

## Using Shared Stories and Individual Response Modes to Promote Comprehension and Engagement in Literacy for Students with Multiple, Severe Disabilities

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*Abstract: This study investigated the effects of scripted task analytic lessons with systematic prompting on engagement and comprehension of students with a multiple, severe disability using a multiple probe single case design. Three teachers followed the scripts to include a target student in a story based lesson to increase comprehension and engagement. All three students had both a severe intellectual disability and either a severe physical or sensory impairment and relied primarily on nonsymbolic communication prior to the study. Each student used a different response mode to participate in the story based lesson (i.e., eye gaze response for a student with inconsistent hand use, point response for a student who grabbed, and object response for a student with visual impairments). Results indicated increases in both comprehension and engagement for all three students. Limitations and implications for research and practice are discussed.*

Emergent literacy includes the reading and writing skills that young children display before they become conventional readers (Justice, 2006). As Whitehurst and Lonigan (2002) note, a focus on emergent literacy differs from the concept of “reading readiness” that creates a boundary between learning formal school-based skills such as letter recognition and everything that comes before this time. Instead, a focus on emergent literacy promotes children’s development of skills like phonological awareness, print principles, and emergent writing. In an emergent literacy view, as children engage in behaviors like viewing pictures in a book, retelling stories, scrib-

bling, and building vocabulary, they are on the path to reading. The National Early Literacy Panel (NELP, 2008) identified six variables that had strong to moderate correlations with later measures of literacy including alphabet knowledge, phonological awareness, rapid automatized naming of letters/digits, rapid automatized naming of objects/colors, writing/writing name, and phonological memory. The panel found moderate effects for concepts about print, print knowledge, reading readiness (composite of alphabet knowledge, concepts of print, vocabulary, memory, and phonological awareness), oral language, and visual processing (matching or discriminating visually presented symbols).

Students with the most significant disabilities, such as those with a severe intellectual disability combined with a physical or sensory disability, may still be developing emergent literacy during the elementary school years. Educators may struggle with developing appropriate literacy lessons for these students for several reasons. First, there is a paucity of research on how to teach literacy skills to students with multiple, severe disabilities. In the past two decades, researchers have been overly focused on teaching sight words rather than a broader array of literacy skills and have rarely included students with multiple, severe dis-

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abilities as participants in this research (Browder, Wakeman, Spooner, Ahlgrim-Dezell, & Algozzine, 2006). A second reason for the underdevelopment of literacy programs is the lack of adequate professional development in this area. Teachers have not received models of best practice that would provide guidelines for appropriate literacy instruction (Erickson & Koppenhaver, 1995). Heller, Fredrick, Dykes, and Cohen's (1999) national survey of special education directors revealed that not one director felt teachers were well-prepared to teach literacy skills to students who were nonverbal. A third reason students with multiple, severe disabilities may receive inadequate literacy interventions is because finding a means for students to respond can be challenging. Students with multiple, severe disabilities may not only be nonverbal, but also may rely on nonsymbolic communication (e.g., crying, reaching) or early symbol use (e.g., raising cup to ask to drink). Communication challenges can make it difficult for students to "show what they know" with the result that educators underestimate student potential for literacy. Students with severe, multiple disabilities will be unlikely to develop emergent literacy or become readers if their school day does not include an intensive focus on literacy.

One potential model for teachers to consider is the use of a shared reading intervention in which the student is engaged in a read aloud with frequent opportunities to respond. The NELP (2008) identified shared reading interventions as a research-based instructional practice that may enhance early literacy skills. Interactive shared book reading has also been identified by the What Works Clearinghouse (2010) as a practice with potentially positive effects for early reading. In addition to being beneficial for typically developing children, interactive shared book reading has also been found to increase communication and literacy development for students with disabilities (Al Otaiba, 2004; Crowe, Norris, & Hoffman, 2004; Justice & Kaderavek, 2002, 2003; Justice, Kaderavek, Bowles, & Grimm, 2005; Justice & Pullen, 2003). A growing body of research also shows that read alouds can promote literacy skills for students with a moderate and severe intellectual disability (Blyden, 1988; Browder, Mims, Spooner, Ahlgrim-Dezell, & Lee, 2009;

Browder, Trela, & Jimenez, 2007; Mims, Browder, Baker, Lee, & Spooner, 2009; Skotko, Koppenhaver, & Erickson, 2004). Optimally, teachers use interactive read alouds, combined with code-focused and language enhancement interventions to produce an effective bridge to beginning reading for all students. In contrast, one of the advantages of teaching students to engage in a read aloud of a story is that even if students do not make the transition to independent reading, they develop skills for gaining meaning for text that can be applied across many school subjects (e.g., science, social studies) and be used for lifelong learning.

