Efficacy of Video Modeling to Train Teachers to Implement Evidence-Based Instructional Practices for Students with Autism

Thesis

Presented in Partial Fulfillment of the Requirements for the Degree of Masters of Arts in Educational Studies in the Graduate School of The Ohio State University

By
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Abstract

Effective teacher training strategies are needed to close the gap between research and practice allowing teachers to implement evidence-based instruction for students with severe disabilities. This study examines the effects of an instructional video model used to instruct three special education teachers to implement evidence-based practices (EBPs) (i.e., peer networking; simultaneous prompting and constant time delay) with students with autism spectrum disorder (ASD), and its effect on student outcomes (i.e., social interactions with peers, receptive shape identification, and multiplication facts). A performance feedback component was introduced when teachers were struggling with implementation fidelity or students were not making optimal progress. A multiple baseline design across participants revealed that all three teachers made substantial improvement after watching the video model, but one teacher required performance feedback to achieve 100% implementation fidelity. Two students made progress on their target skill, though each made optimal progress only after adjustments were made in the performance feedback phase. This study suggests that video modeling can be used as an effective training tool to teach teachers to implement EBPs with students with severe disabilities, and addresses training teachers to evaluate and adjust instruction based on student performance.
Dedication

Dedicated to all teachers who put their time, effort, and heart into working with students with disabilities. Also to my own students, who intellectually challenge me and bring an abundance of joy into my life.
Acknowledgements

I would like to thank Dr. Matthew Brock for his extensive support, time, and guidance throughout the thesis process.

Also, I would like to thank Rachel Seman not only for the time and effort she put in, collecting data and editing my paper, but for the emotional support she provided throughout the process.

Finally, I would like to thank my family- my parents, Scott and Terri; and my fiancé, Aaron for encouraging me to pursue a higher education. Thank you for all of the support and love during a demanding time in my life.
Vita

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Fields of Study

Major Field: Educational Studies

Area of Specialization: Special Education- Applied Behavior Analysis
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ASD-Autism Spectrum Disorder; ID-Intellectual Disability

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Chapter 1: Introduction

Approximately 1 in every 50 children has been identified as having an autism spectrum disorder (ASD) (Blumberg et al., 2013). With a multitude of behavioral and educational treatments available for individuals with ASD, families, educators, and service provider’s must determine the most effective interventions based on sound research (National Standards Project Report, 2009; Wong et al., 2015). Evidence-based practices (EBPs) are “practices and programs shown by high-quality research to have meaningful effects on student outcomes” (Cook & Odom, 2013). The National Professional Development Center on Autism Spectrum Disorders (NPDC) considers interventions to be evidence based if they are supported by: (a) two high quality experimental or quasi-experimental design studies conducted by two different research groups, or (b) five high quality single case design studies conducted by three different research groups and involving a total of 20 participants across studies, or (c) a combination of research designs that must include at least one high quality experimental/quasi-experimental design, three high quality single case designs, and be conducted by more than one researcher or research group. These criteria are consistent with those developed by the Council for Exceptional Children (Cook et al., 2014). Odom, Collet-Klingenber, Rodgers, and Hatton (2010) developed a process for reviewing literature and established criteria for identifying evidence based practices from the NPDC standards, for learners with ASD, identifying 24 interventions with sufficient evidence.
Because the number of research studies has increased over time, Wong et al. (2015) expanded this research to examine 456 studies that met inclusion and methodical criteria and found 27 intervention practices that met the criteria for EBPs, including antecedent-based intervention, modeling, peer-mediated instruction and intervention, reinforcement, scripting, and time delay.

Federal legislation now mandates that all children be taught using EBPs. As a result of the Individuals with Disabilities Education Act of 1997, all students are required to be included in state and district educational testing, allowing students with significant cognitive disabilities to participate in alternate assessments in the form of a portfolio, checklist, or performance assessment (Towles-Reeves, Kleinert, Muhomba, 2009). Alternate assessments are based on the alternate achievement standards that outline an expectation of performance that varies in complexity from the grade-level achievement standard (Towles-Reeves et al., 2009). The Every Student Succeeds Act (2015) and Individuals with Disabilities Education Act (2006), require that teachers implement EBPs, or educational practices that are supported by scientific evidence to teach the alternate assessment standards and IEP goals. Consequently, researchers have constructed a large body of evidence on effective instructional programming (Alber & Nelson, 2005). The What Works Clearinghouse (WWC) was created as a source to help parents, teachers, and administration easily access EBPs (Burns & Ysseldyke, 2009).

However, identifying and listing EBPs has not translated into widespread implementation in schools (Fixsen, Naom, Blase, Friedman, & Wallace, 2005). Teachers report implementing practices without an evidence base more often than those with a strong evidence base (Burns & Ysseldyke, 2009). Furthermore, data in baseline
phases of experimental studies show teachers did not implement practices accurately until given focused training, with special educators struggling to implement peer-mediated interventions (e.g., Brock, Biggs, Carter, Cattey, & Raley, 2016), behavior support plans (e.g., Codding, Feinberg, Dunn, & Pace, 2005), and specific praise within the classroom (e.g., Briere, Simonsen, Sugai, & Myers, 2015). If teachers are not implementing EBPs with their students, the students will be the ones who endure the consequences of poor performance (Scheeler, Bruno, Grubb, & Seavey, 2009), resulting in less than optimal employment outcomes and unsatisfactory personal and social lives (Bender & Wall, 1994). It is unclear how likely practices implemented without an evidence base will result in student progress. Conversely, implementing EBPs with students with severe disabilities is the most promising method to improve student outcomes.

