable (i.e., system of least prompts intervention package) and the dependent variables (i.e., *Text Only Correct* and *Independent Correct*).

A third dependent variable was *Generalized Text Only Correct* responses. *Generalized Text Only Correct* responses were correct responses to listening comprehension questions during literacy class after participants heard a different chapter read aloud by a peer and then answered a comprehension question asked by the general education teacher. Correct responses were the same as *Text Only Correct* responses and *Independent Correct* responses described above. Modeled prompts and errors were also recorded but only *Generalized Text Only Correct* and *Independent Correct* responses were graphed.

Participants

Participants with disabilities. Three elementary students, aged 9-11 years, from two self-contained special education classes for students with intellectual disability were included in the study. All participants with disabilities attended a public elementary school in a large, urban school district in the southeastern United States and met the study's inclusion criteria. The inclusion criteria included: (a) special education teacher

recommendation, (b) used picture symbols or words as their primary mode of communication, but could also have some speech (i.e., was a symbolic or abstract language learner), (c) met eligibility requirements for special education services under the category of intellectual disability or autism, (d) had an intelligence quotient (IQ) of 55 or less, (e) regular school attendance (e.g., no more than five absences in previous six months), (f) normal hearing and vision with corrections (e.g., hearing aids, eye glasses), (g) at least one Individualized Education Plan (IEP) goal for improving literacy or comprehension, and (h) acquired signed parental informed consent. In addition to the inclusion criteria, all participants were screened for the following prerequisite skills: ability to make choices expressively or receptively (e.g., eye gazes, points, activates a switch); ability to make selections discriminatively from an array of nine; and follow verbal directions (e.g., make an "x" in the box, point to "more help"). Students with a history of significant problem behavior were excluded from the study.

After informed parental consent was obtained, eligibility for the first eight criteria was confirmed through student permanent records (e.g., cumulative folder); office records (e.g., daily attendance, behavior referrals); forms developed for this study (e.g., signed informed parental consent); classroom observations and samples of student work; discussions with classroom teacher and other staff; and student IEPs. The participants' ability to indicate choices, make selections discriminatively from an array, and follow verbal directions was assessed by the researcher (i.e., first author) during individual screening sessions. The researcher created a nine-option response board that contained familiar classroom items (e.g., pencil, desk, paper, ruler). Words for the items were paired with symbols using Writing with Symbols 2000 software (Mayer-Johnson, LLC,

2000), a word and symbol processing program. The screening sessions were conducted at a quiet table in one of the special education classrooms. The researcher gave a verbal task direction to point to the [one of the nine items on the response board] and waited 5 s for a participant response. Participant responses were immediately scored "+" for correct responses and "-" for any other participant response. The researcher conducted 18 trials with each participant and gave general verbal praise for work related behaviors (e.g., *I like the way you are working*). Participants met criterion by pointing to the correct response option 15 out of 18 trials (i.e., 83%). All participants met the eligibility requirements for making selections, selecting discriminatively from an array, and following verbal directions.

All participant names are pseudonyms. The first participant was Verla, a 10-year-old Hispanic female diagnosed with moderate intellectual disability and severe physical disabilities from cerebral palsy. Verla was nonverbal and used a combination of high and low technology alternative and augmentative communication (AAC) devices to communicate. In the special education classroom, Verla used a DynaVox AAC device to talk with friends, teachers, and other students in the school. The DynaVox was organized by categories. To initiate or engage in a conversation, Verla used her finger to select a topic she wanted to talk about and was learning to string words together to make a sentence. A finger guard placed over the AAC device provided Verla with enough support to make accurate selections on the board. In addition to the DynaVox AAC device, Verla answered yes/no questions by touching either the word "yes" or the word "no" located on the arms of her wheelchair or turned to a page in her communication book to answer a question or strike up a conversation with others. Verla used a

wheelchair to get around the school and, with the exception of a couple of steep ramps, was able to ambulate on her own volition by using her legs to propel herself forward. Verla recognized some sight words and letters, but struggled to read unfamiliar words. She had participated in informal read-alouds in the special education classroom where she answered questions requiring literal recall of information on the page but had no previous experience with peer-delivered instruction or inclusion in a general education classroom.

The second participant was Robert, a 9-year-old Caucasian male diagnosed with moderate intellectual disability and William's syndrome. Robert used verbal English to communicate and had a friendly, outgoing personality that made him popular with teachers and students alike at the school. Like many individuals with Williams syndrome, he had strong language skills, but lagged behind in reading and mathematics skills. His intelligence quotient (IQ) was 51. Roberts could identify the letters of the alphabet and a few sight words. Robert had participated in informal read-alouds in the special education classroom and had some experience with a peer buddy who provided social support in his special classes (i.e., music art, physical education, and computer) but had no previous experience with peer-delivered instruction or inclusion in a general education classroom.

The third participant was Mason, an 11-year-old Hispanic male who was diagnosed with moderate intellectual disability and Down syndrome. Mason used verbal English to communicate, but his speech was often unintelligible due to poor articulation and soft-spoken speech. Mason had an IQ of 51. He could recognize some sight words and, with help from the classroom teacher, could apply some decoding skills to sound out unfamiliar words. Mason had participated in informal read-alouds in the special

education classroom, but had no previous experience with peer-delivered instruction or inclusion in a general education literacy class. Table 1 contains a description of the participants with disabilities included in this study.

Table 1: Description of Participants with Moderate Intellectual Disability

	Verla	Robert	Mason
Age	10	9	11
Race	Hispanic	Caucasian	Hispanic
Primary Mode of Communication	Non-verbal Used a DynaVox AAC device, the words Yes/No on her wheelchair arms, and a picture symbol communication book to communicate	Verbal in English	Verbal in English
Classification	Moderate Intellectual Disability and Severe Physical Disabilities	Moderate Intellectual Disability	Moderate Intellectual Disability
Grade	5	4	5
Educational Placement	Self-contained special education classroom	Self-contained special education classroom	Self-contained special education classroom
IQ score/ Measurement Instrument(s)	Cognitive Pictorial Test of Intelligence, 2nd Edition Score of 1 for Verbal Abstractions (age equivalent of 4-6 years) Score of 2 for Formal Discrimination (age equivalent of 4-6 years) Score of 2 for Quantitative Concepts (age equivalent of 4-9 years)	51 Psychological Differential Ability Scales 2nd Edition (DAS II): General Conceptual Ability	51 Psychological Differential Ability Scales 2nd Edition (DAS II): General Conceptual Ability

Table 1 (Cont'd)

Adaptive Behavior scores/ Measurement Instrument(s)	Adaptive Behavior Developmental Profile 3 Score of <4 delayed	72 (teacher), 50 (parent), Adaptive Behavior Assessment System, 2nd edition	Composite score of 64 Adaptive Behavior Vineland II Adaptive Behavior Scales
Reading level/skills	Recognized some sight words and letter sounds, but not letter blends; struggled to read unfamiliar words	Identified all letters of the alphabet and a few basic sight words	Recognized some sight words and letter sounds, but not letter blends; struggled to read unfamiliar words, but could decode with adult guidance
Listening skills	Excellent receptive listening skills; followed multiple step directions	Attended to text read aloud for short periods of time, but needed verbal cues to remain on-task	Good receptive listening skills; followed multiple step directions
Previous experience with adapted, grade-level academic content	Story-based integrated literacy, math, science, and social studies lessons	Story-based integrated literacy, math, science, and social studies lessons	Story-based integrated literacy, math, science, and social studies lessons
Previous experience with read-alouds	Informally structured read-alouds in class from special education teacher; answered some literal comprehension questions	Informally structured read-alouds in class from special education teacher; answered some literal comprehension questions	Informally structured read-alouds in class from special education teacher; answered some literal comprehension questions
Previous experience with peer tutors	None	Some experience with peer buddies who supported him in music/art/PE	None

Peer tutors. Peer tutors were selected from the students in the fifth grade general education class in which the study was conducted who were recommended by the general education teacher, volunteered to be a peer tutor, attended school regularly (i.e., no more

than five absences in previous six months), had a passing grade in reading class (i.e., of C or better), obtained signed parental informed consent and signed student assent, demonstrated competency in delivering system of least prompts intervention after training, and demonstrated prosody in reading text aloud. Classroom records (e.g., course grades), school records (e.g. daily attendance), and study forms (e.g., signed informed consent from parent or guardian) were used to confirm eligibility for the first six inclusion criteria. Students who met these criteria were rank ordered by the general education teacher. The first five peer tutors attended an introductory peer tutor training session, were screened for reading prosody, and received individual training from the researcher. Of these five students, three students received individual training and were assessed on their ability to deliver system of least prompts intervention through individual role-play sessions with the researcher. Procedural fidelity criteria for delivering the system of least prompts intervention was two consecutive sessions without error. Five students met the inclusion and training criteria; however, only three students participated in the study as peer tutors and delivered the intervention to participants with disabilities. Two other students participated informally by reading the generalization chapters during literacy class. Peer tutors and participants were paired, but if a peer tutor was absent, one of the other three peer tutors delivered the intervention.

The first peer tutor was Michael (student-selected pseudonym), a 10-year-old Hispanic male who attended the fifth grade general education literacy class. He was above grade-level in reading and played on the school's football team. He had no previous experience as a peer tutor and was recommended for peer tutoring by the

general education teacher because he was an excellent student and extremely patient and helpful. Michael delivered the intervention to Verla.

The second peer tutor was Rocky (student-selected pseudonym), a 10-year old African American female who attended the fifth grade general education literacy class. She was on grade level in reading and had no previous experience as a peer tutor, but had become interested in peer tutoring after observing the peer tutors working with students with disabilities in her fourth grade class. Rocky delivered the intervention to Robert.

The third peer tutor was Brittany (student-selected pseudonym), an 11-year-old Hispanic female who was above grade level in reading. Brittany had participated as a peer tutor in a study conducted by the researcher in the fourth grade general education classroom the year before. Brittany delivered the intervention to Mason. A description of the fifth grade general education peer tutors is included in Table 2.

Table 2: Description of Fifth Grade General Education Peer Tutors

	Michael	Rocky	Brittany
Grade Level	5	5	5
Age	10 years	10 years	11 years
Qualified for free and reduced lunch	Yes	Yes	Yes
Ethnicity	Hispanic	African American	Hispanic
Services received (i.e., speech, Special Education, ESL)	None	None	None
Tutoring experience	No experience	No experience	peer tutor in the 4th grade

Table 2 (Cont'd)

Reading Level	Above Grade Level	On Grade Level	Above grade Level
Reason teacher gave for recommending student for peer tutoring	Excellent student who is extremely patient and helpful	Observed peer tutoring in class last year and volunteered	Peer tutored last year

The researcher screened peer tutors for reading prosody using an adaptation of the Multidimensional Fluency Scale (MFS; Rasinski, 2003). A tape recorder was used to record peer tutors reading of the first adapted chapter from *The Watsons Go to Birmingham – 1963* (Curtis, 1995) aloud. Then the researcher replayed the recordings and rated the peer tutors' oral reading performance for each of the four subscales (i.e., accuracy, phrasing, smoothness, and pace) in the MFS (see Table 3). A tape recording of the peer tutors reading aloud allowed the researcher to listen to the passage several times and score each of the subscales individually. A score of 1-4 was possible for each subscale. The four subscale scores were totaled to arrive at an overall score; an overall score of nine or above indicated that fluency had been achieved for the passage. Peers who were unable to achieve a minimum score of 9 on the MFS did not participate as peer tutors in the study. All three peer tutors were screened and met criteria for reading prosody. Table 3 contains the prosody screening scores of each peer tutor.

Table 3: Peer Tutors' Prosody Scores from the Multidimensional Fluency Scale

	Michael	Rocky	Brittany
Accuracy	4/4	4/4	4/4

Table 3 (Cont'd)

Phrasing	4/4	4/4	4/4
Smoothness	4/4	4/4	3/4
Pace	4/4	4/4	4/4
Total	16/16	16/16	15/16

Peer participants. All other students in the fifth grade general education class were invited to participate in the study as peer participants. Peer participants completed a presurvey and a postsurvey regarding their attitudes about students with disabilities. Students who obtained signed parental informed consent before the study began were included as peer participants. Only peers who completed the presurvey completed the postsurvey. The presurvey was given before the intervention began and the postsurvey was given after the intervention ended.

General education teacher. One fifth grade general education teacher with a bachelor's degree in elementary education (K-6) and nine years of teaching experience participated in the study. The general education teacher collaborated with the researcher about the literacy content adapted for the study, nominated students to be peer tutors, communicated with students' parents about the purpose of study, facilitated the acquisition of informed parental consent for peer participants and peer tutors, included participants with moderate intellectual disability during literacy class, administered the presurvey and postsurvey to peer participants, and completed a social validity form after the study was completed.

Special education teachers. Two special education teachers of students with mild, moderate, and severe intellectual disability participated in the study. One teacher

had a masters of arts in teaching (i.e., MAT) in special education and six years of special education teaching experience. The other teacher had a bachelor's degree, three years of teaching experience, and was one class away from completing a MAT special education certification. Special education teachers nominated participants for the study, communicated with participants' parents about the purpose of study, facilitated the acquisition of informed parental consent, and completed social validity forms after the study was completed.

Settings

Peer-delivered intervention. The system of least prompts intervention was delivered during second literacy block from 9:15-10:30 a.m. when 35 general education students attended literacy class. The classroom was approximately 30' x 40'. Located along the first wall were floor-to-ceiling storage cabinets, a sink and counter top with shelves for books above it, and a five-drawer filing cabinet. Along the back wall were two large windows and a group of four student desks with four computers. The teacher’s desk, Smart Board, white dry erase board, and a television set on a cart were arranged on the third wall. Student cubbies and book shelves were located on the fourth wall. A large peanut-shaped table with four chairs was located in front of the sink area. A carpeted area for independent silent reading was situated in the far left corner of the room. One oblong shaped table large enough to seat eight students was located in front of the student cubbies. Teaching materials, resources, and books were stored on bookshelves and student work was displayed on the walls around the room. In this elementary school, math, science, and reading was delivered on a block schedule and students traveled as a team to different classrooms for the different content areas.

Students sat in desks in groups of four or five around the room. Students without disabilities received reading instruction from the general education teacher by working in their small group area or by rotating through four learning centers paired with the book they were currently reading. Participants with intellectual disability sat in a desk in one of the small groups and participated with their peers when they were not receiving peer-delivered intervention or involved in generalization probe sessions.

Baseline and ongoing probe sessions. Baseline and ongoing probe sessions were conducted in one of two self-contained special education classrooms for fourth and fifth grade students with intellectual disability attended by twelve other students with intellectual disability. Both special education classrooms were similar in layout and materials and were located next to each other in the school. Each classroom was approximately 40' by 30' with large classroom spaces divided into several smaller spaces by furniture and equipment. Three classroom computers were located on one wall and one corner contained a large carpeted area with books. The back wall held two large windows, bookcases, storage cabinets, and individual student hooks for backpacks and coats. A second open area was located in the other corner. Two round tables with chairs provided space for small group instruction and bookcases held teaching materials. A Smart Board was mounted on the fourth wall and student desks were arranged in rows in one room and in a square in the center of the room in the other. With the exception of specials and lunch with their peers, students received instruction in the special education classrooms. Baseline and ongoing probe sessions were conducted in one of the classrooms at one of the tables for small group instruction.

Peer tutor training. The initial introductory peer tutor training was conducted in the school library, a recently renovated space, in a part of the room that held a Smart Board on one wall that was surrounded by several tables. Offices for the library staff were located off the main room. The librarian and assistants interacted and instructed students throughout the day. Individual peer tutor training was conducted at an oblong table outside the cafeteria in one of the school's foyers. This area provided space for the peer tutor to practice using the intervention materials and was generally quiet during second literacy block.

Materials

Adapted grade-level book. The general education fifth grade teacher and researcher selected *The Watsons Go to Birmingham – 1963* (Curtis, 1995) as the book adapted for the intervention. This book was one of the books fifth graders in second literacy block would read during the time the study was implemented. The researcher adapted each of the book's 15 chapters following the procedures described in the next section. Chapters one through five were used during baseline probe sessions and peer-delivered intervention. Chapters six through 15 were used for generalization probes sessions during reading class.

Adapted book chapters. Procedures for adapting the book *The Watsons Go to Birmingham - 1963* (Curtis, 1995) for students with moderate intellectual disability were modified from the procedures described by Browder, Trela, et al. (2007). First, text summaries were written for each chapter that captured the main idea(s) and included enough detail to acquire and maintain listener interest and the story's integrity. Next, definitions and explanations for unknown vocabulary words and terms were added and

the text summaries were rewritten at a 2-3 grade listening comprehension level (i.e., Lexile score between 400-600). To determine the Lexile score for each chapter summary, a plain text file was sent to Lexile Framework for Reading website (http://www.lexile.com/) for analysis. Browder, Trela, et al. selected this listening level based from an informal estimate of the level to which most students with moderate and severe developmental disabilities responded. Table 4 contains the Lexile scores for each adapted chapter.

Table 4: Lexile Scores for *The Watsons Go to Birmingham - 1963*

Chapter	Title	Lexile Score
Chapter 1	And You Wonder Why We Get Called the Weird Watsons	590L
Chapter 2	Give My Regards to Clark, Poindexter	530L
Chapter 3	The World's Greatest Dinosaur War Ever	560L
Chapter 4	Froze-Up Southern Folks	600L
Chapter 5	Nazi Parachutes Attack America and Get Shot Down Over the Flint River by Captain Byron Watson and His Flamethrower of Death	580L
Chapter 6	Swedish Cremes and Welfare Cheese	600L
Chapter 7	Every Chihuahua in America Lines up to Take a Bite out of Byron	560L
Chapter 8	The Ultra-Glide!	580L
Chapter 9	The Watsons Go to Birmingham - 1963	600L
Chapter 10	Tangled Up in God's Beard	530L
Chapter 11	Bobo Brazil Meets the Sheik	600L
Chapter 12	That Dog Won't Hunt No More	530L

Table 4 (Cont'd)

Chapter 13	I Meet Winnie's Evil Twin Brother, the Wool Pooh	540L
Chapter 14	Every Bird and Bug in Birmingham Stops and Wonders	580L
Chapter 15	The World-Famous Watson Pet Hospital	560L

Listening comprehension questions. A total of 18 comprehension questions (i.e., three sets of six wh- word questions) were created for each adapted chapter used in the intervention. A different set of wh- word questions was asked each session so that participants with disabilities were not asked the same comprehension question twice during intervention. For the generalization chapters, three comprehension questions were created for each chapter. A comprehension question template was used to create the comprehension questions for all adapted chapters (i.e., intervention and generalization). The template allowed the comprehension questions to be specific to the chapter as well as similar across chapters. In addition, the template helped generate questions that varied in comprehension levels so that higher levels of comprehension from Bloom's taxonomy of comprehension (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956) were included and two of six comprehension questions required inference to answer. Table 5 contains the wh- word question template used to create the comprehension questions and Appendix A contains a list of all the comprehension questions created for the adapted chapters.

Table 5: Wh- Word Question Template

Who [verbed] the noun?
Where do/did [main character] [verb]?
When did [event] take place?
What did [character] [verb]?
Why did [action from the story]?
Why did [action from the story]?

Content validity. To ensure the book selected for the study was appropriate for fifth grade, the book was selected in collaboration with the general education fifth grade teacher from the fifth grade reading curriculum currently used by the school district. To ensure the adapted chapters maintained the quality of the original chapters (i.e., content and performance centrality; Browder, Spooner, Wakeman, Trela, & Baker, 2006), a university-level expert in elementary reading education reviewed the adapted chapters and considered if the adapted chapters captured the main ideas of the originals and provided a similar experience with grade-level content that peers without disabilities might experience reading or listening to the original story. Suggestions made by the university-level expert were incorporated into the adapted chapters. Another university-level expert reviewed the comprehension questions created for the adapted chapters to ensure that the questions represented a variety of comprehension levels (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956) and that both literal recall and inferential questions were represented. The researcher and university-level expert independently rated each comprehension question as being literal recall or inferential, and then compared responses item-by-item. Interobserver agreement (IOA) on listening comprehension questions was determined by taking the number of agreements divided by the number of agreements plus disagreements multiplied by 100. IOA for the comprehension questions was 100%.