Several studies on using interactive story book reading, also called shared stories, provide guidance for how literacy lessons might be developed for students with a multiple, severe disability. Blyden (1988) used adaptations of books for students with an intellectual and physical disability such as enlarged print, added pictures, and signing words. Participants increased attention skills, receptive and expressive language, social interaction, and active participation. Koppenhaver, Erickson, and Skotko (2001) conducted a study with four parent-child dyads. The participants included four girls (ages 3 to 7) with Rett Syndrome and their mothers. All four girls communicated with objects or facial expressions. With the addition of a variety of assistive technologies (i.e., picture communication symbol set, single-message Big Mack, multi-message four in-line Cheap Talk, and PVC pipe stands to mount devices and symbols) and teaching parents to attribute meaning to child's communicative attempts, students' labeling and commenting improved. The parents also learned to prompt the use of the assistive technology through naturalistic approaches, provide adequate wait time in the prompt hierarchy for the child to respond, and to consistently use questioning and comments that require the use of pictures and a voice output device.

Skotko et al. (2004) also focused on four girls with Rett Syndrome using parent-child storybook interactions. They observed parental responses such as pointing to the book or asking prediction questions and child behaviors such as vocalizations, attention to book or use of augmentative communication devices.

Results showed that both parent (in this case mothers) and child evolved in a positive manner throughout the phases of the study. The girls showed an increase in successful use of augmentative communication devices. The mothers evolved in their presentation of the stories and their expectations of their daughters. By the end of the study mothers were using some of the key elements discussed earlier. The mothers were introducing vocabulary using picture communication symbols, describing pictures, asking prediction and inferential questions. Their expectations of their daughters changed with the use of augmentative communication devices. By the end phases of the study, mothers began to see the voice output devices as an extension of their daughter's voice which resulted in an increase of prediction or opinion type questions.

Besides adapting books, providing assistive technology, and creating opportunities for the student to respond during the read aloud, two additional studies show that students can acquire new skills with systematic prompting and feedback. Mims et al. (2009) used shared stories with two students with severe intellectual disability and visual impairment (i.e., severe cortical visual impairment, severe visual impairment). Books were adapted to include objects related to the stories that were attached to the page that could be removed and used to show comprehension responses (e.g., small pillow, pack of gum). While reading the page aloud, the researcher prompted the student to touch the object being described in the story. Then the researcher asked a comprehension question giving the student the same object paired with a distracter to select a response (e.g., "What did Alexander get stuck in his hair?" Objects were gum and pen). The researcher followed a hierarchy of least intrusive prompts to prompt the student to select the correct response. Both students showed an increase in the number of unprompted correct responses to comprehension questions across three books.

Browder et al. (2009) also used a hierarchy of least intrusive prompting for students to respond and individualized shared story lessons to increase responding for students with a severe intellectual and physical disability who was typically passive during classroom read alouds. A team of educators applied com-

ponents of Universal Design for Learning (UDL; Center of Applied Special Technology, 1998) to plan literacy instruction for the three participants who had a severe intellectual and physical disability. All three students gained foundational literacy skills such as choosing a book, focusing on objects related to the story, or using a voice output device to complete a repeated storyline.

When considered together, these studies on shared reading suggest that a literacy lesson for students with severe, multiple disabilities will include an adaptation of a storybook, opportunities for the student to make frequent responses to engage with the book and answer questions, teacher prompting to promote use of assistive technology and other responses to show understanding, and some individualization of the read aloud presentation based on the unique characteristics of the student. What has not been demonstrated in this prior literature is how these components of a shared story might be used for students with multiple, severe disabilities by a teacher during a typical classroom day. Because emergent literacy instruction is often a focus of parent training, several studies have focused on parent-child dyads (Koppenhaver & Erickson, 2003; Skotko et al., 2004; Trudeau, Cleave & Woelk, 2003; van Bysterveldt, Gillon, & Moran, 2006.) In other studies, a member of the research team conducted the interactive storybook lessons (Browder et al., 2009; Mims et al., 2009). In some studies teachers have used shared stories as one component of a comprehensive early literacy program for students with a moderate or severe intellectual disability (Browder, Ahlgrim-Delzell, Courtade, Gibbs, & Flowers, 2008) or as the primary intervention (Browder, Trela, & Jimenez, 2007), but these applications did not provide demonstrations that were specific to students with severe, multiple disabilities who may use few to no symbols at the onset of instruction. Teachers may find it especially difficult to plan for students who begin with an extremely limited repertoire of responses to interact with the story.

The purpose of this study was to evaluate teacher-implemented shared stories for students with severe, multiple disabilities. There are two research questions: (a) What is the effect of scripted systematic instruction and individually defined responses on the listen-

ing comprehension of students with severe, multiple disabilities? And, (b) What is the effect of scripted systematic instruction and individually defined responses on scores of engagement steps on a literacy based task analysis?