Peer tutor scripts. Peer tutor scripts were created for the first five adapted chapters of *The Watsons Go to Birmingham - 1963* (Curtis, 1995). The peer tutor scripts contained an adapted chapter and the system of least prompts intervention. Each peer tutor script was divided into six sections; each section contained the adapted text paired

with one comprehension question. The peer tutor scripts were a length that peer tutors could read aloud in approximately 15 min. A 3-ring binder was used for each chapter to organize all the materials for each lesson including blank participant self-monitoring sheets, blank data sheets, key vocabulary words paired with picture symbols using Writing with Symbols 2000 software (Mayer-Johnson, LLC, 2000), and the adapted story with comprehension questions (for peer tutors to preread before delivering the intervention). Each peer tutor script was 31 pages in length. An example of one section of a peer tutor script from chapter one is included in Appendix B.

Participant books. Books of each adapted chapter were created for participants with disabilities. Each page of the participant book contained the adapted text read aloud before the comprehension question was asked. Pages were printed on 8 1/2 x 11 inch paper using Calibri 18-point font and placed in page protectors. Each adapted chapter was six pages in length (i.e., one page for each comprehension question). Pages were placed in 3-ring binders like the peer tutor scripts. The participant book for chapter one of *The Watsons Go to Birmingham - 1963* (Curtis, 1995) is included in Appendix C.

Response boards. Response boards were created for all 15 adapted chapters. Response boards contained response options for the comprehension questions and were organized in a 3-ring binder by wh- question word (i.e., who, what, why, when, where). For example, response options for “who” comprehension questions were found under the tab labeled “who” in the binder and all response options were people from the story. Response boards contained correct response options as well as at least one other plausible alternative response for each question. Response options were created by pairing a word or phrase with a picture symbol using Writing with Symbols 2000 software (Mayer-

Johnson, LLC, 2000). In addition to the response options, each response board contained two prompts used by participants with disabilities during the study. The first was a help prompt used to ask for help from the interventionist and the second was a wh- question word rule. For the help prompt, the word "Help" was paired with a picture symbol and placed in the top left-hand corner of the response board. For the wh- question word rules, each rule for answering a wh- question was paired with a wh- word symbol using Writing with Symbols 2000 software (Mayer-Johnson, LLC, 2000) and placed in the center of the top row of the response board. Response boards were validated by a university-level special education expert for text dependency and to ensure that the response boards contained plausible response options as distractors. Appendix D contains an example of a response board for each of the wh- word questions.

Self-monitoring sheet. A self-monitoring sheet was used by participants to record independent unprompted correct responses to comprehension questions (i.e., correct responses after the first read). The self-monitoring sheet consisted of six boxes arranged horizontally on 8 1/2 x 11 inch paper and printed in a landscape orientation. Appendix E contains an example of the self-monitoring sheet used by participants during intervention.

Concept cards for pretraining wh- word concepts. Commercially available picture cards from SRA (McGraw-Hill) were used for pretraining wh- word concepts. These 4.5 x 6 in. picture cards were colored line drawings of common words (e.g., actions, people, tools) arranged by category in a box. Each card had the picture on one side and the word on the other. For two concepts (i.e., why and when), the researcher created cards using Writing with Symbols 2000 software (Mayer-Johnson, LLC, 2000)

and blank 3 x 5 index cards. One picture symbol representing the wh- question word concept (e.g., picture symbol of rain for *because it was raining*) was printed in 36 point font and glued individually to 3 x 5 inch index cards.

Experimental Design

A multiple probe design across participants (Gast, 2010; Horner & Baer, 1978) was used to establish experimental control. A multiple probe design allowed for instruction to begin with one participant while periodic baseline sessions were conducted with all other participants, decreasing the threat of learning through prolonged testing and exposure to intervention materials. A multiple probe design also allowed assessment of generalization of intervention effects to be collected during ongoing probe sessions. Study phases included baseline, intervention, and ongoing probe sessions. Pretraining of wh- word concepts, requesting help, and self-monitoring occurred before the baseline phase. After all students met the established criteria for pretraining, the baseline phase began. During the baseline phase, a minimum of five data points were collected for each participant until performance data were low and stable or descending for both *Text Only Correct* and *Independent Correct* responses. Once a stable baseline was obtained for all participants, the decision of when to change levels within the design was based on *Text Only Correct* responses. One participant began intervention and other participants continued in baseline. A new participant entered intervention when a change in level or trend for *Text Only Correct* responses was evident for the participant receiving intervention. Just prior to entering intervention, three consecutive data points were collected on the participant entering intervention and one probe data point was collected for participants continuing in baseline. For the participant entering intervention, the new,

untrained adapted chapter used next in the intervention was used during the third baseline data point. At least one probe point was collected for each participant every eight sessions. Participants entered the intervention phase in a time-lagged manner until all participants had received intervention. Participant(s) received intervention once a day, three days week. A new untrained adapted chapter was used every three sessions during intervention and the intervention condition contained multiple chapters of an adapted grade-level text. Experimental control was demonstrated by a change in level or trend of correct comprehension responses from baseline condition to intervention conditions across participants.

Dependent Variables and Data Collection Procedures

Dependent variables. The first and primary dependent variable, *Text Only Correct*, was the number of unmodeled correct responses to listening comprehension questions paired with the adapted chapter. *Text Only Correct* responses included independent unprompted correct responses (i.e., correct responses after the first reading of the text with no prompts), correct responses after hearing the text read aloud again (i.e., first prompt), and correct responses after hearing the sentence containing the answer read aloud (i.e., second prompt). At each of these levels, the participant had an equal chance of being right or wrong as the prompt did not reveal the correct answer. To be scored as *Text Only Correct*, participants with disabilities answered correctly without a modeled prompt from the peer tutor. Modeled prompts included verbal prompts where the correct response was said (i.e., third prompt) or said and shown (i.e., fourth prompt).

The secondary dependent variable, *Independent Correct*, was the number of independent unprompted correct comprehension responses. *Independent Correct*

responses were correct responses after the participant heard the chapter read aloud the first time without any prompts. *Independent Correct* responses were included in the *Text Only Correct* responses, but were graphed separately to observe changes in this dependent variable.

The third dependent variable, *Generalized Text Only Correct*, was the number of *Generalized Text Only Correct* comprehension responses during general education reading class. *Generalized Text Only Correct* responses were the same as *Text Only Correct* responses except that they were collected during generalization probe sessions during the fifth grade reading class by the general education teacher. *Generalized Text Only Correct* responses included independent unprompted correct responses (i.e., correct responses after the first reading of the text with no prompts), correct responses after hearing the text read again (i.e., first prompt), and correct responses after hearing the sentence containing the answer read again (i.e., second prompt). At each of these levels, the participant had an equal chance of being right or wrong as the prompt did not reveal the correct answer. To be scored as *Generalized Text Only Correct*, participants with disabilities answered correctly without a modeled prompt from the general education teach. Modeled prompts included verbal prompts where the correct response was said (i.e., third prompt) or said and shown (i.e., fourth prompt).

Social validity. Three social validity measures were collected. First, peers' attitudes about participants with disabilities were collected using a presurvey and postsurvey instrument adapted from an attitudinal survey developed by Haring, Breen, Pitts-Conway, Wilson, and Gaylord-Ross (1983). The survey was piloted with three fourth grade general education students who were not participating in the study and

revisions were made to the survey based on the feedback from the pilot group (e.g., change the word *student* to *scholar*, add a statement about willingness to play with a student with special needs at recess). The survey was administered by the general education teacher to the students in second literacy block who had obtained signed parental consent before the study began and after the study ended.

Second, information about the importance of the study and the effectiveness of the peer-delivered intervention was obtained from key individuals involved in the study. The general and special education teachers, peer tutors, and participants with moderate intellectual disability completed a social validity form after the study was finished. Using a 5-point Likert scale for adults (i.e., strongly agree, agree, neutral, disagree, strongly disagree) and a 3-point Likert scale for peer tutors and participants with disabilities (i.e., yes, maybe, no), stakeholders indicated their level of agreement or disagreement to statements by circling one of five or one of three responses. Statements measured the study's goals, procedures, and outcomes. In addition, after the study was finished, the researcher held a focus group with peer tutors and their responses to questions about to their experiences as peer tutors were recorded as a more in-depth record of their experience. Third, information regarding changes in reading grades for peer tutors was obtained from the general education classroom teacher after the study was finished. For each peer tutor, the interventionist asked the general education teacher to describe any changes in the peer tutors' reading grade during the time of the study, and, if changes occurred, why the teacher thought the grade(s) changed.

Data collection. Data were collected during all study phases. Appendix F contains a data collection sheet from chapter one of *The Watsons Go to Birmingham*

(Curtis, 1995). Correct participant responses were scored in three ways. First, *Text Only Correct* responses were recorded when participants provided the correct response after the first reading of the adapted text with no prompts (i.e., independent unprompted correct), after the text was read again (i.e., first prompt), or after the sentence was read again (i.e., second prompt). *Text Only Correct* responses were unmodeled (i.e., the interventionist did not say or show the correct response). Second, *Independent Correct* responses were included in the *Text Only Correct* responses, but were graphed separately to observe changes in this dependent variable. Third, *Modeled Correct* Responses were scored, but not graphed. These responses were correct responses after the participant was told or shown the correct response (i.e., third and fourth prompt). Likewise, two types of participant errors were scored, but not graphed: when the participant selected the wrong response and when the participant failed to initiate a response within the response time given (i.e., 4 s).

Procedures

Peer tutor training. The four core components for peer support interventions recommended by Carter, Cushing, and Kennedy (2009) were used in this study and included peer tutor selection, peer tutor training, peer-delivered instruction, and adult monitoring. An introductory peer tutor training was held for all students interested in being peer tutors who met the eligibility criteria. Eleven fifth grade general education students attended the session. Prior to the introductory peer tutor training, the general education teacher ranked the general education students from one to eleven and the top five students were selected to implement the study. The first three students delivered the intervention to participants with disabilities. The fourth and fifth students conducted the

generalization probe sessions during literacy class and served as alternates in the event one or more of the peer tutors were not available. The remaining six students were selected to participate as peer tutors in a read-aloud program with other special education students not involved in the study. This program was developed separately by the general education teacher and the special education teachers. For the sake of parsimony, all 11 students interested in being peer tutors received the first part of the introductory training led by the researcher in which the following topics were covered: expectations and responsibilities of a peer tutor, tips for reading aloud to children, and how to support students with disabilities in general education as a peer tutor. The researcher used a PowerPoint to cover each topic. Once the first part of the introductory peer training was competed, the peer tutors who were selected to participate in the study received specific training relevant to the study (i.e., purpose of the study, components of the intervention, how to implement the system of least prompts strategy) from the researcher and the peer tutors selected to deliver read-alouds practiced reading aloud to each other using Building with Stories (http://www.attainmentcompany.com/home.php), a resource available to the teachers of the school's special education classrooms. The introductory session was 1 hr and 15 min in length.

Following the introductory peer tutor session, peer tutors were individually screened for reading prosody using an adaptation of the Multidimensional Fluency Scale (MFS; Rasinski, 2003). Once completed, the researcher met individually with the peer tutors during second literacy block. These sessions were conducted at an oblong table located in the foyer outside the school cafeteria. With the exception of an occasional group of students passing in the hallway, this area was quiet and allowed peer tutors

space to practice the intervention with the researcher. First, the researcher reviewed the peer tutor script with peer and modeled delivering of the system of least prompts intervention using read-alouds of adapted chapters from *The Watsons Go to Birmingham-1963* (Curtis, 1995). After peers were familiar with the script and the steps of the intervention, the researcher used role-play and verbal feedback to teach the steps of the intervention. During role-play sessions, peers delivered a read-aloud using a peer script to the researcher who demonstrated a full range of participant responses (i.e., unprompted correct response, prompted correct response, no response, incorrect response). During the role play sessions, the researcher gave verbal feedback to peers on their delivery of the intervention. Last, peers were given copies of the first five adapted chapters of *The Watsons Go to Birmingham - 1963* (Curtis, 1995) and the comprehension questions paired with the chapters to practice reading aloud.

The peers' ability to deliver the intervention was assessed during role play sessions with the researcher. During role play sessions, the researcher received the peer-delivered instruction and demonstrated a range of possible responses. No feedback was provided during assessment sessions until the session was completed. The peers' ability to deliver the steps of the system of least prompts intervention was scored and including the following steps: (a) introduced the chapter, (b) reviewed/taught vocabulary for the chapter, (c) introduced the wh- question word response boards, (d) reviewed the self-monitoring sheet, (e) delivered the read-aloud, (f) provided the system of least prompts intervention, (g) gave descriptive verbal praise for correct participant responses, and (h) provided the error correction and no-responses procedures as needed. The first four steps were scored as "+" (competed) or "-" (not completed). The remaining steps were scored

for each of six trials in the read-aloud (i.e., one trial for each comprehension question). An error in any part of the trial (e.g., peer failed to deliver descriptive verbal praise) resulted in the trial being scored as an error. The criterion for mastery was 100% correct steps for delivery of the intervention for two consecutive sessions. Peers required an average of four 20-min individual training sessions (range of 3-5) to meet criteria for delivery of the system of least prompts intervention.

General education teacher training. General education teacher training consisted of the researcher modeling the use of the system of least prompts intervention during a read-aloud with special education students and providing the general education teacher with feedback as he implemented the intervention. In addition, the researcher provided data collection sheets for each participant as well as a notebook containing an example and explanation of the prompts for both literal recall and inferential questions. The researcher also provided the general education teacher with the adapted chapters used for generalization during reading class (i.e., chapters six -15) organized in a 3-ring binder. The parts of the text that the general education teacher needed to read for each prompt (i.e., selected text or specific sentence) were highlighted with different colored highlighters. For example, a yellow highlighter was used to put brackets around the paragraph that was to be read again for the first prompt and a green highlighter was used to underline the sentence that was to be read again for the second prompt. Each of the three comprehension questions created for the generalization chapters were also indicated in the adapted text using a hand-written label (e.g., comprehension question 1). In this way, even though the general education teacher asked a different question each generalization probe, they could easily locate the comprehension question in the adapted

text and deliver the correct prompt. The researcher was available throughout the study to answer questions and additional training was conducted as needed.

Pretraining. Before baseline probe sessions were conducted, pretraining sessions were conducted with special education participants that included teaching concepts for the wh- words used in the intervention (i.e., who, what, why, when, and where), asking for help, and self-monitoring *Independent Correct* responses. The pretraining procedures were conducted as described.

Wh- word concepts. Concept pretraining occurred in a one-to-one instructional format in a quiet location free from distraction. Table 6 contains a description of the wh- word concepts taught in the study.

Table 6: Wh- Word Question Rules and Concepts

Rule		Concept
When you hear *what-*	listen for a thing	W*hat* tells about a thing.
When you hear *who-*	listen for a person	W*ho* tells about a person.
When you hear *when-*	listen for a time or date	W*hen* tells about a time or date.
When you hear *where-*	listen for a place	W*here* tells about a place.
When you hear *why-*	listen for the word "because"	W*hy* tells about a reason.

The wh- word concepts were taught sequentially in the following order: who, when, where, what, why. Participants met criteria for one wh- word concept before they received instruction on the next. Criteria for mastery for each wh- word concept was 4/5 correct responses, two consecutive sessions. The steps used during pretraining included:

1. The researcher presented five cards, one at a time (i.e., three cards where examples and two cards were nonexamples of the concept being taught).

2. While presenting each card, the researcher said: "This is a [concept] or “This is not a [concept]. For example, “This is a thing,” (i.e., bike) or “This is not a thing,” (i.e., sad face).
3. Then the researcher presented four cards, one at a time, on the table in front of the participant [one of the cards presented included a card that depicted the concept being taught and three were distracters] and said, “Show me a [concept]."
4. Descriptive verbal feedback was provided when the participant provided the correct response (e.g., “You’re right. A desk is a thing.”)
5. If the participant provided an incorrect response, the researcher pointed to the correct response and said, “This is the thing.”
6. The steps were repeated and the order of card presentation was varied using different examples and nonexamples for each concept.
7. Each trial was scored as correct (i.e., +) or incorrect (i.e., -). A "+" was recorded if the participant responded correctly and a "-" was recorded if the participant responded incorrectly.

Requesting help. Participants were taught to verbally ask for help or point to the “help” prompt on their response board in individual sessions with the researcher in the special education classroom. To begin, the researcher placed a response board on the table in front of the participant that contained nine words paired with picture symbols using Writing with Symbols 2000 software (Mayer-Johnson, LLC, 2000) and a prompt to ask for help. The help prompt was centered at the top of the board. One of the response options was the correct response for an unknown, wrapped prize (e.g., bottle of bubbles, small plane, ball, crayons). The researcher showed the participant the unknown wrapped

prize and told the participant that the prize was theirs to keep when they said what it was. The researcher reviewed the response options on the board and modeled asking for help using the help prompt. Then the researcher asked the participant if they were ready to say what was in the wrapped prize or did they want some help. Each time the participant asked for help, the researcher gave a hint or clue about the prize and verbal praise (e.g., *Good job asking for help. Here's another clue*). Sessions continued until participants identified the wrapped prize. Pretraining continued until participants asked for help with no more than one prompt a session for two consecutive sessions.

Self-monitoring. The researcher prepared a personalized story about each special education participant to use during self-monitoring pretraining. The stories were individualized for each participant so that participants could answer the questions without help (e.g., What is your pet's name?). Two to three additional questions were created that required the participant to ask for help to answer (e.g., What is the name of your teacher’s pet?) to evaluate whether participants generalized asking for help from previous training. A response board similar to the one used in the intervention was prepared that included response options for each of the questions as well as distracters. During pretraining, the researcher and participant sat side-by-side at a table. The researcher showed the participants the response board and reviewed the response options with the participants. Then the researcher explained to participants how to use the self-monitoring sheet (i.e., put an "x" in a box each time a question was answered correctly without help) and read the story aloud. After the story was read, the researcher asked the participant questions about the story. The participants could answer verbally or by pointing to the response option on the response board. For each correct unprompted response, the participant

marked an "x" in one of the boxes on the self-monitoring sheet. If the participant did not make an “x” in a box on their self-monitoring sheet within 5 s of providing a correct response, the researcher gave a verbal prompt to do so. If the participant was unable to answer a question, the researcher went to the next question. When the participant put an “x” in six boxes, the self-monitoring sheet was exchanged for a participant-selected prize. Self-monitoring training continued until participants made an "x" through six boxes and exchanged the self-monitoring sheet for a prize.

Baseline probe sessions. Prior to beginning intervention, the researcher conducted a minimum of five baseline probe sessions with all participants using the first five adapted chapters from *The Watsons Go to Birmingham – 1963* (Curtis, 1995). Chapter one was used for the first baseline probe session, chapter two for the second, and so on until at least five data points were collected. Participants used a game spinner to randomly select which of the three sets of comprehension questions paired with each chapter would be used during baseline probe sessions. If the spinner landed on “1”, the first set of comprehension question was used. If the spinner landed on “2”, the second set of comprehension questions was used. If the spinner landed on “3”, the third set of comprehension questions was used.

During baseline probe sessions, the researcher and participant sat side-by-side with the following materials on the table in front of the participant: (a) a notebook of wh-word response boards, (b) a self-monitoring sheet, and (c) a participant book of the adapted chapter. The researcher told participants they were going to read a chapter aloud. The researcher would stop periodically and ask questions about the story. Participants could use their response board to help answer the questions and they could ask for help if

they needed it. The researcher reviewed the vocabulary for the adapted chapter and taught all unknown words until participants were able to point to all response options when asked. After ensuring there were no questions and participants were ready to begin, the researcher introduced the chapter (*"Today we are going to read [name of chapter]"*) and began reading. At predetermined points in the story, the researcher stopped reading and asked one of six comprehension questions paired with the adapted chapter. The researcher told participants the type of wh- word question that was going to be asked and directed participants to turn to the appropriate response board in the notebook (e.g., *The first question is a "who" question. Turn to the "who" board*.). If participants were not able to turn to the correct board independently, the researcher turned to the correct board before continuing. Once the correct response board was located, the researcher asked the comprehension question and waited 4 s for participants to answer. Participants answered receptively by pointing to a response option or expressively by verbally stating their response. The researcher did not ask participants if they wanted help, but if the participants asked for help, the researcher delivered the next prompt in system of least prompts intervention, asked the question again, and waited 4 s for a response. Participant responses were immediately recorded on a data sheet. The interventionist continued reading the story and asking questions until the story was entirely read and all comprehension questions were asked and answered. Verbal praise for general work behaviors and attending were delivered on a variable ratio schedule and participants chose a small reward after each session for participation.

Ongoing probe sessions. After participants entered intervention, the same procedure used during baseline probe sessions was used to collect data during ongoing

probe sessions. Ongoing probe sessions occurred after three sessions of the peer-delivered intervention and used the new, untrained chapter used next in intervention. During ongoing probe sessions, all participant responses were recorded, but only *Text Only Correct* responses and *Independent Correct* responses were graphed. Table 7 describes the materials and support available to participants with disabilities during all study phases (i.e., pretraining, baseline, and intervention).

Table 7: Materials and Support Available to Participants with Disabilities Across Study Phases

Pretraining			Baseline	Intervention		
Delivered by Researcher					Delivered by Peer Tutors	Delivered by GET and PTs
Wh- word Concepts	Requesting Help	Self-monitoring		Ongoing Probe Sessions	**PRIMARY: Peers trained participants to ask for more help (SLP intervention)**	Ongoing General Education Literacy Lessons
Examples/ non-example cards (e.g., this is a "thing")	Clues and hints about wrapped prize	Personally relevant story about participant	New, untrained, adapted chapters read aloud by researcher	New, untrained, adapted chapters read aloud by researcher	Adapted chapters read aloud by peer tutor (3 versions) in 1:1 tutorial session	Adapted chapters read aloud by peer tutor as needed during literacy lessons
			Participant book with adapted chapter	Participant book with adapted chapter	Participant book with adapted chapter	Participant book with adapted chapters
	9-option Response Board " Help" Prompt	9-option Response Board " Help" Prompt	Response Boards for wh- words " Help" Prompt	Response Boards for wh- words " Help" Prompt	Response Boards for wh- words " Help" Prompt	Response Boards for wh- words " Help" Prompt
		Self-monitoring Sheet	Self-monitoring Sheet	Self-monitoring Sheet	Self-monitoring Sheet	Self-monitoring Sheet

Table 7: (Cont'd)

Pretraining			Baseline	Intervention		
			Participant could ask for help to receive System of Least Prompts	Participant could ask for help to receive System of Least Prompts	Participant could ask for help to receive System of Least Prompts	Participant could ask for help to receive System of Least Prompts
			Wh- word question rules	Wh- word question rules	Wh- word question rules	Wh- word question rules
					Peers asked comprehension questions and delivered SLP Intervention	Gen Ed Teacher asked comprehension questions and delivered the SLP Intervention

Peer-delivered intervention. Peer tutors delivered the system of least prompts intervention using scripted read-alouds of adapted chapters from the book *The Watsons Go to Birmingham – 1963* (Curtis, 1995). Each adapted chapter was taught three times. Three versions of comprehension questions were created so that different comprehension questions were asked each time the intervention was delivered. Materials available to participants during peer-delivered intervention were the same as the materials available to participants during baseline probe sessions (i.e., a notebook of wh- word response boards, a self-monitoring sheet, and a participant book of the adapted chapter). To begin, peer tutors and participants sat next to each other at a table in the general education classroom and intervention materials were laid on the table in front of the participant. The peer tutor introduced the chapter and reviewed intervention procedures as described in baseline probe sessions. Then peer tutors began reading the adapted chapter aloud, pausing at predetermined points in the chapter to ask a comprehension question paired with the adapted chapter. Before each comprehension question was asked, the peer tutor told the participant what kind of question it was and asked the participant to turn to the correct wh- word response board (e.g., *The question is a "who" question. Turn to the "who" board*.). If the participant did not turn to the correct response board within 4 s or turned to the wrong response board, the peer tutor completed the step. Once the correct response board was displayed, the peer tutor asked a comprehension question, and then asked the participant if they were ready to answer or if they wanted help. If the participant asked for help, the peer tutor delivered the next prompt in the system of least prompts intervention.

There were four prompts in the system of least prompts intervention. In the first prompt, a rule for answering the wh- word question (e.g., *When you hear "what," listen for a thing*) and the text in which the correct response was found was read again. In the second prompt, the sentence containing the answer was read again. In the third prompt, the correct answer to the comprehension question was given (i.e., *Listen and I will tell you the answer. The answer is [_____]*). In the fourth prompt, the correct answer was said and shown (i.e., *Watch me and listen. I will tell and show you the answer. The answer is [_____]*. Points to the correct response. *Now, you show it.*) Descriptive verbal praise was provided after all correct participant responses.

If a participant made an incorrect response, the peer tutor delivered an error correction procedure. In an error correction procedure, the peer tutor pointed to the help prompt on the response board and reminded the participant to ask for help if they did not know the answer - not to guess. Then the peer tutor said and showed the correct response and asked the participant to do the same (i.e., fourth prompt). Following an error correction procedure, the peer tutor went to the next section and continued reading.

If the participant did not initiate a response within 4 s of the peer tutor asking a question, the peer tutor delivered a no response procedure. For no response procedures, the peer tutor pointed to the help prompt on the response board and reminded the participant to ask for help when they did not know the answer - not to guess; then delivered the next prompt in the system of least prompts. Both incorrect responses and failure to respond behaviors were scored as errors; however, unlike the error correction procedure in which the peer tutor delivered the controlling prompts and went to the next section in the script, participants continued to have access to the system of least prompts

intervention when they made no response errors. If a participant received an error correction or no response procedure in a session, the researcher and the participant reviewed the procedure for requesting help after the session.

Generalization probe sessions during literacy class. Generalization probe sessions were conducted by peer tutors and the general education teacher three sessions a week during second literacy block in the classroom's silent reading area. Silent reading was one of the four small groups peers without disabilities rotated through after teacher-led reading instruction. The adapted chapters not used in intervention (i.e., chapters six - 15) were used for generalization probe sessions. Three comprehension questions were created for each adapted chapter using a comprehension question template (see Table 5) and one comprehension question was asked each session. Appendix A contains a list of comprehension questions developed for generalization probe sessions.

During generalization probe sessions, peer tutors individually read an adapted chapter aloud to participants at a naturally occurring time during the general education lesson. After the chapter was read aloud by the peer tutor, the general education teacher asked participants with intellectual disability a prepared comprehension question following the same procedures described for baseline and ongoing probe sessions and peer-delivered intervention sessions (i.e., told participant the kind of question that would be asked, asked participant to find the correct wh- word response board, found the correct response board if participant was unable to do so independently) and recorded participants' responses on the data collection sheet. All participant responses were recorded, but only *Text Only Correct* responses and *Independent Correct* responses were graphed. *Text Only Correct* responses were correct responses after participants head only

the text read aloud and included correct responses after the first read with no prompts (i.e., *Independent Correct*), correct responses after the text was read again (i.e., first prompt), and correct responses after the sentence containing the correct response was read again (i.e., second prompt). Modeled correct responses and errors were recorded but not graphed. Modeled correct responses included correct responses after the participant was told or shown the correct response. Errors included wrong answers and failure to initiate a respond within 4 s. The data sheet used for generalization probe sessions is included in Appendix G

Procedural reliability. Procedural fidelity was collected for a minimum of 30% of all study phases. A trained second observer recorded the presence or absence of error during delivery of intervention for the purpose of calculating procedural reliability. The first four steps in the intervention (i.e., introduce the chapter, review and teach vocabulary, introduce the wh-word response boards, and review use of the self-monitoring sheet) were scored as occurring (+) or not occurring (-) each session. The remaining six trials (i.e., one trial for each comprehension question) were scored for the following components: (a) turned to the correct response board, (b) asked the comprehension question, (c) responded with appropriate prompt(s), (d) responded to errors with error correction, (e) responded to no response errors with no response procedure, and (f) delivered descriptive verbal praise for correct responses. If all components of the trial were completed correctly, the trial was scored as occurring without error (+). If one or more of the components was completed incorrectly or omitted, the trial was scored as occurring with error (-). An error in any part of the trial (e.g., peer failed to deliver descriptive verbal praise when participant responds correctly)

resulted in the trial being scored as occurring with error. Procedural fidelity was calculated by dividing number of steps presented without error by the total number of steps delivered multiplied by 100 (Billingsley, White, & Munson, 1980). Criterion for acceptability was no more than one trial with error (i.e., 90%). If criterion fell below 90%, the researcher meet with the peer tutor to review the part of the intervention delivery were the error occurred to ensure the intervention was delivered consistently.

Procedural fidelity also was collected on the general education teacher's delivery of the intervention a minimum of 33% of the generalization probe sessions for each participant during general education reading class. A trained second observer recorded the presence or absence of error during delivery of the system of least prompts intervention for the purpose of calculating procedural reliability. The following steps were scored: (a) gained student attention (e.g., Are you ready for the question?), (b) said the type of question and directed participants to turn to the correct wh-word board, (c) asked the comprehension question, (d) waited 4 s for a response, (e) delivered the system of least prompts as needed, and (f) recorded participant response on data sheet.

Interobserver agreement. A separate interobserver agreement (IOA) was computed for each dependent variable: *Text Only Correct, Independent Correct*, and *Generalized Text Only Correct*. Reliability data on procedural fidelity was collected a minimum of 30% of all study phases for each participant. IOA reliability data on procedural fidelity was computed by comparing the scores for each trial point-by-point. An agreement was recorded if scores for each trial were the same and a disagreement was recorded if scores were different. IOA reliability data were calculated by dividing the number of agreements by the number of agreements plus disagreements multiplied by

100. Criterion for IOA on procedural fidelity was 90% or above. If IOA fell below 90%, the interventionist met with the researcher (or a member of the research team if the interventionist was the researcher) to discuss discrepancies in the delivery of the intervention in order to provide more consistency in future reliability checks.

Data Analysis

Data for the first three dependent variables (i.e., *Text Only Correct, Independent Correct*, and *Generalized Text Only Correct*) responses were summarized in graph form. The *Text Only Correct* graph and the *Independent Correct* graph were visually inspected to identify changes in trend, level, and variability and to determine if a functional relationship existed between the independent and dependent variables. Prediction, verification of prediction, initial effect, and replication of effect were assessed for all participants. The third dependent variable, *Generalized Text Only Correct* responses were correct participant responses during general education class after hearing a different chapter read aloud. *Generalized Text Only Correct* responses included *Independent Correct* responses; however the two dependent variables were graphed separately on a cumulative graph to allow for visual analysis of student progress during reading class on both of these variables.

For the first social validity measure (i.e., peers' attitudes toward including participants with disabilities in literacy class), survey responses collected preintervention and postintervention were compared to identify changes in peers' attitudes (e.g., did more peers indicate on the postsurvey that participants with disabilities should be included in reading class). For the second social validity measure (i.e., stakeholder beliefs about study procedures and outcomes), data were described descriptively (e.g., Three of four

peers indicated they strongly agree with the statement, *Individuals with moderate and severe intellectual disability should be included in reading class*). For the third social validity measure (i.e., peer tutor grades), the researcher asked the general education teacher to identify any changes in peer tutor reading grades over the course of the intervention. If changes in peer tutor grades were found, the researcher inquired of the general education teacher reasons for the changes.

CHAPTER 4: RESULTS

Reliability

Procedural fidelity (PF) data were collected for intervention probe sessions and generalization probe sessions for all participants. During intervention probe sessions, PF data were collected for 100% of the peer-delivered intervention sessions and was 98% (range of 97-100%). PF data were collected for 33% of the generalization probe sessions for the general education teacher during general education reading class and was 100%.

Interobserver agreement (IOA) data were collected on participant responses for all study phases and participants. During peer-delivered intervention probe sessions, IOA data were collected for 32% of sessions and was 100%. IOA data were collected for 33% of the generalization probe sessions during general education reading class and was 100%. Interobserver agreement on procedural fidelity (IOA on PF) was also collected on participant responses during 33% of the peer-delivered intervention probe sessions and was 99% (range of 98-100%). Results of reliability data across phases and participants are reported in Table 8.

Table 8: Reliability Data Across Phases and Participants

	Verla	Robert	Mason	Overall
Procedural Fidelity (PF)				
Peer-delivered Intervention Sessions (peer tutors)	100% (16/16) *m*=97%, range of 90-100%	100% (15/15) *m*=98%, range of 98-100%	100% (15/15) *m*=100%	100% (46/46) *m*=98%, range of 97-100%

Table 8 (Cont'd)

Generalization probe sessions during reading class (general education teacher)	33% (4/12) *m*=100%	33% (4/12) *m*=100%	33% (4/12) *m*=100%	33% (12/36) *m*=100%
Interobserver Agreement (IOA)				
Peer-delivered Intervention Sessions	31% (5/16) *m*=100%	33% (5/15) *m*=100%	33% (5/15) *m*=100%	32% (15/46) *m*=100%
Generalization probe sessions during reading class	33% (4/12) *m*=100%	33% (4/12) *m*=100%	33% (4/12) *m*=100%	33% (12/36) *m*=100%
IOA on PF	33% (5/15) *m*=98%, range of 90-100%	33% (5/15) *m*=100%	33% (5/15) *m*=100%	33% (15/45) *m*=99%, range of 98-100%

Participant Data

Table 9 includes a description of *Text Only Correct* responses, *Independent Correct* responses, and errors for all study phases and participants. Verla answered a total of 168 wh- word questions during the study: 36 during baseline probe sessions, 24 during ongoing probe sessions, 96 during peer delivered intervention, and 12 during generalization probe sessions with the general education teacher during reading class. Robert answered a total of 165 wh- word questions during the study: 36 during baseline probe sessions, 24 during ongoing probe sessions, 90 during peer delivered intervention, and 15 during generalization probe sessions in the general education reading class. Mason answered a total of 171 wh- word questions during the study: 42 during baseline

probe sessions, 24 during ongoing probe sessions, 90 during peer delivered intervention, and 15 during generalization probe sessions in the general education reading class.

Table 9: *Text Only Correct*, *Independent Correct*, and Errors Across Phases and Participants

	Verla			Robert			Mason		
	TOC	IC	ER	TOC	IC	ER	TOC	IC	ER
Baseline Probe Sessions	7 (19%)	7 (19%)	29 (81%)	2 (6%)	2 (6%)	34 (94%)	11 (26%)	11 (26%	31 (74%)
Intervention Probe Sessions	76 (79%)	59 61%)	19 (20%)	65 (72%)	13 (14%)	10 (11%)	67 (74%)	23 (26%)	14 (16%)
Ongoing Probe Sessions	15 (63%)	11 (46%)	9 (38%)	5 (21%)	4 (19%)	19 (79%)	9 (38%)	7 (29%)	15 (63%)
Generalization Probe Sessions	9 (75%	4 (33%)	3 (25%)	9 (60%)	4 (27%)	4 (27%)	2 (13%)	0 (0%)	7 (47%)

TOC = *Text Only Correct* responses, IC = *Independent Correct* unprompted responses, ER = Errors

***Text Only Correct* responses**. The number of *Text Only Correct* responses are displayed in Figure 1. All participants improved the number of *Text Only Correct* responses from baseline to intervention. Verla's *Text Only Correct* responses were low during baseline and increased from 7 to 76 after intervention. Verla also had more *Text Only Correct* responses (i.e., 15) during ongoing probe sessions in which the upcoming chapter used next in the intervention was read aloud. Robert's *Text Only Correct* responses during baseline were low and increased from 2 to 65 after intervention. Robert's *Text Only Correct* responses during ongoing probe sessions were slightly higher than baseline (i.e., 5). Though not immediately after the intervention was introduced, Mason too increased the number of *Text Only Correct* responses from 11 to 67 after intervention. Unlike Verla and Robert, Mason had two fewer *Text Only Correct* responses during ongoing probe sessions (i.e., 9) than baseline.

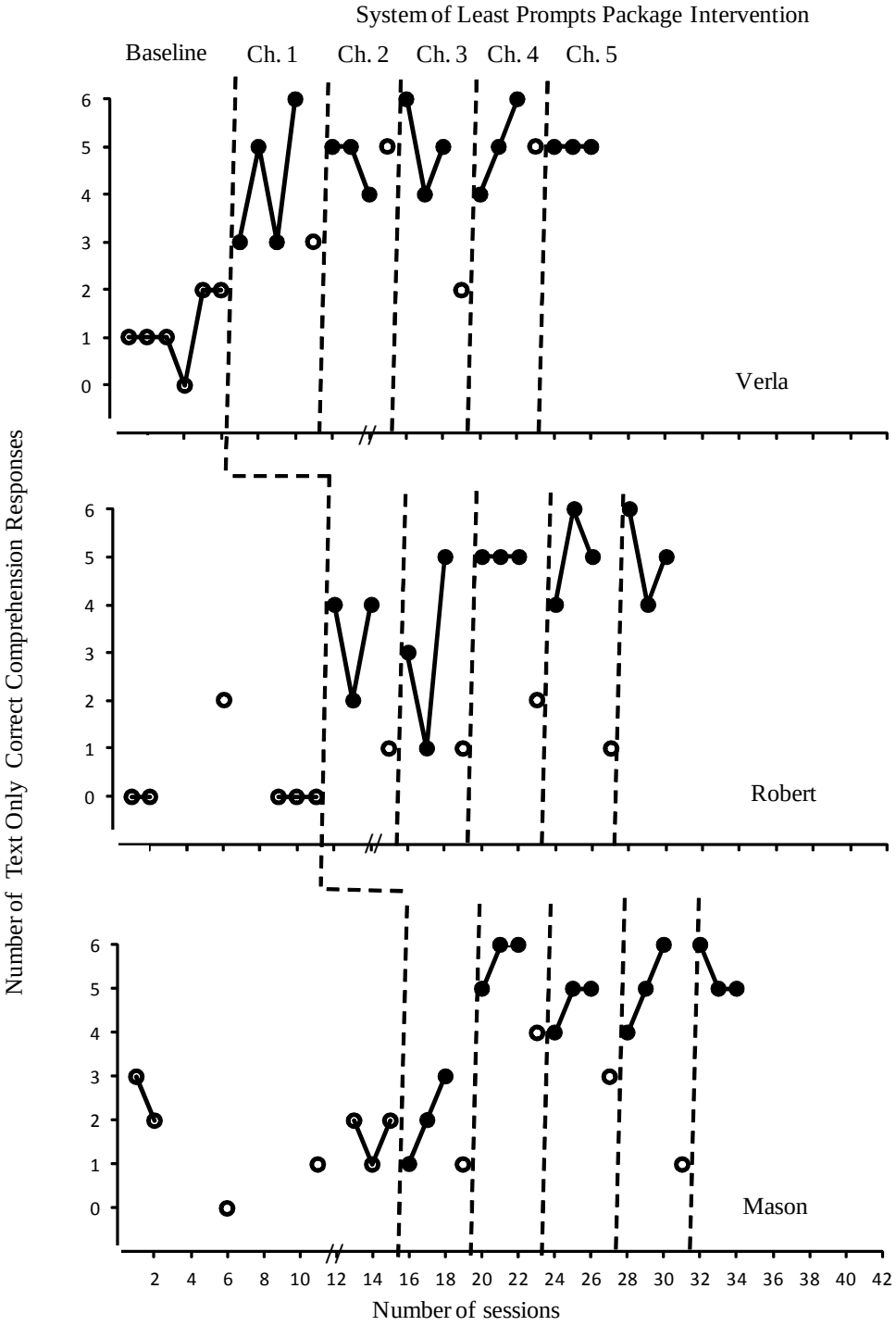

Figure 1. The number of text only correct responses are graphed. Text only correct responses are correct responses after hearing only the text and do not include modeled prompts in which participants were told or shown correct responses. Solid circles respresent correct responses during peer-delivered instruction and open circles represent correct responses during baseline and ongoing probe sessions. A two-week break in instruction due to a holiday break is indicated by two forward slashes.