## Method

### *Participants and Setting*

Participants included three elementary age students in a large urban school district who were classified as having a severe intellectual disability concomitant with a physical or sensory impairment. The three students received special education services in self contained classes. All three students needed intensive support for all aspects of their self care (e.g., feeding, dressing, diapering). The criteria for inclusion was that the student had a severe intellectual disability concomitant with a severe physical or sensory impairment and relied primarily on nonsymbolic communication (e.g., used movement or sounds rather than pictures, objects, or word approximations for requesting). Teachers were asked to nominate students with these characteristics and who also had shown minimal responses during shared stories. From the teacher's nominees, the research team selected three students who would be using three different types of response modes.

The first student, Donna, was an 8-year-old girl with a severe intellectual disability and cerebral palsy (i.e., ataxic quadriplegic). She relied on a wheelchair for mobility. Donna communicated using primarily eye gaze. She inconsistently would eye gaze to objects that represented activities. She also inconsistently used her hands to activate voice output devices or engage with books but her hand movement lacked control and often resulted in repeated banging of the device or book. Donna's voluntary use of her hands was also restricted because she engaged in persistent hand wringing and hand biting. Donna was social and would interact with adults and other children with smiles and laughter. Although Donna had received over two years of literacy instruction that included read alouds and other skill building, she made few consistent responses. One reason for her lack of

progress seemed to be the teacher's use of physical guidance of Donna's hands to make responses which she was not able to fade because of Donna's lack of hand control. The research team chose Donna to evaluate how the intervention worked with a student who would rely primarily on an eye gaze response.

Denise was a 9-year-old girl with a severe intellectual disability who was legally blind. She inconsistently used tactile exploration to find familiar items or food on a table upon request. She was ambulatory, but required physical guidance to find locations in the classroom or school. To communicate she used vocalizations, facial expressions of pleasure (smile) or displeasure (grimace), and a refusal gesture (e.g., pushed items or people away). Denise was often resistant to a teaching activity and at times would become aggressive (e.g., intense scratching and pinching of the person attempting to work with her) if her refusal response was ignored. She was beginning to use one or two objects to serve as cues for the next activity in her schedule (e.g., holding diaper before being taken to restroom). Denise's teacher was not sure how to adapt the read alouds for Denise's visual impairment and had not involved her in any shared story lessons at the time the study began. Denise was selected as a candidate for responding primarily with the use of objects.

Ralph was a 6-year-old boy with a severe intellectual disability and cerebral palsy (i.e., spastic quadriplegic). Ralph used a wheelchair for ambulation. Ralph communicated mainly through facial expressions for pleasure/displeasure and vocalizations. He used his vocalizations for requests, protests, and to gain social attention. He also grabbed people and laughed to gain their attention, but sometimes injured them with his force. He inconsistently used some object representations such as a cup for drink. He also liked to grab objects, which made instruction challenging. To manage the challenge, the teacher would prompt Ralph to use soft touches to gain attention and to wait for teacher permission before taking objects. Although Ralph's teacher often read books to her students, Ralph did not have any consistent responses to this activity other than grabbing the book or the teacher. Ralph was chosen as a candi-

date for responding primarily with a pointing response (without grabbing).

All three teachers who agreed to participate as the interventionists in this study met state criteria to be highly qualified and licensed in special education. Two of the participating teachers had a bachelor's degree in special education; one had a master's degree in special education. Two of the three teachers had participated in two years of a research study on literacy for students with severe disabilities. Donna's teacher had a bachelor's degree and 11 years of teaching experience, Denise's teacher had a bachelor's degree and 19 years of teaching experience, and Ralph's teacher had a master's degree with 4 years of experience. All instruction took place in the student's self-contained special education classrooms during the typical time literacy was taught or in a nearby conference room if the room was too noisy. The teachers provided this instruction in a one-to-one format while the other students worked with the classroom paraprofessionals on other literacy activities. The teacher also provided literacy instruction to the other students in the class in both one-to-one and small group formats either before or after this research intervention. The shared story lesson typically took about 30 minutes and occurred three times per week. A member of the research team observed the lessons to record student data and teacher fidelity of implementation.

### *Materials*

Each teacher received two picture story books that were selected through consultation with a literacy expert for appropriateness to the student's ages. The books were adapted for durability and ease of use for the students. To increase durability, the book was cut from its binding; each page was laminated, hole punched, and put into a 3-ring binder. The covers of the books were attached to the front cover of the binders so that the finished product looked like a durable version of the original book. To increase understanding, the research team created a summary statement of the main idea of the book. This summary statement was typed and taped to several pages of the book to be used during reading as a repeated storyline (e.g., "Let's do the

earth dance!"). The research team also selected objects to represent the main ideas on selected pages of the book. These objects were affixed to the corresponding laminated page of book using Velcro. These objects were used during the reading when presenting comprehension questions. The pages with a repeated story line also had an object or picture representing the last word of the repeated storyline. After completing the repeated story line, the student was asked to locate the object or picture. For example, the teacher would read, "My favorite thing to do is play. . . ." The student would read the word, "baseball." The teacher would then say, "Good, you read the word baseball, now find the picture of the baseball." The teacher would then give the student time, and as needed prompting, to find the baseball. The interactive read aloud also involved having the student identify his or her name paired with a picture; or for the student with a visual impairment, paired with an object that represented her name.

In addition, the researchers asked the teachers to use the voice output devices which were readily available in the classroom. An eye gaze board was used with the student who used an eye gaze to respond. This board was clear plexiglass on which an object or picture array could be displayed in each corner for ease and clarity in making a response by looking at one selection. The eye gaze board had been used previously with this student and was available in the classroom.

### *Data Collection Procedure*

*Dependent variables.* The researchers developed a task analysis for the steps of the interactive storybook reading which is shown in Table 1. The steps of the task analysis were categorized as two dependent variables—comprehension or engagement. For comprehension, the researchers summarized the number of independent correct responses for the listening comprehension steps of the task analysis. There were seven steps involving listening comprehension. The score consisted of a minus (−) for no response or an error, a plus (+) for an independent correct response or a check for prompted responses. To be scored as an independent correct, the response had to occur within five seconds of the teacher's

TABLE 1

Steps of Shared Story Reading

<i>Steps of Task Analysis</i>	<i>Comprehension or Engagement</i>
<b>Choose between two books</b> <i>"Touch the book that you would like to read."</i>	<b>Engagement</b>
<b>Select own name or representation</b> <i>"Touch your name."</i>	<b>Engagement</b>
<b>Interact with anticipatory set</b> <i>"This story is going to be about baseball, touch the baseball."</i>	<b>Engagement</b>
<b>Answer prediction question</b> <i>"What do you think the story will be about?"</i>	<b>Engagement</b>
<b>Interact with object #1 on page</b> <i>"Feel the hat; that is what I will be reading about."</i>	<b>Engagement</b>
<b>Answer comprehension question using object #1</b> <i>"What flew off of Dewey's head? A dog or a hat?"</i>	<b>Comprehension</b>
<b>Interact with object #2 on page</b> <i>"Feel the juice box; that is what I will be reading about."</i>	<b>Engagement</b>
<b>Answer comprehension question using object #2</b> <i>"What do the baseball players have with their snack? A juice box or a key?"</i>	<b>Comprehension</b>
<b>Interact with object #3 on page</b> <i>"Feel the game ball; this is what I will be reading about."</i>	<b>Engagement</b>
<b>Answer comprehension question using object #3</b> <i>"What does one player get after the game? The horn or the game ball?"</i>	<b>Comprehension</b>
<b>Complete the repeated story line using a voice output device</b> <i>"My favorite thing to do is play_____ (baseball)."</i>	<b>Comprehension</b>
<b>Find the symbol that represents the word that completes the repeated story line</b> <i>"Yes! You read the word baseball; now find the picture of the baseball in the book."</i>	<b>Engagement</b>
<b>Complete the repeated story line using a voice output device</b> <i>"My favorite thing to do is play_____ (baseball)."</i>	<b>Comprehension</b>
<b>Find the symbol that represents the word that completes the repeated story line</b> <i>"Yes! You read the word baseball; now find the picture of the baseball in the book."</i>	<b>Engagement</b>
<b>Complete the repeated story line using a voice output device</b> <i>"My favorite thing to do is play_____ (baseball)."</i>	<b>Comprehension</b>
<b>Find the symbol that represents the word that completes the repeated story line</b> <i>"Yes! You read the word baseball; now find the picture of the baseball in the book."</i>	<b>Engagement</b>
<b>Answer a summary question at the end of the book</b> <i>"What was the story about? A baseball or a skateboard?"</i>	<b>Comprehension</b>

direction to respond (e.g., 5 seconds after question was asked), without any further teacher responding (no verbal, physical or modeled assistance), and with a clear distinct response (e.g., holding gaze on one selection for 3 seconds if eye gaze; only picking up one object if object use; pointing to only one object if pointing response).

The second dependent variable was engagement in the literacy activity. These steps were scored using a rubric for the level of engagement on each step. There were 10 engagements steps, each with a range of scores from 0-3, resulting in possible engagement scores

ranging from 0-30. The continuum of responses for the rubric were operationally defined for each student for each response mode and each step (e.g., for an eye gazer, 0 = no response, 1 = looks at reader but not at object, 2 = glances at object for 1-2 seconds, 3 = holds gaze on object for 3 seconds after teacher request). During baseline and intervention, a member of the research team observed the lesson to score the student's response on each step of the task analysis using the scoring method for comprehension and engagement steps. Due to the complexity of the scoring system used for the research study,

a researcher was present for all sessions to collect student data.

*Inter-rater reliability.* A second member of the research team observed about one third of the baseline and intervention sessions for each student. Inter-observer agreement was computed using an item by item method (e.g., exact same numerical score on rubric for each engagement step; +, - or check for each comprehension step.) Inter-observer agreement was calculated by dividing the number of agreements by the number of possible agreements and multiplying by 100. Inter-rater agreement was collected during 33% of sessions for Student 1 and resulted in 96.8% agreement rate. For Student 2, inter-rater agreement was collected during 32% of sessions and resulted in 98.8 % agreement rate. For Student 3, inter-rater was collected during 30% of sessions and an agreement rate of 99.4% was obtained.