***Independent Correct* responses**. The number of *Independent Correct* responses for each participant is displayed in Figure 2. Both Verla and Robert increased the number of unprompted *Independent Correct* responses during intervention, but Mason's decreased. During baseline probe sessions, Verla had seven unprompted *Independent Correct* responses. After intervention, the number of unprompted *Independent Correct* responding increased to 59 (i.e., 61%) during peer-delivered intervention and 11 (i.e., 46%) during ongoing probe sessions. Though not as marked as Verla's, Robert also improved the number of unprompted *Independent Correct* responses over baseline levels. During baseline probe sessions, Robert made two (i.e., 6%) unprompted *Independent Correct* responses. After intervention, Robert's number of *Independent Correct* responses increased to 13 (i.e., 14%) during peer-delivered intervention and four (i.e., 19%) during ongoing probe sessions. Unlike Verla's and Roberts, the number of unprompted *Independent Correct* responses for Mason remained unchanged from baseline levels during intervention (i.e., 11) and decreased to seven during ongoing probe sessions.

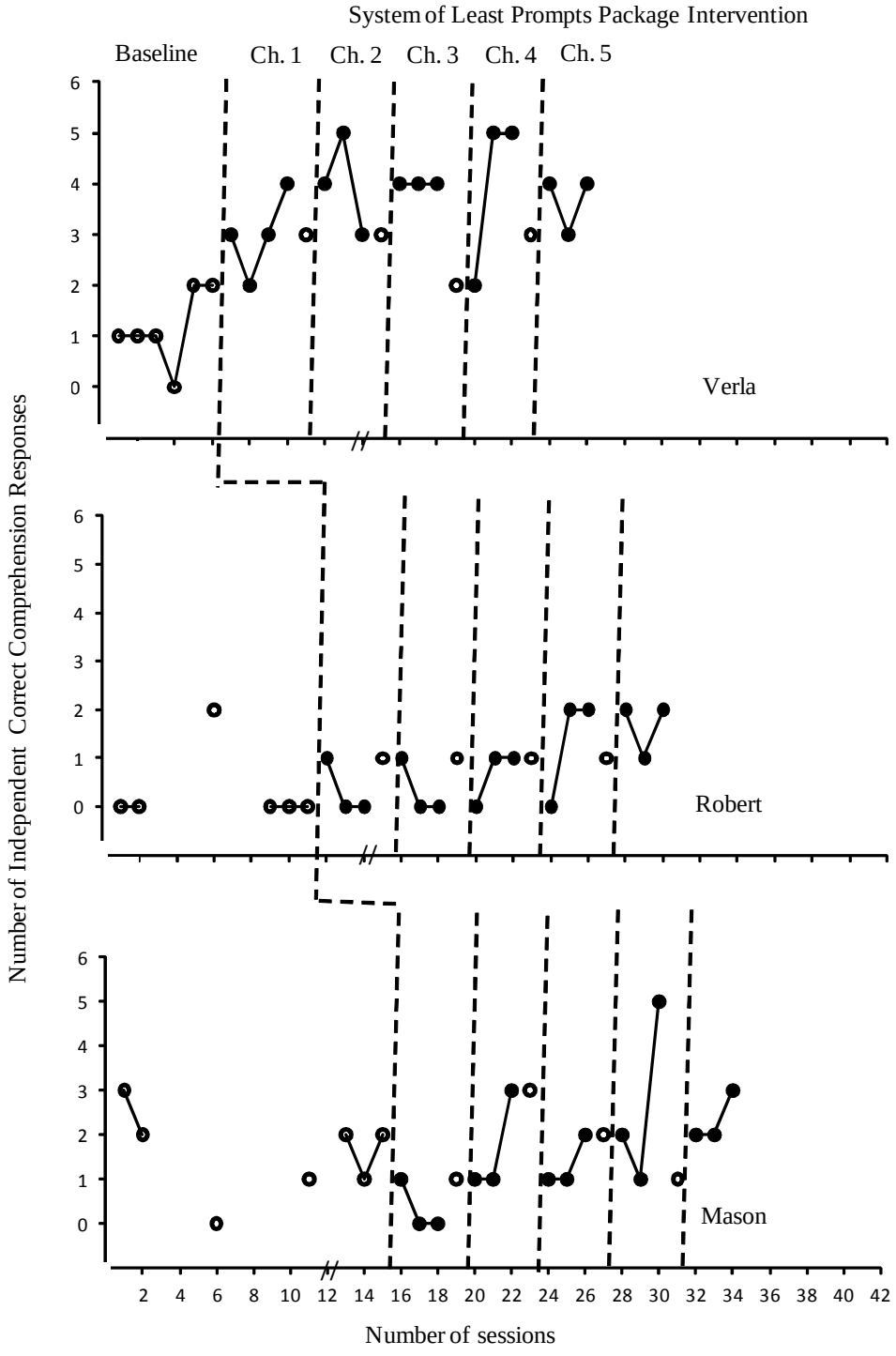

Figure 2. The number of independent unprompted correct listening comprehension responses are graphed. Solid circles respresent participant responses during peer-delivered instruction and open circles represent participant responses during baseline and ongoing probe sessions. A two-week break in instruction due to a holiday break is indicated by two forward slashes.

***Generalized Text Only Correct* responses**. The number of *Generalized Text Only Correct* responses is displayed in Figure 3. Verla had nine (i.e., 75%) *Generalized Text Only Correct* responses after hearing untrained chapters read aloud during reading class. Furthermore, four (i.e., 33%) of Verla's *Generalized Text Only Correct* responses were after the first read (i.e., unprompted *Independent Correct* responses). Like Verla, the number of *Generalized Text Only Correct* for Robert remained high (i.e., 9; 60%) and four responses (i.e., 27%) were unprompted *Independent Correct* responses. For Mason, however, the number of *Text Only Correct* responses during generalization probe sessions in the general education reading class decreased from 11 to two. Furthermore, Mason did not have one unprompted *Independent Correct* response during generalization probe sessions in reading class.

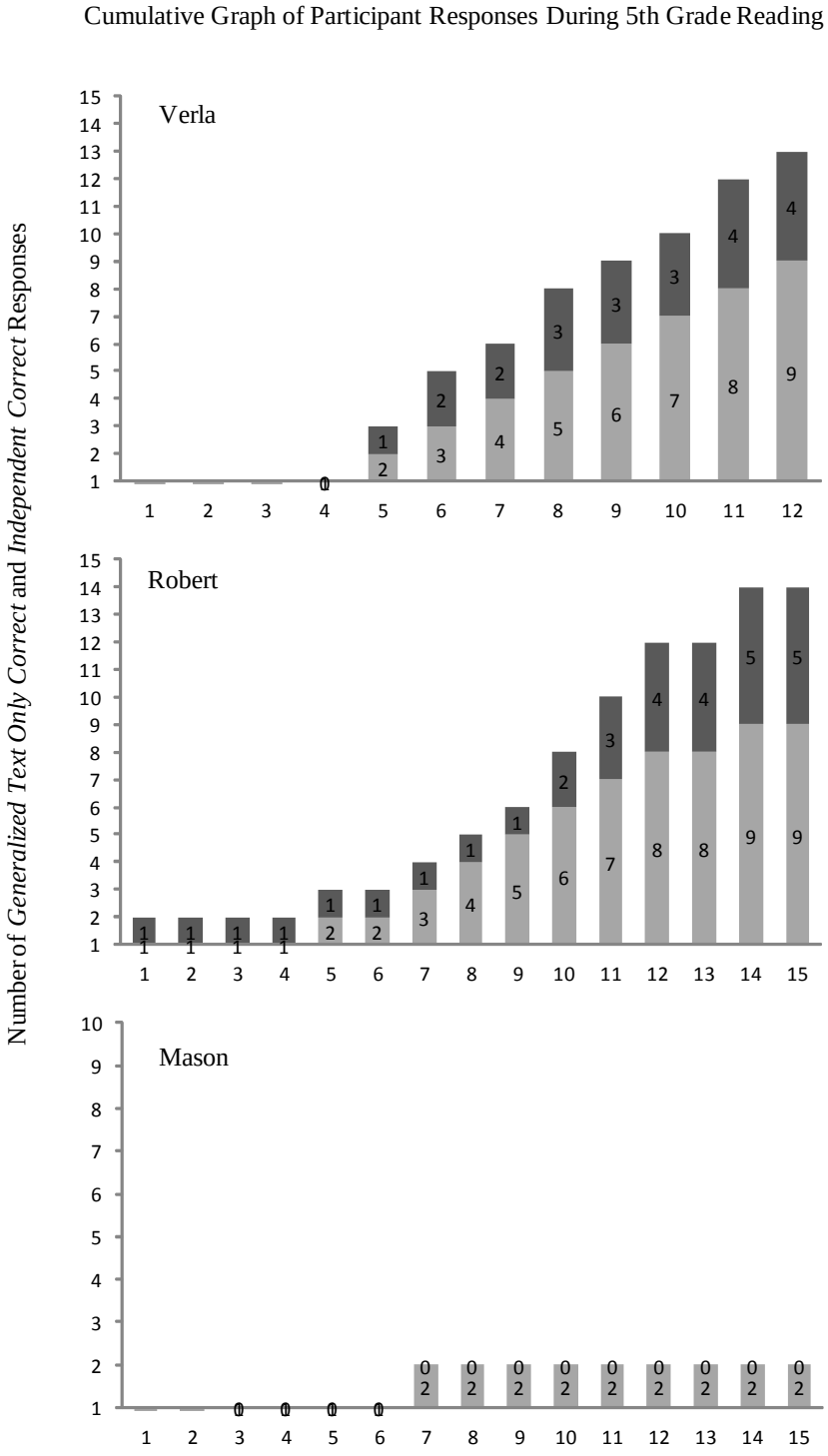

Figure 3. The number of *Generalized Text Only Correct* (graph bar) and *Independent Correct* (black bar) responses are graphed cumulatively. *Generalized Text Only Correct* responses were correct responses after hearing only the text read aloud during fifth grade reading class and did not include modeled prompts. *Independent Correct* responses were unprompted correct responses after the first read.

Inferential and literal recall questions. Of the 90 wh- word comprehension questions created for the intervention, 75 required literal recall comprehension (i.e., the answer was found in the text) and 15 required inference. The type of wh- word question missed by the participants and the percentage of inferential and literal recall questions are described in Table 10. The type of wh-word question missed most often by all participants was *why*. Verla missed 17 comprehension questions during intervention and 53% of them were *why* questions. Robert missed 10 comprehension questions during intervention and 50% of them were *why* questions. Likewise, Mason missed a total of 15 comprehension questions during intervention and 33% were *why* questions. Of the 15 questions Mason missed during intervention, over half (i.e., 8/15; 53%) occurred during the first two intervention sessions. The other seven errors occurred over the next 13 sessions. In addition, the majority of comprehension answered incorrectly by participants were literal recall rather than inferential. Seventy-six percent of Verla's incorrect comprehension responses were literal recall, 70% of Robert's, and 87% of Mason's.

Table 10: Participant Errors During Peer-Delivered System of Least Prompts Intervention

Question Type	Verla	Robert	Mason
Who	11 (12%)	2 (20%)	2 (13%)
What	4 (24%)	1 (10%)	1 (7%)
When	2 (12%)	2 (20%)	3 (20%)
Why	9 (53%)	5 (50%)	5 (33%)
Where	0 (0%)	0 (0%)	4 (27%)
Total Errors	17/96 (18%)	10/90 (11%)	15/90 (17%)
# of Inferential Errors	4/17 (24%)	3/10 (30%)	2 /15 (13%)
# of Literal Recall Errors	13/17 76%)	7/10 (70%)	13/15 (87%)

Social Validity

Social attitude survey. A social attitude survey adapted from a social distance questionnaire by Haring, Breen, Pitts-Conway, Wilson, and Gaylord-Ross (1983) was given to 12 peers without disabilities who attended second literacy block with participants with disabilities before the study began and after the study ended. The same 12 peers completed both the presurvey and the postsurvey. Peers without disabilities responded to statements about their willingness to interact with students with special needs both in the classroom (e.g., I will sit next to a student with special needs in class) and outside the classroom (e.g., I will play with a student with special needs during recess). Survey results are included in Table 11. Data from the presurvey indicate that most peers without disabilities would talk to a student with special needs at school (i.e., *n*=10); thought students with special needs should be included in their reading class (i.e., *n*=10); would sit next to a students with special needs in class (i.e., *n*=11); would help a student with special needs with school work (i.e., *n*=11); and would say hi to a student with special needs (i.e., *n*=11). In contrast, fewer peers without disabilities indicated they would eat lunch with a student with special needs (i.e., *n*=5); liked having students with special needs in their class (i.e., *n*=7); or would play with a student with special needs during recess (i.e., *n*=8). After the study was finished, positive changes in peer attitudes were evident in that all peers indicated they would talk to a student with special needs at school (i.e., *n*=12); most thought students with special needs should be included in their class (i.e., *n*=11); liked having students with special needs in their class (i.e., *n*=10); would play with a student with special needs at recess (i.e., *n*=10); and more indicated they would eat lunch with a student with special needs (i.e., *n*=8). Conversely, one less

peer indicated they would say hi to a student with special needs. The survey instrument used for the presurvey and postsurvey data collection is included in Appendix H.

Table 11: Results from Peer Social Attitude Presurvey and Postsurvey

	Presurvey Peer tutor responses (*N*=12)			Postsurvey *N*=12 Peer tutor responses (*N*=12)			Change
	YES	Maybe	NO	YES	Maybe	NO	↑↓
1. I will talk to a scholar with special needs at school.	10	2	0	12	0	0	↑
2. I think scholars with special needs should be included in my class.	10	2	0	11	1	0	↑
3. I will sit next to a scholar with special needs in class.	11	1	0	11	1	0	no change
4. I will eat lunch with a scholar with special needs.	5	7	0	8	4	0	↑
5. I will help a scholar with special needs with school work.	11	1	0	11	1	0	no change
6. I will be friends with a scholar with special needs.	11	1	0	11	1	0	no change
7. I will say "Hi" to a scholar with special needs.	11	1	0	11	0	1	↓
8. I have seen people with special needs on TV shows or movies.	9	0	3	10	2	0	↑
9. I like having scholars with special needs in my class.	7	4	1	10	2	0	↑
10. I will play with a scholar with special needs during recess.	8	3	1	10	1	1	↑

Adapted from a social distance questionnaire for attitudes of high school students toward handicapped peers (Haring, Breen, Pitts-Conway, Wilson, & Gaylord-Ross, 1983).

Teacher social validity forms. Two special education teachers and one general education teacher completed social validity forms about the study's goals, procedures, and outcomes after the study ended. Special education teachers indicated their level of agreement or disagreement to five statements and the general education teacher indicated his level of agreement or disagreement to eight statements. Teachers selected one of five

responses (i.e., strongly agree, agree, neutral, disagree, strongly disagree) for each statement. Statements and special education teacher responses are included in Table 12 and statements and general education teacher responses are included in Table 13.

Both special education teachers strongly agreed with the following statements: (a) The peer-delivered intervention met the needs of the participants with disabilities; (b) The intervention did not take a lot of my time; (c) The intervention allowed students with moderate intellectual disability to participate more fully in the general education class; (d) I would use this strategy with other students with moderate intellectual disability; and (e) There were benefits for both the participants with disabilities and peer tutors. One special education teacher also wrote in the additional comments section of the social validity form that the students loved their time in the general education class and that the work they did in the general education class carried over to the self-contained classroom.

Table 12: Special Education Teacher Social Validity Data

Survey Question	Response
1. The peer-delivered intervention met the needs of the participants with disabilities.	Strongly Agree
2. The intervention did not take a lot of my time.	Strongly Agree
3. The intervention allowed students with moderate intellectual disability to participate more fully in the general education class.	Strongly Agree
4. I would use this strategy with other students with moderate intellectual disability.	Strongly Agree
5. There were benefits for both the participants with disabilities and peer tutors.	Strongly Agree

Likewise, the general education strongly agreed with the following statements: (a) The peer-delivered intervention met the needs of the participants with disabilities.; (b) The intervention did not take a lot of my time.; (c) There were benefits for both the participants with disabilities and peer tutors.; (d) The intervention allowed students with

moderate intellectual disability to participate more fully in the general education class.; (e) The intervention did not disrupt the learning time of students without disabilities.; (f) The strategy was efficient on promoting student learning.; and (g) I would use this strategy with other students with moderate intellectual disability. The general education teacher also wrote additional comments about the impact of the study for students in the fifth grade general education class.

> The study has had an enormous impact on all the general education students. Many students have shown an interest in becoming a peer tutor and in wanting to help the students with disabilities. General education students have become much more comfortable interacting with the students with disabilities (i.e., seeing them in the hall or recess). It has taught the peer tutors a lot about responsibility and all general education students have see that. Having the peer study has also helped with behavior. One student (who is a peer tutor) that has had behavior/attitude problem in the past, has grown and matured due to the fact she is a peer tutor.

The general education teacher responses are included in Table 13.

Table 13: General Education Teacher Social Validity Data

Survey Question	Responses
1. The peer-delivered intervention met the needs of the participants with disabilities.	Strongly Agree
2. The intervention did not take a lot of my time.	Strongly Agree
3. There were benefits for both the participants with disabilities and peer tutors.	Strongly Agree
4. The intervention allowed students with moderate intellectual disability to participate more fully in the general education class.	Strongly Agree

Table 13 (Cont'd)

5. The intervention did not disrupt the learning time of students without disabilities.	Strongly Agree
6. The peer-delivered intervention was easy to use in the general education setting.	Strongly Agree
7. The strategy was efficient on promoting student learning.	Strongly Agree
8. I would use this strategy with other students with moderate intellectual disability.	Strongly Agree

Peer tutor social validity interviews. After the study was finished, the peer tutors completed a social validity form. They indicated the level of agreement or disagreement to six statements by selecting one of three responses (i.e., yes, maybe, no). All peer tutors indicated yes to the following statements: (a) I liked being a peer tutor.; (b) I would be a peer tutor again.; (c) I would recommend being a peer tutor to my friends.; (d) I think it was important for me to be a peer tutor.; and (e) I learned a lot being a peer tutor. All three peer tutors indicated no for the statement that being a peer tutor was a lot of work. The peer tutor social validity data are included in Table 14.

Table 14: Peer Tutor Social Validity Data

Survey Question	Yes	Maybe	No
1. I liked being a peer tutor.	3	0	0
2. Being a peer tutor was a lot of work.	0	0	3
3. I would be a peer tutor again.	3	0	0
4. I would recommend being a peer tutor to my friends.	3	0	0
5. I think it was important for me to be a peer tutor.	3	0	0
6. I learned a lot being a peer tutor.	3	0	0

Participant social validity interviews. After the study was finished, participants with disabilities completed a social validity form individually with the researcher. The researcher read each question aloud and recorded the participants' level of agreement or disagreement to six statements (i.e., yes, maybe, no). All participants indicated yes to the following statements: (a) I liked being a participant.; (b) I would be a participant again.;

(c) I would recommend being a participant to my friends.; (d) I think it was important for me to be a participant.; and (e) I learned a lot being a participant. Two of three participants responded that being a participant was not a lot of work and one participant indicated that being a participant was a lot of work. The participant social validity data are included in Table 15.