*Procedural fidelity.* Procedural fidelity was assessed by the same researcher who collected student data using the steps of the task analysis and noted whether the teacher introduced each step and used the designated prompting and reinforcement described in the script (see Intervention). Procedural fidelity observations occurred for a minimum of 25% of sessions for each teacher. Procedural fidelity for delivery of all engagement and comprehension steps was 98% across all three teachers with a range of 92.8% to 100%.

*Social validity.* The social validity of the intervention was measured by giving the participating teachers a survey. Utilizing a five point Likert scale, the survey was designed to obtain teacher perspectives on skill selection, individualization, and overall success of intervention.

### *Research Design*

A multiple probe single case design was used to evaluate the functional relationship between the intervention and student responding (Gast, 2010). The design was a variation of a multiple probe across participants with each participant purposefully selected to represent one of three response modes for which the intervention could be applied (i.e., eye gaze, object selection, touch response). The design was also applied concurrently to two depen-

dent variables by separating the comprehension and engagement responses for each participant in separate graphs to be sure students were gaining meaning from the text as well as becoming more active in the lessons (engagement).

In applying the design, baseline data were collected for all students and is described next in the procedures. Once all students had stable responding, intervention began with Donna, who used an eye gaze response. To avoid reactive effects of assessment without instruction, Denise and Ralph received no probes during this time. When Donna showed an increase in trend and level, additional baseline probes were conducted for Denise and Ralph. When the additional probes were stable, Denise, who used object selection, entered the intervention. When Denise showed an increase in trend and level, Ralph received additional baseline probes. When stable, Ralph, who used pointing, entered intervention. Thus, the interventions were staggered across participants following the conventions of a multiple probe design.

### *Procedure*

*Baseline phase.* In preparation for the baseline assessment, the teachers received all of the specified materials (i.e., adapted books with repeated story lines, voice output devices, and objects embedded in the books). For consistency in baseline assessment, the teachers were also given a baseline script that followed each step of the task analysis depicting exactly what to say and do. The script adhered to all seventeen steps of the individualized task analysis but had no prompting or reinforcement. That is, the teacher simply read the book and gave each designated opportunity to respond and then waited for the student to respond without comment. At random times in the script, the teacher praised the student for sitting, attending, or other social behaviors as appropriate to maintain participation in the assessment.

*Intervention phase.* The intervention also used a script for each step of the task analysis, but this script included explicit instructions for how to use a hierarchy of least intrusive prompts for each step. This script consisted of four columns including: (a) What the Teacher

Says (e.g., read the page and ask the question specified), (b) What the Teacher Does (presentation of materials), (c) How the Student Responds, and (d) Prompting (i.e., prompting to use if there is no response or an error). Teachers were also trained to praise all correct independent responses. Some of column b, "What the Teacher Does," included creative measures to increase general student engagement in the story (e.g., using a fan to blow "wind" across the students face when the text refers to wind). A system of least to most prompts hierarchy was defined for each step and for each student response mode. For comprehension steps, the hierarchy included a verbal cue of re-reading the text and repeating the comprehension question, then, if needed, a model where the teacher would model selecting the correct answer to a comprehension question. For Denise, who had a visual impairment, modeling consisted of placing her hand on the correct object and then moving it back to a neutral position and then re-asking the question. For Donna, who used an eye gaze, the model was tapping the correct object to show where she was to look. For Ralph, the model was the teacher demonstrating how to touch the correct object gently. Finally, if needed, the student received physical guidance to select the correct response. Before each level of prompting, the teacher was to wait at least five seconds before giving assistance. (Full teaching scripts are available from first author upon request).

*Generalization.* Each teacher received two books. Students were given the opportunity to choose one of the two books each time intervention occurred. This gave students the opportunity to generalize skills across two books.

## Results

*Student comprehension data.* Student performance data for comprehension steps on a task analysis are displayed in Figure 1. All three students' ability to correctly respond to comprehension steps implemented during the literacy lesson increased. During baseline, Donna, who used eye gazed, correctly responded to a mean of 1.75 comprehension steps with a range of 1 to 3 correct comprehension responses. After intervention, Donna's correct responses ranged

from 1 to 6 with a mean of 3.7. During baseline, Denise, who used object selection, correctly responded to a mean of .14 comprehension steps with a range of 0 to 1. During intervention, Denise increased her comprehension responses to a mean of 4.3 and a range of 0 to 7. During baseline, Ralph, who used pointing to objects, correctly responded to a mean of .16 comprehension steps with a range of 0 to 1. During intervention, Ralph increased correct responses to 4.3 with a range of 1 to 6.

*Student engagement data.* Student performance data for engagement steps on a task analysis are displayed in Figure 2. All students demonstrated an increase in their level of engagement during the intervention phase of the study. During baseline, the engagement scores for Donna, who used eye gaze, ranged from 13 to 17 with a mean of 15.25. After intervention, Donna increased engagement scores to a mean of 23.9 with a range of 16 to 29. During baseline, the engagement scores for Denise, who used object selection, ranged from 0 to 9 with a mean of 6.5. During intervention, engagement scores increased to a mean of 22.1 with a range of 8 to 30. Ralph, who used pointing to objects, had engagement scores ranging from 11 to 19 during baseline and a mean of 16.6. During intervention, the mean engagement score for Ralph increased to a mean of 23.2 with a range of 16 to 27.

*Social validity.* All classroom teachers participated in a follow-up survey that gave them an opportunity to evaluate the intervention. The survey used a five point Likert scale with the following options: Strongly agree, Agree, Neutral, Disagree, and Strongly Disagree. All three teachers strongly agreed that using the script as a systematic guide was an effective intervention, and the use of the individualized script and adapted books were appropriate. All teachers noticed meaningful increases in their student's comprehension of, and engagement with the stories being read to them. Teachers also agreed that using systematic instruction, specifically, least to most prompting was beneficial to their students. Finally, the teachers all reported that they would continue using this intervention with their students and would consider using this instructional pack-

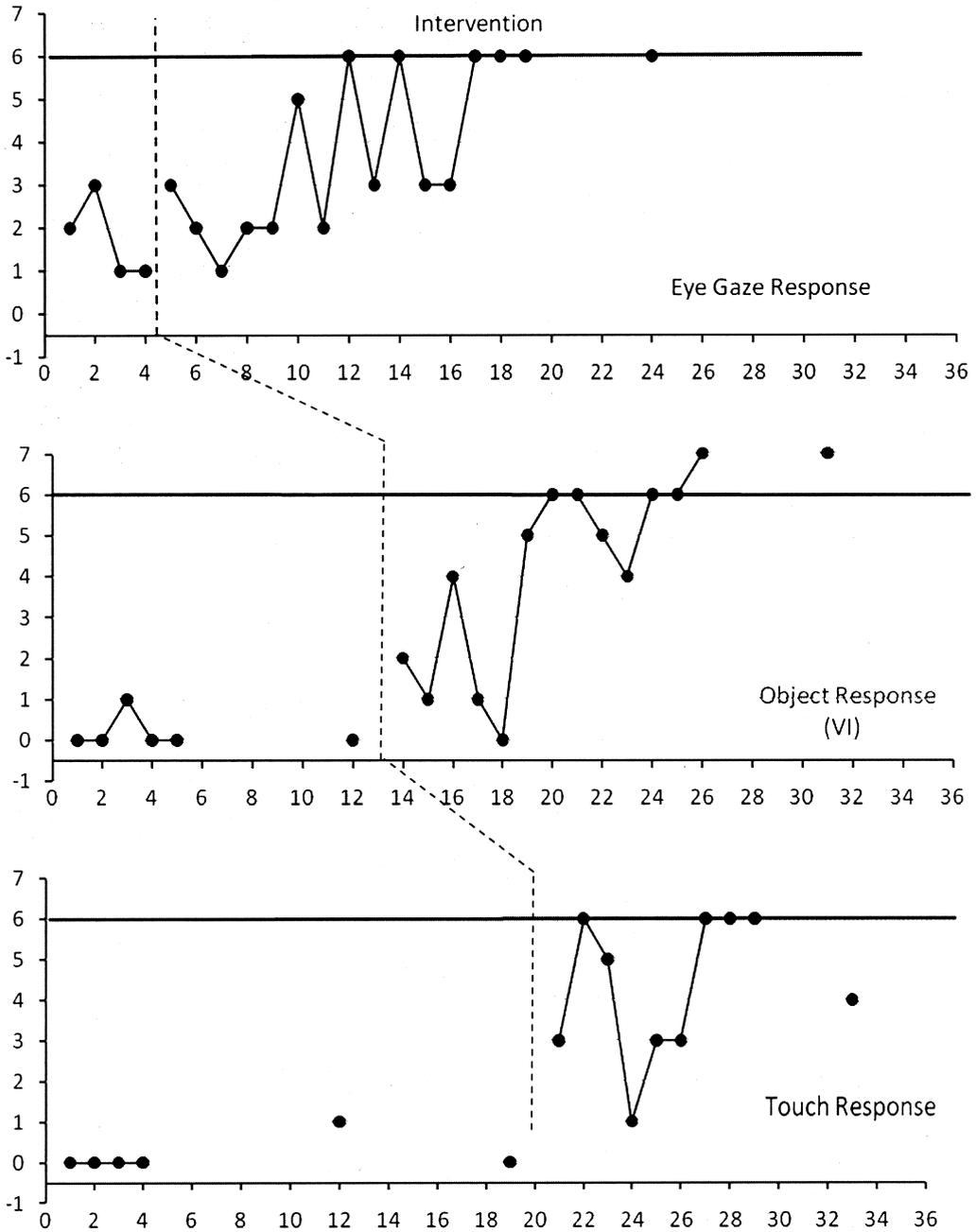


Figure 1. Number of correct responses on comprehension steps across three response modes.

age in the future and with students other than those in the study.