Table 15: Participant Social Validity Data

Survey Question	Yes	Maybe	No
1. I liked being a participant.	3	0	0
2. Being a participant was a lot of work.	1	0	2
3. I would be a participant again.	3	0	0
4. I would recommend being a participant to my friends.	3	0	0
5. I think it was important for me to be a participant.	3	0	0
6. I learned a lot being a participant.	3	0	0

Peer tutor focus group. The researcher held a peer tutor focus group meeting with the three peer tutors after the study was completed. Five questions were asked and each peer tutor had a chance to respond to each question in a round-robin style during the meeting. Their responses were videotaped and transcribed. The questions were (a) What have you learned from your experiences as a peer tutor?, (b) What surprised you the most about being a peer tutor?, (c) How did you benefit from being a peer tutor?, (d) In what ways do you think peer tutoring benefitted students with disabilities?, and (e) What did you like most about being a peer tutor. A complete record of peer tutor responses for each question is included in Appendix L. Overall, peer tutors described satisfaction in peer tutoring, a commitment to social justice for individuals with disabilities, and were aware they were role models for their peers.

Peer tutor grades. After the study was finished, the researcher asked the general education teacher if there were any changes in the peer tutors' reading grades from the

time the intervention began until it ended. The general education teacher reported that there were no changes in the reading grades of the peer tutors involved in the study during the implementation of the study.

CHAPTER 5: DISCUSSION

Question One: What was the effect of a peer-delivered system of least prompts package and read-alouds on unmodeled, text only comprehension responses (i.e., *Text Only Correct*) for participants with moderate intellectual disability?

Explanation of findings. The primary question investigated in this study was the effect of a peer-delivered system of least prompts intervention package and grade-level read-alouds on *Text Only Correct* comprehension responses for participants with moderate intellectual disability. *Text Only Correct* responses were correct responses after hearing the text read aloud in which participants had an equal chance of selecting a correct or incorrect answer. Using text only prompts, participants had only heard the text and were not given model prompts in which they were told or shown the correct response. All participants' *Text Only Correct* responding was low and stable during baseline probe sessions and *Text Only Correct* responses increased immediately after intervention for two participants and after the first chapter for the third participant (see Figure 1), indicating a functional relationship between the peer-delivered intervention package and *Text Only Correct* comprehension responses.

The text only prompts used in this study can be compared to instructional scaffolds used to teach literacy skills and strategies in children without intellectual disabilities (Vacca et al., 2006). Instructional scaffolding provides enough instructional guidance and support for students to successfully use the reading skills and strategies they have acquired in two ways: (a) the application of skills and strategies *at the point of*

actual use during reading and (b) explicit instruction in the development of skills and strategies (Vacca et al., 2006). Depending on how instruction is designed, scaffolding may or may not be explicit. With explicit instruction, students are made aware of the strategy being used, see the strategy modeled, have opportunities to practice using the strategy, and opportunities to apply the strategy in authentic reading situations (Vacca et al., 2006). Coyne et al. (2009) used a combination of explicit instruction and direct instruction to teach listening comprehension to 210 at-risk and average-achieving first-grade students in the Story Read Aloud Program (Baker et al., 2004). In the program participants were taught to listen for specific text elements in different types of books, interact with the teacher about the text (i.e., dialogic interactions), and retell and summarize text. In addition, intertextual connections between the narrative and informational texts in the instructional materials were explicitly highlighted.

In this study, the first text only prompt in the system of least prompts hierarchy contained three instructional scaffolds. First, participants were told the type of wh-question being asked (i.e., *The first question is a "who" question*.) Second, participants were given a rule for answering the wh- word question (e.g., *When you hear who, listen for a person*.) Third, participants were told to listen for particular information as they heard the text again (i.e., *Listen for who was hurt as the text is read again*). Reading the text again in the first and second text only prompts gave participants an opportunity to apply the instructional scaffolds they had been given. By telling participants what to listen for in the text and giving a rules for answering wh- word questions, participants learned to listen for key information as they heard the text read again. In this way, they were not just learning discrete responses to comprehension questions, but also applying

an instructional strategy to the text they heard read aloud to answer comprehension questions.

The *Text Only Correct* dependent variable differs from dependent variables of previous research that included modeled prompts in the system of least prompts package. For example, in the Mims et al. (2009) and Mims et al. (in press) studies, the system of least prompts hierarchy included modeled prompts in which participants were told the correct response (i.e., verbal prompt), told and shown the correct response (i.e., model prompt), and physically guided to make the correct response (i.e., physical prompt). While these modeled prompts helped participants select correct responses to the listening comprehension questions paired with the text, it was unclear if increases in correct responding were due to increased comprehension of the text or from imitating and complying with the instructor. Therefore, the distinction between unmodeled *Text Only Correct* responses and modeled correct responses is an important one. This study sought to strengthen the demonstration of a functional relationship between the system of least prompts intervention package and listening comprehension by recording participants' correct responses after hearing only the text and did not include correct responses after a modeled prompt was given. Because of this, a clearer inference could be made that students were using the text itself to derive the answer.

Another aspect of this study's intervention that strengthened the inference that the change in behavior was due to increased text comprehension was that each data point during intervention was a novel comprehension question; that is, none of the listening comprehension questions were repeated. This also differs from prior research (e.g., Mims et al., 2009, in press) in which participants were asked the same comprehension questions

multiple times. For example, in the Mims et al. (in press) study, participants responded to comprehension questions after hearing read-alouds of adapted biographies for three sessions and the number of correct responses to listening comprehension questions were recorded. Increasing amounts of assistance were given each session until participants selected the correct answer and, if participants selected the wrong answer, the correct response was modeled (i.e., the interventionist said and pointed to the correct response). Because participants were told the correct answers after the first session, correct responses during the second or third sessions could have been due to remembering the correct responses from the first session (i.e., a memorized response). In this study, three sets of comprehension questions were created so that new comprehension questions were asked after each reading. Because participants were not given the answers to the comprehension questions in previous readings, it is more likely that participants selected correct responses based on the text they heard and less likely that they made a memorized response.

Repeating readings are an important part of the shared story methodology (Browder et al., 2009; Swanson et al., 2011). Hearing text read enough times to remember key lines in the text (e.g., repeated story line) provides a way for nonreaders to participate in read-alouds and to answer questions about the story. Participants in this study listened to read-alouds of adapted chapters for three sessions before a new chapter was introduced into the intervention. Three repeated readings is less than most other shared story reading studies (e.g., Mims, 2009). For example, in the Mims et al. (2009) study, participants responded to listening comprehension questions after hearing a read-aloud of a children's book (e.g., *Alexander and the Terrible, Horrible, No Good, Very*

Bad Day; Viorst, 1972) until they met the criterion for correct responses (i.e., 8 out 10 correct responses for three consecutive sessions). As a result, one participant heard the story 18 times before the next story was introduced. Repeated readings are important for comprehension of text (e.g., Swanson et al., 2011; van Kleeck et al., 2006), but in accessing the general curriculum in inclusive settings, it is also important to keep pace with instruction in the general education classroom where instruction may be delivered at a faster pace. Participants in this study were able to demonstrate gains in listening comprehension after hearing the adapted chapters three times. These results are similar to the results found by Hudson et al. (2011) in which participants improved their comprehension after hearing adapted science and social studies chapters three times in an inclusive fourth grade class. While acknowledging the importance of repeated readings, this research suggests that participants with moderate intellectual disability can be successful with fewer repeated readings even when they are responding to novel questions and listening to read-alouds of grade-level adapted academic text.

Question Two: What was the effect of a peer-delivered system of least prompts package and read-alouds on independent unprompted correct listening comprehension responses (i.e., *Independent Correct*) for participants with moderate intellectual disability?

Explanation of findings. A second question asked in this study was the effect of a peer-delivered system of least prompts intervention package and grade-level read-alouds on independent unprompted correct listening comprehension responses (i.e., *Independent Correct*). *Independent Correct* responses were correct responses after the first reading of text with no rereading of the text from the interventionist. For all

participants, *Independent Correct* listening comprehension responses were low or stable during baseline and for Verla, *Independent Correct* responses increased following the introduction of the intervention package. In contrast, Robert's independent unprompted correct responses did not increase from baseline levels until the twelfth session of intervention and Mason's did not improve over baseline levels.

These results demonstrate a weaker functional relationship between the system of least prompts intervention package and increased *Independent Correct* listening comprehension responses. The lack of increase for two of the participants is disappointing, but not surprising. The dependent variable measured independent unprompted correct responses to comprehension questions after the first reading of the adapted chapter. This dependent variable is similar to read-aloud interventions used with students with milder disabilities or at risk for disabilities (for a review of this literature, see Swanson et al., 2011) who also have difficulty getting the correct answer after hearing a text read aloud once. For example, Bygrave (1994) and Morrow (1984) found no difference in comprehension outcomes for children at risk for reading difficulties who were read one short story per day and asked questions aimed at increasing comprehension and memory skills over a 23-week period than the children in the control group.

Another explanation for the lack of immediate change in the level of *Independent Correct* responding for two participants may lie in how stimulus control is transferred in the system of least prompts strategy when the strategy is used to teach a complex behavior like comprehension of text. In the system of least prompts, increasing amounts of assistance (i.e., prompts) are typically given until participants select the correct response. When the system of least prompts is used to teach listening comprehension to

nonreaders, the prompts provide opportunities for students to hear the text read multiple times and each subsequent reading focuses the amount of text read (e.g., first the paragraph is read again, then the sentence). As stimulus control is transferred from the prompts in the hierarchy to the naturally occurring stimulus (i.e., the comprehension question), the prompts are no longer used by participants and are self-faded. Robert's and Mason's data indicate that they continued to need prompts to select correct responses when asked comprehension questions about the text they heard. In other words, the transfer of stimulus control was not yet accomplished for these students and the prompts had not been self-faded. As the intervention progressed, however, they made more correct responses after hearing text only prompts and needed fewer modeled prompts. These results indicate that the transfer of stimulus control using the system of least prompts may take more time for some students and some students may continue to need the support of text only prompts to answer comprehension questions.

To facilitate independent responding, the use of other strategies in conjunction with the system of least prompts may be beneficial. One strategy used to teach independent responding of wh- word questions for students with disabilities is to teach rules (Secan, Egel, & Tilley, 1989; Mims et al., in press). For example, Secan et al. (1989) found students with autism generalized skills in answering wh- word questions (i.e., what, how, and why) to new storybook questions when a relevant cue was visible. In another study Mims et al. (in press) found a rule for answering wh- questions (e.g., *When you hear what, listen for a thing*) inserted in the first level verbal prompt of system of least prompts, helped three of four participants with severe developmental disabilities answer more questions correctly after listening to a read-aloud of new, untrained

biographies during ongoing probe sessions than during baseline probe sessions. In this study, two participants answered more questions correctly during ongoing probe sessions with the upcoming chapter used next in the intervention, but one student did not. For some students, perhaps teaching one type of wh- word rule at a time might enhance independent responding.

Teaching wh- word concepts is another strategy that may improve independent responding for students learning to answer wh- word questions. In an action research study with six young adults with intellectual disability and Down syndrome, Morgan, Moni, and Jobling (2009) found that when participants answered wh- word questions incorrectly, it was unclear if participants did not comprehend the text read aloud or if participants did not understand the question asked. The researchers implemented an intervention that focused on developing the participants' understanding of the meanings of the question words *who*, *where*, *what*, *when*, *why*, and *how*. The researchers grouped the question words into levels based on Bloom's taxonomy of comprehension (Bloom et al., 1956). For example, *who*, *where*, and *when* were categorized as level one or literal recall questions; *what* was categorized as level two or sequencing questions; and *how* and *why* were categorized level three or cause and effect questions and included feelings, attitudes, and behaviors. Photographs, posters, murals, written displays, and word prompts were used to teach the wh- word concepts. The word prompts, called "Tell About" words, were paired with the wh- words to describe the wh- word concept (e.g., who *tells about* a person; what *tells about* a thing). The researchers found that comprehension of text improved for participants following instruction on wh- word concepts and that participants learned some of the wh- word concepts before others (i.e.,

literal recall before sequencing). As a result, the researchers taught *who*, *where*, *what*, and *when* wh- words before *how* and *why*.

In this study, participants were pretrained on wh- word concepts before the system of least prompts intervention package to ensure they understood the wh- word question being asked. Concepts for each wh- word were taught using direct instruction of the wh- word concepts. Participants were shown examples of the wh- word concept (i.e., "This is a *who*" for a picture of a girl) and nonexamples (i.e., "This is not a *who*" for a picture of a car). The wh- words were taught in order (i.e., who, when, where, what, why), so that wh- words that required literal recall were taught before wh- words that required higher levels of comprehension. Both Verla and Robert met criteria for each wh-word concept in two sessions, but Mason required six sessions to meet the criterion for *what*. The use of direct instruction to teach wh- word concepts along with explicit strategy instruction of wh- word question rules during the system of least prompts intervention package illustrates how teaching methods can be combined to teach comprehension of text to students with moderate intellectual disability. A question for future research is whether additional training in these rules might increase independent responding or if another strategy, like teaching one wh-word rule at a time, is needed.

Question Three: Did listening comprehension skills acquired during instruction generalize to the general education reading class (i.e., *Generalized Text Only Correct*)?

Explanation of findings. The third question asked in this study was the effect of peer-delivered instruction on comprehension responses during general education reading class (i.e., *Generalized Text Only Correct*). *Generalized Text Only Correct* responses

were the same as *Text Only Correct* responses in that participants heard only the text read aloud and had an equal chance of selecting the right or wrong answer. *Generalized Text Only Correct* responses also did not include modeled prompts in which participants were told or shown the answer, but did include the repeated readings by the general education teacher when the student requested more help. The read-alouds used in the generalization probe sessions were of new chapters not previously used during intervention and a new wh- word question was asked after each session.

Data from the generalization probe sessions are mixed. For Verla, G*eneralized Text Only Correct* responses improved from zero correct responses the first week to three *Generalized Text Only Correct* responses for all subsequent weeks - the maximum number possible. Moreover, with the exception of the first week, Verla answered at least one comprehension question correct on her own with no prompts (i.e., *Independent Correct*). In comparison, Robert also answered questions correctly during generalization probe sessions with text only prompts, but few of these correct responses were on his own with no prompts. The exception occurred during the fourth week of intervention (i.e., twelfth session), when he answered all three comprehension questions correctly with no prompts (i.e., *Independent Correct*). Mason continued to need modeled prompts in which the answer was stated or shown, but as the intervention progressed, he made fewer errors. En pointe, during the first two weeks of generalization probe sessions, Mason made an error in four of six questions, but during the last week of intervention he made one error and answered correctly with a model prompt for the other two questions.

Previous researchers have noted the importance of evaluating the ability of participants to generalize skills learned during intervention to novel situations in the

general education classroom (e.g., Jameson et al., 2008). In this study, all instruction took place in the general education class. The generalization target was generalization across people by having the general education teacher ask the question. This also required generalization across content because the chapters from the book *The Watsons Go to Birmingham - 1963* (Curtis, 1995) were different from the chapters used during intervention. Other studies (Jimenez et al., in press) have had the general education teacher involved in the intervention. For example, in the Jimenez et al. (in press) study, the general education science teacher directed the KWHL (i.e., **K**=what do you **K**now?; **W**=**W**hat do you want to know? **H**=**H**ow will you find out?; **L**=what did you **L**earn?) activity during a middle school science inquiry lesson and students with moderate intellectual disability completed their KWHL charts with peer tutors. This is the first study to see if students could generalize academic responses from peers to the general education teacher.

Collecting reliable generalization data on academic skills in inclusive settings requires preplanning and collaboration with the general education teacher. In this study, five steps were taken to plan for generalization data collection before the study began. First, to maintain continuity between the literature adapted for intervention and the academic content taught during the general education reading class, the general education teacher and researcher selected a novel the general education students would be reading during the time of the study. Second, the researcher adapted the chapters not used in the peer tutoring intervention (i.e., chapters six - 15 of *The Watsons Go to Birmingham - 1963,* Curtis, 1995) and created three generalization questions paired with each adapted chapter using the wh- word question template and the general education teacher asked

one question a session. Third, the researcher prepared a 3-ring binder of student response boards organized by wh- word tabs identical to the response boards participants used during intervention, but with the content for the generalization chapters. Fourth, the researcher trained the general education teacher to deliver the intervention prompts and record participant responses on a data sheet. Fifth, the researcher conducted weekly fidelity checks on the general education teacher's delivery of the intervention and provided feedback and support as needed. It should be noted that the general education teacher asked peer tutors different from the peer tutors who delivered the intervention to read aloud the adapted text from the generalization novel just prior to asking these questions. This typically occurred at the same time in the class other students were reading the non-adapted novel silently or rotating through four learning centers to complete assignments related to the novel they were reading. Thus, while the person posing the questions and content differed from the intervention, salient stimuli (e.g., chapters from the same novel, comprehension questions developed from the same question template) in both the training and generalization settings were used to facilitate generalization (Stokes & Baer, 1977).

Questions Four, Five, & Six: Did peers' attitudes about students with disabilities improve after students with moderate intellectual disability attended reading class? Did stakeholders rate the procedures and outcomes as important for students with moderate intellectual disability? Did peer tutors' reading grades change during the study's implementation.

Explanation of findings. Social validity is how well teachers, students, parents, and even those that pay taxes to support public education, understand and appreciate an

intervention (Wolf, 1978). In other words, social validity answers the "so what?" question after an intervention is finished. Wolf (1978) suggested the social validity of a study in applied behavior analysis should be evaluated in three ways: the social significance of the behavior, the appropriateness of the procedures, and the social importance of the results (Cooper, Heron, & Heward, 2007). One way to acquire social validity measures is to ask the stakeholders involved to give their opinions about the goals, procedure, and outcomes of the intervention. Stakeholders are individuals who are directly involved (e.g., participants, teachers), indirectly involved (e.g., parents), members of the immediate community (e.g., peers, friends), or members of the extended community (e.g., people who do not know the participant). A common way to measure social validity is to ask stakeholders to complete interviews, questionnaires, or rating scales regarding their beliefs about the intervention or study. When selecting stakeholders, it is important to remember that subjective opinions often do not correspond with actual behavior and to assess not just the individuals who are likely to approve of the study.

According to Schwartz and Baer (1991), the ultimate purpose of social validity assessments is to inform and guide decisions about the development and applications of programs. Social validity measures are important for any study, but were especially important for this study due to the fact that the researchers were evaluating an intervention to teach comprehension in the general education classroom to students with moderate intellectual disability. In this study, social validity measures were collected directly from the stakeholders involved (i.e., teachers, peers without disabilities, peer tutors, and participants with disabilities) using social validity forms, interviews and in-depth interviews. All stakeholders strongly agreed with the importance of the

intervention's goals, procedures, and outcomes, but most indicative of the social validity of this study was the determination of the general education teacher and peer tutors to continue the intervention after the study ended. The fact that the general education teacher and peer tutors took steps to ensure the intervention continued is evidence of the high value they placed on the content taught in this intervention.

In addition to the social validity information acquired from stakeholders, peers without disabilities completed a presurvey and postsurvey about their willingness to interact with peers with disabilities in class and school. Comparisons of the two surveys indicate that peers without disabilities grew more willing to interact with peers with disabilities after the study was finished. In addition, a focus group meeting was held with the peer tutors to explore in-depth their experiences after the study was finished. This information is important for gaining greater understanding regarding the impact of peer tutoring in a study such as this where peer tutors are responsible for teaching academic skills to students with intellectual disability in the general education classroom. The focus group interview sought to discover why peer tutors think peer tutoring is important and how the experience changed their beliefs about their fellow peers with disabilities. These peer tutors are the future parents, leaders, and teachers of individuals with disabilities and experiences such as peer tutoring can impact how they view individuals with disabilities the rest of their lives.

Overall Contributions to the Literature

These outcomes make several unique contributions to the research. First, this study adds to the growing number of experimental studies that demonstrate the effectiveness of peer tutors for teaching academic skills to students with moderate and

severe intellectual disability within the context of general education (e.g., Collins et al., 2001; McDonnell et al., 2000, 2001; Jameson et al., 2008). Peer tutors have taught a variety of academic skills in the general education classroom, including letter writing (Collins et al., 2001), spelling (McDonnell et al., 2000), and health and art key word definitions (Jameson et al., 2008). Recently, researchers have used peer-delivered instruction to teach learning targets taken from grade-level academic content (e.g., Jimenez et al., in press; Hudson et al., 2011). For example, in their study, Jimenez et al. (in press) used peer tutors without disabilities to teach five middle school students with moderate intellectual disability to identify science vocabulary (e.g., technology, energy, continents) and science concepts (e.g., kinetic energy is the energy of motion) from the sixth grade science text. Similarly, Hudson et al. (2011) used peer tutors and read-alouds of adapted science and social studies chapters to teach two elementary students with moderate intellectual disability and one student with moderate intellectual disability and severe motor disabilities listening comprehension. In both of these studies, the academic content was taken from the academic grade-level content peers without disabilities were taught. Findings from this study add additional support for the use of peer tutors for teaching grade-level content in the general education classroom.

The elementary-aged peer tutors in this study used a script to deliver the system of least prompts intervention package. With the exception of the Collins et al. (2001) study that taught peer tutors to use the system of least prompts to teach letter writing to high school students with moderate intellectual disability, most other inclusive academic studies have taught peer tutors to implement a constant time delay instructional strategy. The use of scripts is also not common. Only two studies (e.g., Jameson et al., 2008;

Wolery et al., 1994) were found in the literature that provided peer tutors scripts to deliver the intervention and both used constant time delay in the intervention. For example, in a study with elementary-aged peers, Wolery et al. (1994) taught 13 elementary-aged students from the second and fourth grade to use constant time delay instruction to teach three students with cognitive disabilities to read sight words or identify correctly spelled words. The constant time delay instructional script was printed on the back of each instructional stimulus and peer tutors relied on the script to deliver the constant time delay intervention. Similarly, Jameson et al. (2008) taught three middle school students to embed constant time delay instruction during health and art class to teach three students with significant cognitive disabilities the effects of smoking tobacco on the body or definitions related to hand-building ceramic forms. Peer tutors used a written constant time delay script to teach one set of three vocabulary word definitions to each student. For a second set of three definitions, peer tutors were given the materials (i.e., word cards and definitions) but no instructional script. The researchers found that peer tutors were able to deliver embedded constant time delay instruction with and without a script. Given the results of Jameson et al., (2008), future research should evaluate if peers can deliver the system of least prompts intervention without a script. One way to do this might be to prepare the adapted text like the text used for the generalization probe sessions in this study. Different colored highlighters were used to indicate the text that was to be read for the prompts. Brackets were placed around the text to be read for the first prompt with a yellow highlighter and the sentence to be read in the second prompt was underlined with a green highlighter.

This study also contributes to the research by demonstrating the use of an instructional model for teaching comprehension of text to students with moderate intellectual disability in the general education classroom. While comprehension of text is necessary for most academic learning, instructional models for teaching comprehension of text for students with moderate and severe intellectual disability in the general education classroom are few (Hudson et al., 2011). This study used the system of least prompts with read-alouds of grade-level adapted literature to teach listening comprehension of text. The shared story reading method in which the interventionist reads the story aloud, poses comprehension questions, and uses a system of prompts to promote correct responses has been effective in teaching comprehension in self-contained settings (e.g., Browder, Mims, et al., 2008; Mims et al., 2009, in press). Like the research conducted in self-contained settings, this study found the shared story methodology (i.e., read-alouds) and the system of least prompts strategy to be effective in teaching comprehension for students with moderate intellectual disability in the general education classroom. Furthermore, this research found that instructional scaffolds and repeated readings of the text provided participants the support they needed to answer novel comprehension questions correctly when they heard text only prompts. In addition, because the system of least prompts intervention package was delivered by peer tutors within the context of ongoing literacy instruction, the intervention blended into the milieu of the classroom while others did center-based activities related to the book they were reading.

In all of the shared story reading literature with this population, the system of least prompts has been one part of an intervention package to teach participation skills

(e.g., turn the page; find the title) and comprehension together (e.g., Browder, Mims, et al., 2008) or listening comprehension alone (e.g. , Mims et al., 2009, in press). Typically, the system of least prompts provides increasing assistance for a student to make a motor response (e.g., completing the steps for making a sandwich, selecting the correct response card from an array).The prompts are usually also delivered on a preset teacher schedule (e.g., after waiting 4 seconds for a response). In contrast, when applied to listening comprehension, the prompting hierarchy used in this study and in Mims et al. (2009, in press) simplified the amount of information the participant had to identify the answer. For instance, the teacher rereads a portion of the text to see if the student can identify the answer. If the student still needs help, the teacher rereads the sentence containing the answer. If the student still needs help, the teacher rereads this sentence while pointing to the correct answer in an array of options. The results of this study indicate that instructional scaffolds (i.e., statements about the type of wh- word question asked, statements about specific things to listen for in the text, and rules for answering wh-questions) delivered within text only prompts in the system of least prompts helped participants improve their correct comprehension responses. This is a significantly different from past research in which participants were given modeled prompts to answer comprehension questions.

In addition to instructional strategy instruction, participants in this study were taught to self-monitor their independent unprompted correct responses. This combination makes an additional contribution to the research. Self-monitoring has been recognized as the initial step in self-management training and is an important characteristic to promote self-determination (Agran, 1997; Wehmeyer & Schwartz, 1998). Despite the importance

given self-monitoring, few studies have been conducted in inclusive settings to evaluate the effects of self-monitoring on academic or study skills for students with moderate and severe disabilities (Ganz, 2008; Gilberts et al., 2001). In this study, students were pretrained to use a self-monitoring sheet to track their independent unprompted correct responses during peer-delivered instruction. Before delivering the intervention, peer tutors reviewed the self-monitoring procedure and reminded participants to make a mark on their self-monitoring sheet after they made an independent unprompted correct response if they failed to do so, on their own. In addition, after peer-delivered instruction, peer tutors reviewed the number of independent unprompted correct responses the participant with disabilities had made during the session and counted how many more were needed before earning a special prize. All three participants demonstrated excitement to complete their self-monitoring sheet. Verla had the most independent unprompted correct responses (*n*=59/96) during intervention and therefore had the most opportunities to use her self-monitoring sheet. The use of self-monitoring, however, may have been most effective for Mason. Mason had an opportunity to use his self-monitoring sheet during peer-delivered intervention at least once during weeks 2-5 and he kept his pencil poised to make another "X". While self-monitoring was only one part of Mason's intervention package, his excitement at completing his self-monitoring sheet did coincide with an increase in independent unprompted correct responses (*Independent Correct*), albeit small. While these data are promising, more research is needed to evaluate the effect of self-monitoring on learning for these students.

The prompts in the system of least prompts were also self-paced. In prior literature, researchers have used self-paced instruction to improve a variety of skills

including problem solving skills (Agran, Blanchard, Wehmeyer, & Hughes, 2002) and study planning skills (Palmer et al., 2004), access to the general curriculum (Lee, Wehmeyer, Palmer, Soukup, & Little, 2009), transition goals (Agran & Wehmeyer, 2000), active student participation in general education (Agran, Wehmeyer, Cavin, & Palmer, 2008), skills and strategies needed to be successful in postsecondary education (Finn, Getzel, & McManus, 2008), and improved job performance (McGlashing-Johnson, Agran, Sitlington, Cavin, & Wehmeyer, 2003). In all of these studies, participants of various ages and disabilities were taught to set personal goals, develop an action plan, implement the plan, and adjust goals and plans as needed (Self-Determined Learning Model of Instruction, SDLMI; see Wehmeyer, Palmer, Agran, Mithaug, & Martin, 2000 for a description of the SDLMI). This study makes a unique contribution to this literature by demonstrating a way for participants with moderate intellectual disability to direct their own instructional assistance. In this study, participants with disabilities let a peer reader know how much assistance they needed to answer listening comprehension questions.

Another contribution of this research is the benefits experienced by peer tutors without disabilities. In addition to the academic and social gains described in the literature for students with moderate and severe disabilities (Carter et al., 2005; Carter & Kennedy, 2006), researchers have noted benefits for peer tutors (Hudson et al., under review; Jimenez et al., in press; McDonnell et al., 2000, 2001). For example, Jimenez et al. (in press) found the science grades of five peer tutors stayed the same for one tutor and improved for the other four when they provided embedded constant time delay instruction to students with moderate intellectual disability. Likewise, McDonnell et al.

(2000) found the mean spelling performance remained very high for peers participating in Partner Learning for students with severe intellectual disability. Benefits for peers involved in this study were also noted. First, the general education teacher reported that the study impacted all general education students in the class, not just the students involved in the study as peer tutors. The students who were not peer tutors in this study demonstrated increased interest in helping students with disabilities. In addition, the teacher reported students became more comfortable interacting with students with disabilities in the hall and at recess. Likewise, the teacher stated that being a peer tutor had helped teach the peer tutors about responsibility. In particular, the teacher talked about how one peer tutor with past behavior problems had grown and matured due to her involvement in the study. Finally, the teacher reported that all peer tutors continued to make high grades in reading.

Peer tutors also described some benefits for themselves from their peer tutoring experience during the focus group discussion. For example, Rocky stated she benefitted from learning that she can make a difference in the lives of people with disabilities and Michael reported that he benefited from the realization that people with disabilities are the same as [people without disabilities] and that nothing should keep them from learning. In addition, Brittany described an increased understanding of empathy for others as a benefit of peer tutoring.

Limitations

There are a number of limitations of this study that should be noted. One limitation of this study is that a member of the research team (i.e., the lead researcher) recorded participant response data during instructional sessions. Peer tutors needed to

make decisions quickly based on participant responses (e.g., which prompt level to deliver, when to move to the next section of the adapted chapter, when to deliver descriptive verbal praise). Given the peer tutors' young age (i.e., 10-11 years), the complexity of the intervention, and the importance of recording accurate data, the interventionist recorded participant responses during instructional sessions. The peer tutors implemented the intervention with high fidelity (i.e., *m*=98%, range of 97-100%), but because of the interventionist's presence, the fidelity with which the peers would implement the session without adult supervision is unknown and remains an area for future research to evaluate.

A second limitation of this research is that baseline and probe sessions were conducted by the researcher and peer tutors conducted the intervention sessions. Because different interventionists conducted these sessions, it cannot be determined how much impact the presence of the peer or peer tutoring had on participants' with disabilities requests for help. In the future, researchers might want to train peer tutors to conduct the baseline probe sessions as well as the intervention sessions. For example, in their study, Collins et al. (1995) taught high school peer tutors to deliver both probe and instructional sessions to teach generalized cooking product labels to students with moderate intellectual disability using constant time delay instructional strategy. Teaching peer tutors to deliver both the probe and instructional sessions, however, would require that peer tutors understand the differences between the two study phases. For example, peer tutors would need to deliver descriptive verbal praise following correct participant responses during intervention but only general verbal praise for work behaviors during baseline probe sessions.

A third limitation of this study is the lack of baseline data collected on participants' responses to read-alouds of adapted chapters during generalization probe sessions. Without baseline data, it is not possible to rule out alternate hypotheses for student learning during generalization probe sessions. For example, an alternative hypothesis for gains in participant responding is that participants already knew the correct responses to the listening comprehension questions before the generalization probe sessions started. Without baseline data to indicate the contrary, a causal relationship between the intervention and gains in comprehension responses during generalized probe sessions cannot be inferred. Future research should acquire baseline data on generalization responses during general education literacy class before intervention begins.

A fourth limitation of this study is that participants were not given self-monitoring sheets to use during general education literacy class so it is unknown if participants would have generalized the use of the self-monitoring sheet or if self-monitoring would have promoted their independent unprompted correct responses during literacy class. In this study, participants with disabilities made few independent unprompted correct responses during generalization probe sessions. Future research could evaluate if students generalized the use of self-monitoring by giving participants a self-monitoring sheet during generalization probe sessions and if the use of self-monitoring would increase unprompted correct responses.

Recommendations for Future Research

The participants in this study were all English language learners for whom English was their primary language. For many students with disabilities, however,

English is not their primary language. One area for future research would be to evaluate the effectiveness of this intervention for students with disabilities for whom English is a second language. In a recent study, Spooner et al. (2009) evaluated the effects of a shared story intervention for teaching emergent literacy skills to a 6-year-old student with moderate intellectual disability whose native language was Spanish. A paraprofessional whose native language was also Spanish taught emergent literacy skills (e.g., point to/say title, orient book, open book) and comprehension skills (e.g., answer comprehension questions about the story) during culturally contextual story-based lessons using read-alouds of popular storybooks. The paraprofessional used read-alouds from three different storybooks to gradually shift instruction from Spanish to English. The read-alouds were in Spanish (i.e., *Los Cinco Patitos*, Paparone, 1995), in English and Spanish (*El Dragon*, Ende, 2001), and in English only (*Abuela*, Dorros, 1991). The researchers found that using culturally contextual read-alouds delivered by a paraprofessional whose culture was similar to the student's and the system of least prompts intervention package was effective in improving the emergent literacy skills of a young English Language learner. Peers without disabilities who are fluent in another language or from a diverse culture could be paired with students with intellectual disabilities who have similarly diverse backgrounds to teach listening comprehension skills in the general education classroom.

Another area for future research is the need for more studies using a dependent variable like the one used in this study. An issue of past research that has hindered the practice of shared story reading for teaching comprehension for students with moderate and severe disabilities from being evidenced-based is that the dependent variables used in the shared story interventions have varied. This study used a dependent variable that

included text only unprompted correct responses to measure gains in listening comprehension. This dependent variable is important for strengthening the functional relationship between the system of least prompts intervention and correct listening comprehension responses. Moreover, this study also included a dependent variable that measured gains in independent unprompted correct comprehension responses which is important when making comparisons with the comprehension literature for students with milder disabilities, at risk for disabilities, and without disabilities.

A third area for future research is the need for more studies in which students with disabilities direct the amount of help they receive from peer tutors (i.e. student-directed instruction). In this study, participants with disabilities were taught to ask for help when they needed it and to monitor their *Independent Correct* responses before the study began. During the intervention, peers responded to requests for help from the participants with disabilities by delivering prompts accordingly. Future research could further evaluate the impact of student-directed learning on gains in academic content in comprehension and other academic areas for these students. A final area for future research is the need to refine the intervention to increase independent responses. For example, would teaching one Wh- word question rule at a time have increased independent responses?

Implications for Practice

The first implication for practice is that comprehension of adapted grade-level text can be improved for students with moderate intellectual disability using a peer-delivered system of least prompts package. This finding is an exciting one for teachers who want to improve listening comprehension for students with intellectual disability in

the general education classroom who are nonreaders or who read significantly below grade level. In this study, all three participants improved the number of *Text Only Correct* comprehension responses after peer-delivered system of least prompts intervention with adapted grade-level read-alouds. The peer-delivered intervention was incorporated into the regular routines of the fifth grade literacy block and all stakeholders rated the intervention's goals, outcomes, and procedures as important. The ultimate goal of most interventions delivered in general or special education settings alike is for the stakeholders involved to continue the intervention after the intervention ends. In this study, the general education teacher and peer tutors continued the intervention with students with disabilities after the study ended. This action on the part of the major stakeholders involved in this study is a testament to the value stakeholders have for the content being taught and the importance of learning in inclusive settings for students with disabilities.

A second implication for practice is that listening comprehension can be improved using text only prompts and instructional scaffolds within the prompt hierarchy of the system of least prompts. Students were told what kind of wh- word question to listen for and given a rule for answering wh- word questions. Then participants were given an opportunity to apply these strategies as the text was read again. Text only prompts in the system of least prompts included reading the text again (i.e., first prompt) or reading the sentence that contained the correct response (i.e., second prompt). Both of these prompts were unmodeled (i.e., the peer tutor did not model the correct response by saying or pointing to the correct answer). Using text only prompts, participants were able to demonstrate gains in listening comprehension even when they responded to novel

questions each session. Similar results were found by Knight (2010) in a study that evaluated the effects of supported electronic text and explicit instruction on science comprehension for four middle school students with Autism Spectrum Disorders (ASD). Researchers used a multiple probe across participants design to evaluate the *Book Builder*™ program on measures of vocabulary, literal comprehension, and application questions. Results indicated a functional relation between the Book Builder™ and explicit instruction (i.e., model-lead-test, examples and non-examples, and referral to the definition) and the number of correct responses on the probe. In addition, students were able to generalize concepts to untrained exemplars. Both the Knight study and this study indicate that given prompts during instruction, students with disabilities can apply the skills and strategies they are given to improve their comprehension of text the read or hear.

A third implication for practice is that teaching comprehension skills using direct instruction (i.e., wh-word concepts) and using explicit strategy instruction during the first prompt of the system of least prompts that included opportunities to hear the text again may improve participant comprehension of novel untrained text. In this study, students were taught wh- word concepts before the study began. Then, during the system of least prompts intervention, participants were told the kind of wh- word question being asked (i.e., The next question is a *who* question), given a question rule (e.g., When you hear *who*, listen for a *person*), and directed to listen for specific information as the text was read again (i.e., Listen for who got a do as the text is read again). Because these components were combined into an intervention package, it is impossible to determine the singular impact of these components on students' comprehension of text. Ongoing

probe session data using the upcoming chapter used next in the intervention indicate that two participants answered more comprehension questions correctly after intervention than during baseline. Verla answered seven comprehension questions correctly in baseline (*m*= 1.16 correct responses per session) and 11 during ongoing probe sessions with novel untrained chapters (*m*=2.75 correct responses per session). Likewise, Robert answered two comprehension question correctly in baseline (*m*=.33 correct responses per session) and four during ongoing probe sessions with novel untrained chapters (*m*=1.00 correct responses per session). These results are similar to the findings of Mims et al. (in press) in which students were told a rule for answering wh- word questions in the first prompt of the system of least prompts and participants answered more comprehension question correctly during ongoing probes of new biographies before they were used in intervention.

Fourth, the organization of the wh- word response boards may have important implications for practitioners. For each chapter of *The Watsons Go to Birmingham - 1963* (Curtis, 1995), comprehension questions were created that asked five different types of wh- word questions (i.e., why, who, what, when, where). A nine-option response board was planned for each chapter that contained all the response options needed for the comprehension questions paired with the chapter plus at least one plausible alternative. Because three different sets of wh- word questions were created for each chapter (i.e., a total of 18 questions per chapter), the nine-option response board did not provide enough response options for correct responses and plausible alternatives. Instead, to facilitate student responding and place emphasis on the type of wh- word question being asked, the response options were organized by type of wh- word question and placed in a 3-ring

binder. As a result, all of the *who* response options were people from the story, *when* response options were times or dates from the story, *what* response options were things from the story, *why* response options were reasons things happened in the story, and *where* response options were places from the story. Tabs labeled with the wh- word were used to separate the response boards in the 3-ring binder.

During intervention, participants were asked to turn to the response board for the type of wh- word question asked (e.g., *The next question is a who question. Turn to the who response board*). If participants were unable to locate the correct response board independently, the interventionist (i.e., researcher, peer tutor, or general education teacher) turned to the correct wh- word board. Once located, participants had two prompts (i.e., help and a wh- word question rule) and nine options from which to select the correct response. All the response options on the page were the same kind of wh- word (e.g., all response options on the "who" board were people) and all were responses from the story. Only one response option answered the text-dependent question correctly even though there were other plausible alternatives. The other options on the board served as distractors for the question.