*Maintenance and generalization.* Maintenance probes occurred anywhere from 10 days to one month after the last intervention

session. All students were able to maintain engagement skills as well as comprehension skills with only slight decreases in the comprehension data. Students were offered a choice of two books at the beginning of each session.

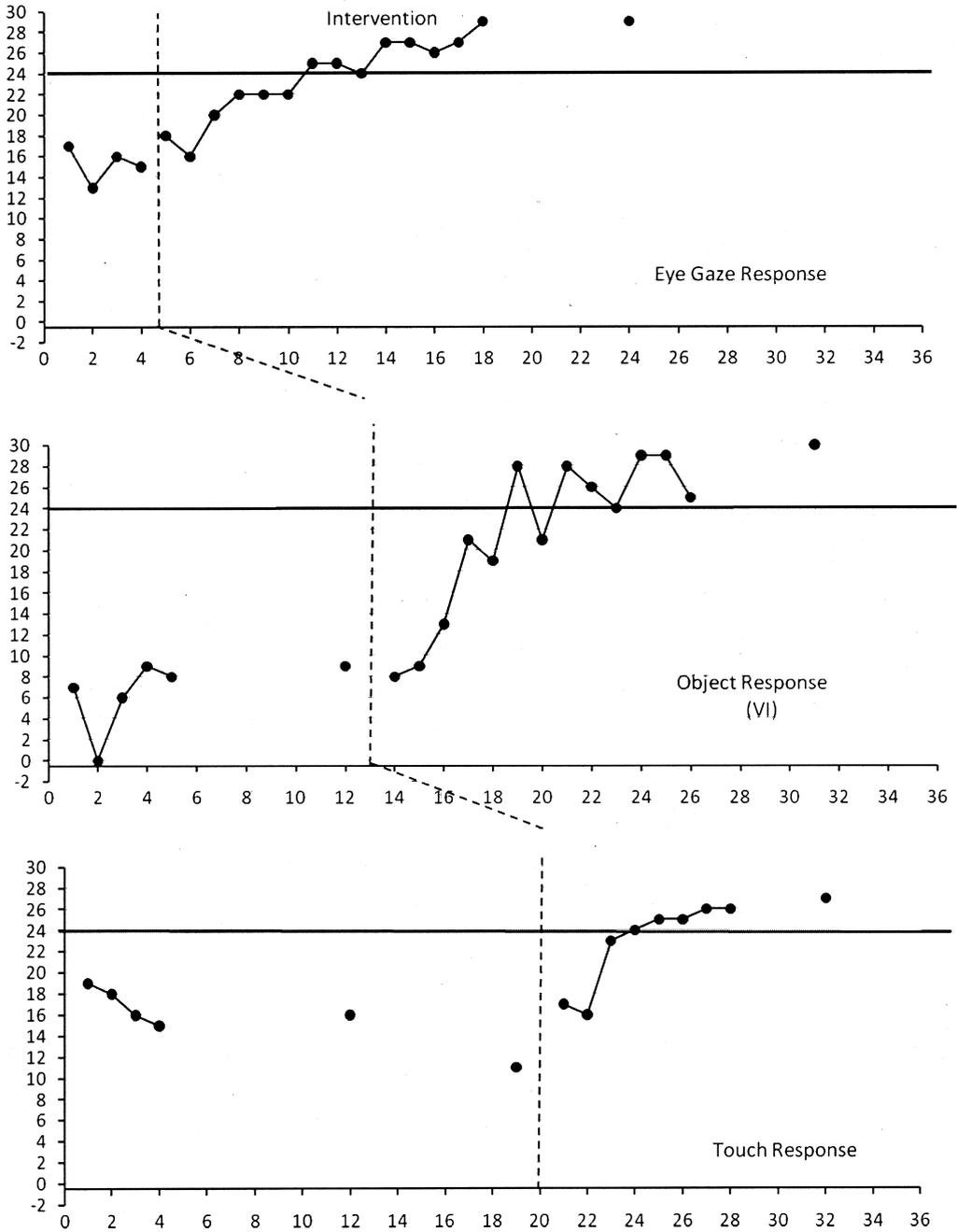


Figure 2. Scores on engagements steps across response modes.

Because all students chose both of the books randomly, the data shown in the figures represent performance with two different stories and sets of materials. Although not planned as

generalization, two students began intervention in a separate quiet conference room, but then were able to generalize to their own classroom after a couple of sessions.