A fifth implication for practice is that, given text only prompts, students with moderate intellectual disability can answer far more listening comprehension questions than previously demonstrated in the literature. In this study, three sets of listening comprehension questions were created for each adapted chapter using a question template. Each session, peer tutors read the adapted chapter and asked participants a different set of questions so that participants responded to different questions every time they received the intervention. The fact that participants continued to increase the number

of *Text Only Correct* responses across chapters strongly indicates that participants were using the information they heard in the text to answer and not relying on a memorized response.

A sixth implication for practice is that the peer-delivered system of least prompts intervention can be implemented within the ongoing routines of the general education classroom. McDonnell (1998) emphasized the importance of implementing research-based instructional strategies within the ongoing routines of the general education classroom. In this study, a peer-delivered system of least prompts intervention was implemented within the context of a fifth grade general education literacy block when other students without disabilities were rotating between learning centers paired with the book they were reading. For example, at various learning centers, students worked on summarizing fiction and nonfiction text, distinguishing fact from opinion via Study Island or Accelerated Reading tests, completed a skills based game on the Smart Board, or completed a response activity at the reading center. Peer tutors without disabilities learned to deliver a system of least prompts package after an average of four individual 20-min training sessions and they delivered the intervention with fidelity (i.e. *m*=98%, range of 97-100%). In addition, peer tutors spent an average of 15 min (range of 12-17 min) to deliver the intervention each session. The small amount of time needed to train peers to fidelity and the relatively short amount of time needed to implement the intervention within the general education classroom make it a viable instructional model for teaching comprehension to students with moderate intellectual disability in many general education classrooms.

In contrast to the time needed to implement the intervention during general education class, the peer tutor scripts required a lot of time to prepare. The researcher wrote the peer scripts and estimated the amount of time involved in preparing the scripts to be approximately 50 hours. After the first script was written, however, subsequent scripts took less time because of the repetition that occurred in each script. As with other scripted lessons, teachers (or peer tutors) are often able to more independently deliver intervention or lesson without the support of a script over time because they become familiar with the procedures. It is likely that practitioners could train peers in the general procedures of the intervention without the use of scripts or fade the use of scripts quickly over time thus reducing the burden of preparing scripts for peer-delivered interventions.

A seventh implication for practice from this research is that students with moderate intellectual disability must have self-determination skills as well as skills for learning academic content in order to succeed in the general education classroom. The general education classroom is a busy place and students without disabilities are expected to be self-directed learners. To be successful in the general education classroom (and life in general), students with disabilities also need to be self-directed learners to the greatest degree possible. For the participants with disabilities, this study was their first experience learning from a peer in a general education and attending a general education class for the purpose of learning academic content. All participants with disabilities had to make adjustments from the learning environment they were accustomed to in the self-contained special education classroom to the learning environment of the general education classroom. Of upmost importance was the need for participants with disabilities to attend to the peer tutor when they were delivering the intervention regardless of the activity

going on around them. Self-monitoring and asking for help were two self-determination skills that were beneficial to the success of participants in this study. When prioritizing IEP goals for students with disabilities, teachers should keep in mind the importance of self-determination skills and include them in the IEP goals so that these skills are taught in conjunction with other academic and functional goals (Courtade & Browder, 2011).

A final implication for practice is that students with physical disabilities can participate in peer-delivered instruction in the general education classroom with a few modifications to the instructional procedure. The first participant, Verla, had severe motor disabilities as well as moderate intellectual disability. She was non-verbal and used a non-motorized wheel chair to get around the school. The word "yes" was taped to one wheelchair arm and the word "no" was taped to the other. This low technology system allowed Verla to answer yes/no questions easily. Despite the severe motor impairments caused by cerebral palsy, Verla could make a selection from nine response options, but occasionally her responses were inexact and hard to read. If there was a question as to the response option she intended to select, the interventionist asked her to confirm her response using a yes/no question (i.e., Is this your answer). If it was the intended response, Verla touched the word "yes" on the arm of her wheel chair. If it was not the answer she intended, she touched the word "no".

Conclusion

This research study used a multiple probe single case design to evaluate the effects of a peer-delivered system of least prompts intervention package and grade-level read alouds on listening comprehension for three elementary participants with moderate intellectual disability. The research questions asked of the study in regards to students

with moderate intellectual disability were: (a) What was the effect of a peer-delivered system of least prompts package and read-alouds on unmodeled text only comprehension responses (i.e., *Text Only Correct*)?; (b) What was the effect of a peer-delivered system of least prompts package and read-alouds on independent unprompted correct listening comprehension responses (i.e., *Independent Correct*)?; (c) Did listening comprehension skills acquired during instruction generalize to the general education reading class (i.e., *Generalized Text Only Correct*)?; (d) Did peers' attitudes about students with disabilities improve after students with moderate intellectual disability attended reading class?; (e) Did stakeholders rate the procedures and outcomes as important?; and (f) Did peer tutors' reading grades change during the study's implementation?

Three peers from the fifth grade general education reading class were trained to deliver the system of least prompts intervention package during the second literacy block when peers without disabilities were involved in activities at learning centers related to the book they were reading. The novel adapted for the intervention was *The Watsons Go to Birmingham - 1963* (Curtis, 1995), a novel read by the students in the fifth grade class as part of their reading curriculum. Correct responses to listening comprehension questions were used to measure gains in listening comprehension during peer-delivered intervention, ongoing probe sessions, and generalization probe sessions in the fifth grade reading class. During intervention and ongoing probe sessions, participants responded to six different comprehension questions each session and all responses were recorded; however only correct responses after hearing the text read aloud were graphed (i.e., *Text Only Correct, Independent Correct*).

The primary dependent variable in this study were *Text Only Correct* responses in which participants selected correct responses after hearing only the text read aloud. For *Text Only Correct* responses, participants had an equal chance of selecting the correct answer and were not told or shown the correct response. Data for a second dependent variable, *Independent Correct*, was also collected in this study. *Independent Correct* responses were unprompted correct responses after the initial reading of the text in which participants did not require any help from the reader. Data were also collected on correct responses in the general education reading class (*Generalized Text Only Correct*). *Generalized Text Only Correct* responses were correct responses to comprehension questions after listening to an adapted chapter that was not used in intervention read aloud and given only text prompts.

In addition to student response data during study phases, three measures of social validity were collected that examined stakeholder beliefs about the importance of the study's goals, procedures, and outcomes. First, teachers, peer tutors, and participants with disabilities completed a social validity form after the study was finished. Second, peers in the general education fifth grade class completed a presurvey and a postsurvey about their attitudes toward individuals with disabilities. Third, peer tutor experiences were explored during an in-depth focus group discussion and the impact of peer tutoring on the peer tutors' reading grade during the time of the intervention was evaluated.

Results from the study indicate that all participants with moderate intellectual disability improved their *Text Only Correct* responses from baseline to intervention, indicating a functional relationship between the dependent variable and the system of least prompts intervention package. Likewise, one of three students made gains in

independent unprompted correct comprehension responses (*Independent Correct*) after the initial reading of the chapter. Data from social validity measures indicate that all stakeholders involved thought the content was important for participants with moderate intellectual disability and the peer-delivered system of least prompts intervention was effective in teaching listening comprehension for these students. Comparison of the peer attitude presurvey and postsurvey indicated that peers without disabilities grew more willing to interact with peers with disabilities after the study was implemented in their reading class. Benefits were also noted for the peer tutors by themselves and by the general education teacher. In summary, this study makes several unique contributions to the literature regarding teaching listening comprehension to participants with moderate intellectual disability in an inclusive fifth grade classroom while raising other questions for future research.

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APPENDIX A: COMPREHENSION QUESTIONS

Intervention Listening Comprehension Questions

Chapter 1	Who helped Byron? (momma)
	Who kissed the mirror? (Byron)
	Who is Kenny's brother? (Byron)
	Where do the Watsons live? (Michigan)
	Where does Kenny live? (Michigan)
	Where were mom and dad? (house)
	When does the story take place? (winter)
	When was it cold in Michigan? (winter)
	When did momma help Byron? (morning)
	What did Byron kiss? (mirror)
	What did Dad turn up? (heater)
	What did Byron clean? (mirror)
	Why did Byron need help? (Byron was hurt)
	Why did momma cry? (Bryon was hurt)
	Why did the Watson's leave their house? (it was cold)
	Why did Dad turn the heater up? (it was cold)
	Why did Byron scream? (Byron was hurt)
	Why does spit freeze? (it was cold)
Chapter 2	Who was sitting in the front row? (Byron)
	Who was proud of Kenny? (Byron)
	Who was older than Larry Dunn? (Byron)
	Where did Kenny go to school? (Clark Elementary)
	Where did Byron go to school? (Clark Elementary)
	Where did Byron catch up to Kenny? (playground)
	When did Byron catch up to Kenny? (after school)
	When did Byron help Kenny? (Saturday*)*
	When did Kenny think Byron would kill him? (after school)
	What was Kenny good at? (reading)
	What did Kenny hide? (eye*)*
	What did Kenny cover with a patch? (eye)
	Why did Kenny try to fix his eye? (people stared)
	Why did kids get mad at Kenny? (he was a good reader)
	Why did teachers want Kenny to read? (he was a good reader)
	Why did Kenny need help? (fix his eye)
	Why was Larry Dun bigger than other kids? (he was older)
	Why did Byron help Kenny?(people stared)
Chapter 3	Who was the new kid at Clark Elementary? (Rufus)
	Who hunted with a gun? (Rufus)
	Who stopped being Kenny's friend? (Rufus)
	Where did Rufus sit? (desk)
	Where did Kenny and Rufus eat lunch? (playground)
	Where did Rufus see a fat squirrel? (playground)
	When did Rufus see a squirrel on the playground? (today)

When did Kenny go to Rufus's house? (today)
When did Rufus start Clark Elementary? (today)
What did Kenny give Rufus? (sandwich)
What did Rufus share with his brother? (clothes)
What did Rufus give Cody (sandwich)
Why did Kenny stop playing with LJ? (stole dinosaurs)
Why did Kenny move his desk (kids were mean)
Why did Kenny not want to play with LJ? (stole dinosaurs)
Why did Kenny laugh at Rufus? (shared clothes)
Why was LJ not a good friend? (stole dinosaurs)
Why did Kenny not want to be Rufus's friend? (Kids were mean)

Chapter 4

Who stole Kenny's gloves? (Larry Dunn)
Who begged momma? (Joey)
Who did not have any gloves? (Rufus)
Where did Kenny and Joey go? (Clark Elementary)
Where did Kenny and Joey walk each morning? (Clark Elementary)
Where did Kenny help Joey? (Clark Elementary)
When did Joey, Kenny, and Byron get gloves? (winter)
When did Byron tell the story? (today)
When did Larry Dunn start wearing new gloves? (today)
What did Kenny give Rufus? (gloves)
What was Larry Dunn wearing? (gloves)
What did Joey, Kenny, and Byron get in the winter? (gloves)
Why was the cold dangerous? (people freeze to death)
Why did Kenny give Rufus his gloves? (keep hands warm)
Why did Joey and Kenny cry? (they don't want to die)
Why were Kenny and Joey scared? (they don't want to die)
Why did Joey, Kenny, and Byron get gloves? (keep hands warm)
Why was momma afraid of the cold? (people can freeze to death)

Chapter 5

Who tried to protect Byron? (Joey)
Who warned Byron? (momma)
Who gets the matches? (Momma)
Where did momma get matches (kitchen)
Where was Byron making a movie? (bathroom)
Where was Byron playing with matches? (bathroom)
When does Byron have to stop playing with matches? (today)
When did Byron learn a lesson? (today)
When did Byron start playing with matches again? (today)
What was Byron making? (movie)
What did momma get from the kitchen? (matches)
What did momma hear? (toilet)
Why was Byron in trouble? (playing with matches)
Why did momma drag Byron downstairs? (to get Byron's attention)
Why did Momma get the matches (to get Byron's attention)
Why was momma mad at Byron? (playing with matches)
Why did momma have to get the matches herself? (Joey would not)

	Why did Joey stand between momma and Byron? (to protect him)
	Generalization Listening Comprehension Questions
Chapter 6	Who sent Byron to the store for food? (momma)
	When did Byron throw cookies at Kenny? (Saturday)
	Why was Byron mad? (He didn't want welfare food)
Chapter 7	Where was Kenny doing his homework? (kitchen)
	What did daddy shave? (Byron's head)
	Why was momma mad? (Byron got a "do")
Chapter 8	Who bought the Ultra-Glide record player? (daddy)
	What did Joey hang from the rear-view mirror? (pine scented tree)
	Why were the Watson's going to Birmingham? (to visit Grandma Sands)
Chapter 9	Where were the Watson's going? (Birmingham)
	When did the Watsons go to Birmingham? (1963)
	Why was Byron not going to talk the whole trip? (He was mad at momma and daddy)
Chapter 10	Who used an outhouse? (Grandma Sands)
	What kind of bathroom did Kenny and Byron use at the rest stop? (Outhouse)
	Why did it seem like there were more stars in the sky? (air was clean)
Chapter 11	Where did momma blow the car horn? (Grandma Sands house)
	When does Kenny wake up? (Sunday)
	Why did Kenny think Grandma Sands had won the fight with Byron? (Byron was nice)
Chapter 12	Who saved the hunting dog? (Mr. Roberts)
	When were they looking at the old hunting dog? (in the morning)
	Why was Birmingham like an oven? (it was hot)
Chapter 13	Where did Grandma Sands tell them not to go? (Collier's Landing)
	What were they going to do? (go swimming)
	Why were they supposed to stay away from Collier's Landing? (little boy drowned)
Chapter 14	Who went to church? (Joey)
	What did Kenny find in the church? (black shoe)
	Why did people rush to the church? (bomb/explosion)
Chapter 15	Where was the Watson's World Famous pet hospital? (behind the couch)
	When did the Watson's leave Birmingham? (that night)
	Why did Byron start hanging out on the couch? (to help Kenny)

APPENDIX B: SAMPLE PEER TUTOR SCRIPT

Chapter 1 - And You Wonder Why We Get Called the Weird Watsons

1. Say: **Today we are going to read Chapter 1 from *The Watsons Go to Birmingham - 1963*. You can follow along in your book as I read out loud. I'll remind you to turn the page when it is time. I will stop reading and ask you questions about the chapter. If you don't know the answer, you can ask me for help and I will help you. You can also use your response board to help you answer.**

2. Say: **Let's review the words in your story today. Show me [**name each response option and HELP prompt one at a time**].** If the participant is unable to point to a word, tell them the word and have them repeat it. Then ask them again. Repeat until the participant can point to each word on the response board without help.

3. Open the Participant Response Boards notebook, point to the Wh- word tabs, and say: **Here are the response boards to help you answer the questions. This is "who", "what", "why", "when", and "where".**

4. Point to self-monitoring sheet and say: **This is your self-monitoring sheet. Every time you answer a question correctly by yourself, you can put an "X" in a square. When you have made an "X" in 6 boxes, you can select a prize. Any questions? OK. Let's begin reading.**

My name is Kenny and this story is about my family. I have an older brother named Byron and a younger sister named Joetta. We call her Joey for short. We live in Michigan with my momma and Dad.

Make sure the participant response board notebook is open to the beginning.

Say: **The first question is a "where" question. Turn to the "where" response board to help you answer.**

Wait 4 s for participant to turn to correct response board.

If CORRECT, say: **Good job! You turned to the "where" response board.**

If NO RESPONSE or INCORRECT, point to the correct tab and say: **This is the "where" response board tab.** Turn to the correct response board.

Say: **Here is the question. Remember, if you do not know the answer, ask me for help and I will help you. Don't guess.**

1. Say**: *Where do the Watsons live?* The answer is on the page. Are you ready to answer or do you want some help?**

 The answer is *Michigan*.

2. Wait 4 for participant to respond.

3. If CORRECT - Point to the self-monitoring sheet and say: **You're right! The Watsons live in *Michigan*. Make an X on your self-monitoring sheet. Let's turn the page and keep reading the story.** Make sure participant turns the page. Go to next section.

4. If NO RESPONSE - Point to HELP on response board and say: **Remember to ask for help when you don't know the answer and I will help you. Here's some help to answer the question.** Go to Step 6.

5. If ERROR - Point to HELP on response board and say: **Remember to ask for help when you don't know the answer. Don't guess.** Point to the correct response and say: **The answer is *Michigan*. Now you show the answer.** Participant touches or says *Michigan*. Remind participant to turn the page. Go to next section.

6. HELP - 1

Point to the Question Word Rule and say: **Where tells about a place. Here is the rule. When you hear *where*, listen for a *place*. Listen for where the Watsons live as I read the paragraph again.**

My name is Kenny and this story is about my family. I have an older brother named Byron and a younger sister named Joetta. We live in Michigan with my momma and dad.

Where do the Watsons live? Are you ready to answer or do you want some help?

7. Wait 4 s for participant to answer.

8. If CORRECT - Say: **You're right! The Watsons live in *Michigan.* Let's turn the page and keep reading the story.** Go to next section**.**

9. If NO RESPONSE - Point to HELP on response board and say: **Remember to ask for help when you don't know the answer and I will help you. Here's some help to answer the question.** Go to Step 11.

10. If ERROR - Point to HELP on response board and say: **Remember to ask for help when you don't know the answer. Don't guess.** Point to the correct response and say: **The answer is *Michigan*. Now you show the answer.** Participant touches or says the answer. Remind participant to turn the page. Go to next section.

11. HELP – 2

Say: **The answer is in this sentence. Listen as I read the sentence again.**

We live in Michigan with my momma and dad.

Where do the Watsons live? Are you ready to answer or do you want some help

12. Wait 4 sec for participant to answer.

13. If CORRECT - Say: **You're right! The Watsons live in *Michigan*. Let's turn the page and keep reading the story.** Go to next section.

14. If NO RESPONSE - Point to HELP on response board and say: **Remember to ask for help when you don't know the answer and I will help you. Here is some help to answer the question.** Go to Step 16.

15. If ERROR - Point to HELP on response board and say: **Remember to ask for help when you don't know the answer. Don't guess.** Point to the correct response and say: **The answer is *Michigan*. Now you show the answer.** Participant touches or says the answer. Remind participant to turn the page. Go to next section.

16. HELP – 3

Say: **Listen and I will tell you the answer. The answer is *Michigan*.**

Where did the Watsons live? Are you ready to answer or do you want some help?

17. Wait 4 s for participant to answer.

18. If CORRECT - Say: **You're right! The Watsons live in *Michigan*. Let's turn the page and keep reading the story.** Go to next section.

19. If NO RESPONSE - Point to HELP on response board and say: **Remember to ask for help when you don't know the answer and I will help you. Here's some help to answer the question.** Go to Step 21.

20. If ERROR - Point to HELP on response board and say: **Remember to ask for help when you don't know the answer. Don't guess.** Point to the correct response and say: **The answer is *Michigan*. Now you show the answer.** Participant touches or says the answer. Remind participant to turn the page. Go to next section.

21. HELP - 4

Say: **Listen and watch. I will show and tell you the answer.** Point to correct answer and say: **The answer is *Michigan*. Now you show the answer.** Participant touches or says the answer.

Say: **You are doing great. Let's turn the page and keep reading our story.** Make sure participant turns the page. Go to next section.

APPENDIX C: SAMPLE PARTICIPANT BOOK

1. And You Wonder Why We Get Called the Weird Watsons

This story is about Kenny and his family. He has an older brother named Byron and a younger sister named Joetta. They call her Joey for short. They live in Michigan with momma and Dad. People call them the weird Watsons.

It is winter in Michigan. Your spit freezes before it hits the ground. Momma did not like the cold. She grew up in

Alabama. It is warm in Alabama, even in the winter.