## Discussion

Interactive shared storybook reading has been identified as a promising research-based practice by the What Works Clearinghouse for young children and found to promote literacy for students with a disability (Al Otaiba, 2004; Crowe et al., 2004; Justice & Kaderavek, 2002, 2003; Justice et al., 2005; Justice & Pullen, 2003). A growing body of research also shows that shared stories can promote literacy skills for older students with moderate and severe intellectual disabilities (Blyden, 1988; Browder et al., 2007; Browder et al., 2009; Mims et al., 2009; Skotko et al., 2004). The current study contributes additional information on how to use this methodology with students with severe, multiple disabilities and with the teacher serving as interventionist.

Two of the biggest challenges in applying an intervention with students with severe, multiple disabilities are making the activity meaningful and interpreting student responses. These challenges can be especially difficult in planning literacy lessons for students who do not yet have the symbolic communication to engage with print or use conventional methods to show understanding. Researchers have addressed this problem in various ways. Koppenhaver et al. (2001) introduced supports for a literacy lesson in four phases including adapted books, some hand splinting, assistive technology, and instructions for prompting responding for parents to use with their daughters with Rett syndrome. Browder et al. (2009) used principles of universal design to decide how to modify the representation, expression, and engagement. Team planning with progressive phases of support may often be needed for students with multiple, severe disabilities to respond optimally to literacy interventions. In contrast, teachers often note how difficult it is to find time for planning (Westling & Fox, 2009). What the current study contributes is a task analysis with adaptations for three response modes that teachers can use as a starting point for students who have a variety of challenges. Planning time can then be devoted to additional support needs rather than planning all students' literacy lessons "from scratch." The teaching scripts also offer simplicity for the teacher who lacks the professional development or time to deter-

mine how to present each step of the task analysis. Teachers in the current study welcomed the explicit scripts to know exactly what to say and do.

Besides contributing information on how teachers can economize literacy planning for students with severe, multiple disabilities by using a predeveloped task analysis and script, this study also contributes information on how students with multiple, severe disabilities can acquire literacy skills. Often the focus for research on shared stories is for the student to increase responses to engage with the book (e.g., Browder et al., 2009; Koppenhaver et al., 2001). In Mims et al. (2009) the focus was listening comprehension. In the current study, students acquired both types of responses. It is important to note that the students were inconsistent in using objects symbolically in their daily routines, but had begun to be consistent in selecting the objects to show understanding of the read aloud. This was probably due to the repetition of the stories across days and systematic prompting employed. A next step would be to see if students could learn to generalize the object selections in other contexts and learn to use other object symbols (e.g., daily schedule) if similar systematic prompting were utilized. The additional contribution of the creative element to student learning is unknown. Incidentally, the researcher observed the students frequently expressed pleasure (e.g., smiling, laughing) when these creative elements were introduced. Many involved some type of sensory stimulation that related to the story (e.g., touch of grass, feel of wind, the act of swinging or touching a plastic bat).

Although results of this study were promising there are limitations to be noted. All instruction was provided in a one to one format. Most of these teachers typically used a small group format for shared stories to economize their instructional time. Additional research is needed to see if students with severe, multiple disabilities could learn these skills in a small group format. A second limitation is that there were no replications within response mode. Additional research is needed to determine the extent to which these findings generalize across other learners who respond using eye gaze, pointing, and object selection. This study also occurred in the self-contained

classrooms in which students received most of their instruction. Additional research is needed to see if this intervention might generalize to inclusive contexts where paraprofessionals or peers might use the adapted materials and scripts. In the current study, the research team collected all student data. Additional research is needed to determine if teachers could score the task analysis reliably as a means to monitor student progress. Finally, it is unknown whether the teachers could have had strong fidelity for the intervention without the scripts by following the task analysis. Teachers with adequate training in systematic instruction methods (Collins, 2007) might not need a script to implement the intervention. This might also allow for more flexibility in adapting prompts to the individual student's learning needs.

This study has several implications for practice. The first is that all students need the opportunity for daily literacy learning. In the current intervention, students received intensive one-to-one instruction three days per week. Teachers might intersperse these intensive sessions with small group lessons and train paraprofessionals, peers, and parents to use the scripted lesson. There are many different models for interactive storybook reading in the literature (e.g., Browder, Gibbs, Ahlgrim-Delzell, Courtade, & Lee, 2007; Ezell & Justice, 2005; van Kleeck, 2006). The model provided in the current study introduces the steps of the lesson as a task analysis. Teachers are encouraged to explore how these lessons can be developed in additional ways, for example, by embedding more decoding or expanding conversation. Whatever model used, some thought needs to be given to the books to be used so that they are interesting, relevant to the students, and age appropriate. These books may need to be adapted for durability and to increase opportunities to respond.

In summary, this study provides a demonstration of how a task analysis with systematic prompting, that teachers implemented using a script, increased both engagement and comprehension for students with multiple, severe disabilities. This population is often overlooked in research because of the difficulty in finding ways to promote and capture student learning. This study adds to the literature demonstrating that students with a severe dis-

ability can develop emergent literacy skills which can be an important first step towards gaining meaning from text and learning to read.

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