Dad turned the heater up high, but it was cold inside the house. They put on extra clothes and huddled together on the couch under a blanket because it was cold. They had to go to Aunt Cydney's house where it was warmer.

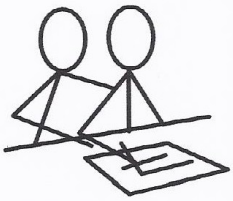
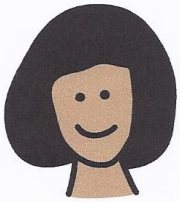
Before the Watsons could go to Aunt Cydney’s, Byron and Kenny had to clean the ice off the car windows. Kenny started cleaning the windows on one side and Byron

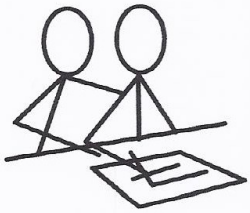
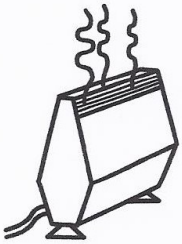
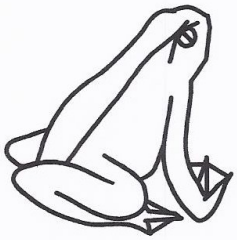
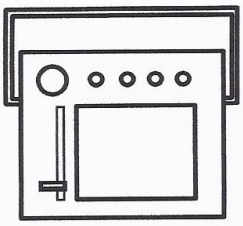
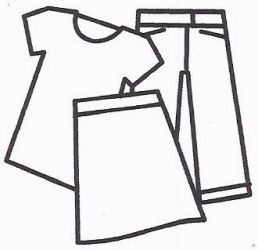
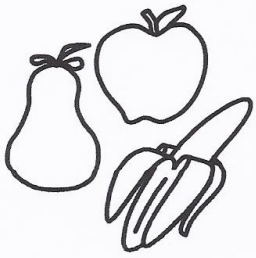
the other. Kenny heard Byron mumbling and went to check on him. Byron’s lips were stuck to the side mirror. After Byron cleaned the mirror, he kissed it and his lips got stuck.

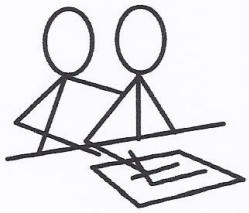
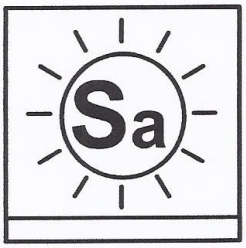
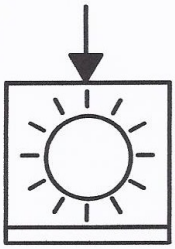
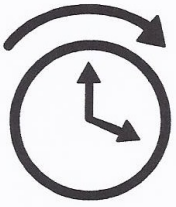
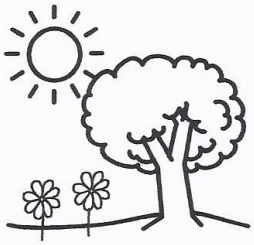
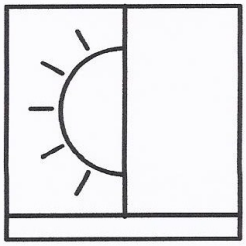
Byron needed help because he was hurt. Kenny ran inside the house to get momma and dad. When momma saw Byron was hurt, she started crying. She tried to help by pouring some warm water on the mirror, but Byron's lips were still stuck to the mirror.

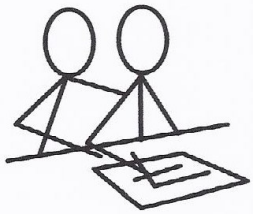
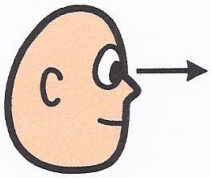
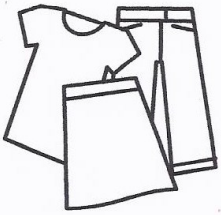
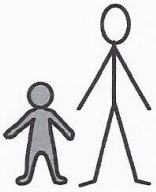
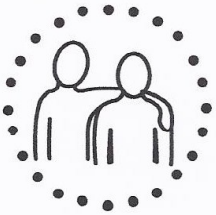
That morning momma helped Byron. She took Byron's head in her hands and told him she loved him. Then momma pulled his face away quickly. Byron screamed but his lips were not stuck to the mirror anymore.

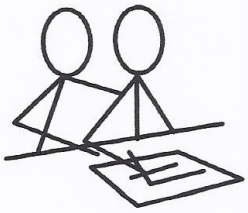
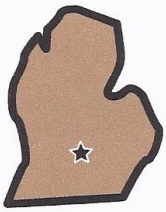
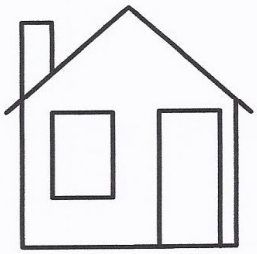
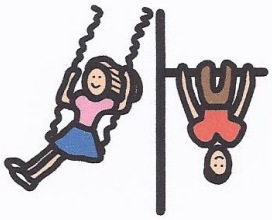
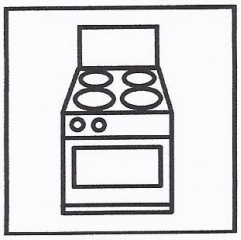
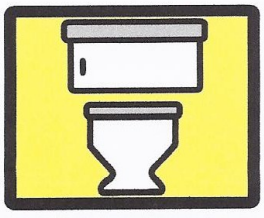
APPENDIX D: PARTICIPANT RESPONSE BOARDS FOR WH- WORD QUESTIONS

 help	 Who tells about a person	
 Byron	 Kenny	 Joey
 Momma	 Larry Dunn	 Grandma
 Rufus	 Buphead	 Wilona

 help	 What tells about a thing	
 heater	 frog	 radio
 toilet	 clothes	 mirror
 gloves	 reading	 fruit

 help	 When tells about a time or date	
 winter	 1963	 Saturday
 today	 after school	 summer
 morning	 1999	 night

 help	 Why tells about a reason	
 people stared	 shared clothes	 kids were mean
 people can freeze	 Byron was hurt	 he was older
 to protect Byron	 it is cold	 he was a good reader

 help	 Where tells about a place	
 Michigan	 house	 Clark Elementary
 desk	 playground	 kitchen
 bathroom	 Alabama	 car

APPENDIX E: PARTICIPANT SELF-MONITORING SHEET


Way to go!

1	2	3	4	5	6	Select a prize. 

APPENDIX F: DATA COLLECTION SHEET

Data Sheet: Chapter 1.1			Baseline Probe		Ongoing Probe		Intervention			
Session Length:	Peer 1 2 3 4 5		Student 1 2 3 4		Observer:		Date:			
IOA: %	PF: %	Video: YES NO	# of TOCs:		#of ICs:		#of Errors:			
Place an X in the box if peer needed to be prompted to perform the step.										PF
1. Introduce Story	YES	NO	RB= Response Board		IC = Independent Correct					
2. Review Response Options for story	YES	NO	MH = More Help		NR = No Response					
3. Review Wh- word Tabs	YES	NO	EC = Error Correction							
4. Review Self-monitoring Sheet	YES	NO	DVP = Descriptive Verbal Praise							
q1. Where do the Watsons live? (Michigan)	RB	IC	MH P1	MH P2	MH P3	MH P4	NR	EC	DVP	
q2. When does the story take place? (winter)	RB	IC	MH P1	MH P2	MH P3	MH P4	NR	EC	DVP	
q3. Why did dad turn up the heater? (it was cold)	RB	IC	MH P1	MH P2	MH P3	MH P4	NR	EC	DVP	
q4. What did Byron kiss? (mirror)	RB	IC	MH P1	MH P2	MH P3	MH P4	NR	EC	DVP	
q5. Why did Byron need help? (Byron was hurt)	RB	IC	MH P1	MH P2	MH P3	MH P4	NR	EC	DVP	
q6. Who helped Byron (momma)	RB	IC	MH P1	MH P2	MH P3	MH P4	NR	EC	DVP	
		Text Only Correct			Modeled		Errors			

APPENDIX G: GENERALIZATION DATA SHEET

Participant:	Peer:	Participant response:		
Chapter 6				
Date:	1. Who sent Byron to the store for food? (momma)	IC	1 2 3 4	Error
Date:	2. When did Byron throw cookies at Kenny? (Saturday)	IC	1 2 3 4	Error
Date:	3. Why was Byron mad? (He didn't want welfare food)	IC	1 2 3 4	Error
Chapter 7				
Date:	1. Where was Kenny doing his homework? (kitchen)	IC	1 2 3 4	Error
Date:	2. What did daddy shave? (Byron's head)	IC	1 2 3 4	Error
Date:	3. Why was momma mad? (Byron got a "do")	IC	1 2 3 4	Error
Chapter 8				
Date:	1.Who bought the Ultra-Glide record player? (daddy)	IC	1 2 3 4	Error
Date:	2. What did Joey hang from the rear-view mirror? (pine scented tree)	IC	1 2 3 4	Error
Date:	3. Why were the Watson's going to Birmingham? (to visit Grandma Sands)	IC	1 2 3 4	Error
Chapter 9				
Date:	1. Where were the Watson's going? (Birmingham)	IC	1 2 3 4	Error
Date:	2. When did the Watsons go to Birmingham? (1963)	IC	1 2 3 4	Error
Date:	3. Why was Byron not going to talk the whole trip? (He was mad at momma and daddy)	IC	1 2 3 4	Error
Chapter 10				
Date:	1. Who used an outhouse? (Grandma Sands)	IC	1 2 3 4	Error
Date:	2. What kind of bathroom did Kenny and Byron use at the rest stop? (Outhouse)	IC	1 2 3 4	Error
Date:	3. Why did it seem like there were more stars in the sky? (air was clean)	IC	1 2 3 4	Error
Chapter 11				
Date:	1. Where did momma blow the car horn? (Grandma Sands house)	IC	1 2 3 4	Error
Date:	2. When does Kenny wake up? (Sunday)	IC	1 2 3 4	Error

Date:	3. Why did Kenny think Grandma Sands had won the fight with Byron? (Byron was nice)	IC	1 2 3 4	Error
Chapter 12				
Date:	1. Who saved the hunting dog? (Mr. Roberts)	IC	1 2 3 4	Error
Date:	2. When were they looking at the old hunting dog? (in the morning)	IC	1 2 3 4	Error
Date:	3. Why was Birmingham like an oven? (it was hot)	IC	1 2 3 4	Error
Chapter 13				
Date:	1. Where did Grandma Sands tell them not to go? (Collier's Landing)	IC	1 2 3 4	Error
Date:	2. What were they going to do? (go swimming)	IC	1 2 3 4	Error
Date:	3. Why were they supposed to stay away from Collier's Landing? (little boy drowned)	IC	1 2 3 4	Error
Chapter 14				
Date:	1. Who went to church? (Joey)	IC	1 2 3 4	Error
Date:	2. What did Kenny find in the church? (black shoe)	IC	1 2 3 4	Error
Date:	3. Why did people rush to the church? (bomb/explosion)	IC	1 2 3 4	Error
Chapter 15				
Date:	1. Where was the Watson's World Famous pet hospital? (behind the couch)	IC	1 2 3 4	Error
Date:	2. When did the Watson's leave Birmingham? (that night)	IC	1 2 3 4	Error
Date:	3. Why did Byron start hanging out on the couch? (to help Kenny)	IC	1 2 3 4	Error

APPENDIX H: PEER SOCIAL ATTITUDE SURVEY

Questions	Circle One		
1. I will talk to a scholar with special needs at school.	YES	Maybe	NO
2. I think scholars with special needs should be included in my class.	YES	Maybe	NO
3. I will sit next to a scholar with special needs in class.	YES	Maybe	NO
4. I will eat lunch with a scholar with special needs.	YES	Maybe	NO
5. I will help a scholar with special needs with school work.	YES	Maybe	NO
6. I will be friends with a scholar with special needs.	YES	Maybe	NO
7. I will say "Hi" to a scholar with special needs.	YES	Maybe	NO
8. I have seen people with special needs on TV/movies.	YES	Maybe	NO
9. I like having scholars with special needs in my class.	YES	Maybe	NO
10. I will play with a scholar with special needs during recess.	YES	Maybe	NO

Adapted from the social distance questionnaire for attitudes of high school students toward handicapped peers (Haring, Breen, Pitts-Conway, Wilson, & Gaylord-Ross, 1983).

APPENDIX I: PEER TUTOR/PARTICIPANT INTERVIEW FORM

1. I liked being a peer tutor/participant.

YES	Maybe	NO

2. Being a peer tutor/participant was a lot of work.

YES	Maybe	NO

3. I would be a peer tutor/participant again.

YES	Maybe	NO

4. I would recommend being a peer tutor/ participant to my friends.

YES	Maybe	NO

5. I think it was important for me to be a peer tutor/participant.

YES	Maybe	NO

6. I learned a lot being a peer tutor/participant.

YES	Maybe	NO

APPENDIX J: GENERAL EDUCATION TEACHER SOCIL VALIDITY FORM

Please indicate the degree to which you agree or disagree with the following statements. All data are confidential and will not be associated with any person. The results of this survey will be reported in a manuscript describing the results of this study and may be submitted for publication to a professional journal.

1. The peer-delivered intervention met the needs of the participants with disabilities.

   Strongly Agree Agree Neutral Disagree Strongly Disagree

2. The intervention did not take a lot of my time.

   Strongly Agree Agree Neutral Disagree Strongly Disagree

3. There were benefits for both the participants with disabilities and peer tutors.

   Strongly Agree Agree Neutral Disagree Strongly Disagree

4. The intervention allowed students with moderate intellectual disability to participate more fully in the general education class.

   Strongly Agree Agree Neutral Disagree Strongly Disagree

5. I would use this strategy with other students with moderate intellectual disability.

   Strongly Agree Agree Neutral Disagree Strongly Disagree

6. The intervention did not disrupt the learning time of students without disabilities.

   Strongly Agree Agree Neutral Disagree Strongly Disagree

7. The peer-delivered intervention was easy to use in the general education setting.

   Strongly Agree Agree Neutral Disagree Strongly Disagree

8. The strategy was efficient on promoting student learning.

   Strongly Agree Agree Neutral Disagree Strongly Disagree

Additional comments:

APPENDIX K: SPECIAL EDUCATION TEACHER SOCIAL VALIDITY FORM

Please indicate the degree to which you agree or disagree with the following statements. All data are confidential and will not be associated with any person. The results of this survey will be reported in a manuscript describing the results of this study and may be submitted for publication to a professional journal.

1. The peer-delivered intervention met the needs of the participants with disabilities.

   Strongly Agree Agree Neutral Disagree Strongly Disagree

2. The intervention did not take a lot of my time.

   Strongly Agree Agree Neutral Disagree Strongly Disagree

3. The intervention allowed students with moderate intellectual disability to participate more fully in the general education class.

   Strongly Agree Agree Neutral Disagree Strongly Disagree

4. I would use this strategy with other students with moderate intellectual disability.

   Strongly Agree Agree Neutral Disagree Strongly Disagree

5. There were benefits for both the participants with disabilities and peer tutors.

   Strongly Agree Agree Neutral Disagree Strongly Disagree

Additional comments:

APPENDIX L: PEER TUTOR FOCUS GROUP QUESTIONS AND RESPONSES

The following questioned were asked of each peer tutor during focus group meeting. Peer tutor responses were videotaped and transcribed following the focus group meeting. Peer tutor responses for individual questions are as follows.

Focus Group Questions and Peer Tutor Responses		
1.	*What have you learned from your experiences as a peer tutor?*	Michael - I learned that being a peer tutor takes a lot of hard work and most kids with disabilities, they need help learning some things because they are physically disabled. Brittany – I learned that everybody is equal. Even though some people told me, "Why are you working with them"? People would make fun when Verla came in the room and I would see my friends, even one of my best friends, was laughing at Verla. I explained to them why that was wrong. And they said, "Why was I working with them?" I learned that what people say is not what matters … what matters is if your friendship is true or not. *Why did you think your friends weren't right when they said you should stop working with them?* Brittany- because if they were right, I would be doing everything wrong and I would be like why do I have to work with this person and ewww, – I don't want to work with this person. They were wrong – I did prove them wrong – and now they know. Being a person with disabilities is not a joke. Rocky – I learned that even though people look different or they do different doesn't mean that we break apart. We all stick together and work together as a team.
2.	*What surprised you the most about being a peer tutor?*	Brittany – I expected everything to be the same as last year but it wasn't. (Brittany was a peer tutor in the study last year) The scripts were not the same. This year we were working on reading and last year we worked with science. I remember that (another peer tutor) worked with the student that you had to point out all the answers. I was surprised that none of us had a person with that much of a disability. This year they could point at it or say it. When the response boards changed to a book of response boards I was nervous that I would mess up. Rocky-Last year we learned a lot of stuff (Rocky observed peer tutoring in a study that was conducted in her

		classroom). I expected it to be about Marcus and Arianna (last year's science curriculum) but this year it was about *The Watsons Go to Birmingham – 1963.* *Having watched the study last year and being a peer tutor this year, was there anything that surprised you?* Rocky - I was a little scared after I signed the paper and I didn't know if I was going to be a peer tutor. I was very happy that I got to be a peer tutor. Michael-I was surprised by how smart they were. When I worked with my student she got almost every question right.
3.	*You know that the participants with disabilities benefited from being in the study because you helped them improve their comprehension. How did you benefit from being a peer tutor?*	Rocky-I learned that whatever is going wrong around us, we can help. Peer tutors can make a difference in the lives of people with disabilities. Michael -Yes, because when I was younger, my friends would say look at those kids, they're ugly. They would insult them. I would say it's not good to make fun of people who have disabilities. They are the same as us – they're equal, so there shouldn't be nothing that keeps them from learning. Brittany -same thing that Michael said. What if that was me. I'd want them to cut me a break. They don't know how that person feels. If you are mean to people, it will come back twice as much on them.
4.	*How did you help the students with disabilities? Is peer tutoring beneficial to students with disabilities? Do you think it's a good thing*?	Michael - Yes, because some people don't help people with disabilities read or learn or anything but this year I got a chance to help them and I feel really good about that. *Do you think that would have happened any other way? Would you have had a chance to teach if we didn't have peer tutoring?* Michael - No Brittany - I say yes and no. Yes because you actually gave us the script and some of us memorized the script and we could look at the student when we were teaching and the student would listen and they would learn from that. We emphasized the words but not like tell them the answers. We would pause and say the words louder. I think people do that to help people learn. And the no is because the room was loud during workshop and it gets like a nightclub and

		it's so loud they can barely hear. Rocky - yes. The students with a disability can learn a lot. When they get to college the teachers will ask them questions and maybe they will know the answers. They'll keep learning and learning and learning. We learn every day because we are always learning something new. That's what helps us move forward and not go back.
5.	*What did you like most about being a peer tutor?*	Rocky - What I liked most was teaching comprehension to students with disabilities and how we did it because we challenged ourselves to help them (students with disabilities) and we continued to do that every day. At the final chapter I was sad because I couldn't read anymore to my student. It was pretty good. *Your student was very different from the others.* Rocky - Yes, he went back and forth. Then he started getting the questions correct and I was like, you're right! Brittany -What I liked most about being a peer tutor was learning that everyone's the same. No one is different. When they think they are perfect that's when they are not. Michael – I liked being a peer tutor because I think they will remember this the rest of their lives. Like, they will remember us, "Oh he's the one who helped me learn read". I know I made a difference. All - Everybody did good! Rocky - I'm proud of (the general education teacher) too, because he helped us all be good peer tutors.

Adapted from Hughes, C., & Carter, E. W. (2008). *Peer buddy programs for successful secondary school inclusion.* Baltimore, MD: Paul H. Brookes.