Effective teacher training strategies are needed to close the gap between research and practice. The most thoroughly studied teacher training strategy with the strongest research base is performance feedback (Fallon, Collier-Meek, Maggin, Sanetti, & Johnson, 2015), which involves a brief meeting between a consultant and a consultee in which implementation of strategies are discussed. Within the process, the consultant offers feedback on what is going well (e.g., steps implemented consistently, student improvement) areas that are in need of improvement (e.g., steps that need to be implemented, lack of student progress), and strategies to improve implementation (Fallon et al., 2015). Solomon, Klein, and Politylo (2012) conducted a meta-analysis of 36 single-case studies and found that performance feedback had an average effect size in improving teachers’ treatment fidelity across studies. Fallon et al. (2015) also conducted a systematic review and evaluation of performance feedback based on 111 single-case
research studies, determining performance feedback to be an evidence based intervention based on the WWC criteria.

Although performance feedback is a powerful training tool, it does have several drawbacks. For example, performance feedback is time-intensive and costly. In the studies reviewed by Fallon et al. (2015), most performance feedback was provided multiple times in a one-to-one format. In most cases, daily feedback was provided over the course of weeks. In some cases, daily feedback was provided over the course of a month or longer (e.g., Codding & Smyth, 2008; Reinke, Lewis-Palmer, & Merrell, 2008). Performance feedback requires resource intensive post-training follow-up including accessibility of trained consultants, most often a university researcher, funds to support training personnel, and scheduled times for all participants, with several studies requiring daily feedback multiple times a week (Fallon et al., 2015).

Furthermore, performance feedback occurs only after a teacher has attempted implementation. This presents a problem, as teachers have the potential of implementing instruction ineffectively with their students before any feedback is given. In addition, allowing teachers to practice implementation errors likely makes it more difficult to change their behavior later. Compared to performance feedback, much less attention has been given to training teachers how to implement EBPs prior to attempting implementation as an antecedent training tool. If teachers are able to implement instruction with fidelity immediately after training, it might reduce the amount of time students are receiving ineffective or inefficient instruction. Indeed, antecedent-based training strategies are needed to improve teacher implementation of EBPs before they
attempt implementation to set teachers up for success. Such strategies might mitigate or even eliminate exclusive reliance on performance feedback.

Video modeling is one such strategy that may provide a more effective means toward implementation of EBPs. Video modeling involves a trainee watching a person correctly perform target skills, with a forthcoming opportunity for the trainee to practice that skill in a similar situation (Collins, Higbee, & Salzberg, 2009). Macurik et al. (2008) compared the effectiveness, efficiency, and acceptability of video training versus in-vivo training, by training 38 staff members on behavioral intervention plans for individuals with challenging behaviors who lived in residential care facilities. The authors measured the effectiveness of the intervention by assessing staff’s verbal skills via a quiz and performance skills during on-the-job sessions. Efficiency measures were used to examine the amount of time staff and the behavior analyst were involved in the training processes, including the time spent conducting training sessions, on the job assessment and training sessions, and filming the videos. Live training sessions included a written summary, vocal description, and solicited questions. Video trainings included a headshot of the analyst providing a description of the plan with intermittent bullet points of key aspects of the plan. Periodically, a ‘picture-to-picture’ format was used with the behavior analyst speaking in the upper corner, while providing bulleted points on the other section of the monitor. Findings revealed that compared to live training, initial training sessions required less time spent during video sessions; averaging 11 min less per staff trainee. Time efficiency for training behavior analyst in video and live training sessions resulted in essentially the same amount of time; however, if the staff were trained on all three behavior plans, video training would require considerably less time. Lastly, staff reported
both trainings with positive acceptability with live training being considered slightly more favorable. Macurik et al. (2008) provided meaningful evidence to support the use of video instruction to train staff members on behavior plans.

Moore and Fisher (2007) added to the research base on video modeling by evaluating the effectiveness of lectures and two types of video modeling in training staff members to conduct functional analysis (FA) sessions. The study focused on three participants, who all had bachelor’s degrees in psychology, and two who were pursuing a master’s degree in behavior analysis. All participants had no prior experience conducting FAs. Training tasks included conducting FA sessions outlined by Iwata et al. (2000) in both simulated and natural conditions. Staff behavior was measured as the percent of correct responses completed successfully by participants. Lecture training materials included written description of methods, short written protocols for each condition, a PowerPoint presentation, and example outcomes. Video modeling consisted of complete and partial role-play situations, with experimenters simulating the therapist and client behaviors. Complete video models included examples of each potential therapist behavior, whereas partial video modeling consisted of samples of approximately 50% of potential therapist behaviors. A multiple baseline across participants design revealed that lecture only training increased correct responding, but not to criterion. Notably, partial video modeling resulted in a small to moderate improvement over baseline and complete video modeling resulted in mastery performance (above 80%) across eight of the nine implementations. Moore and Fisher (2007) found that allowing participants to view a 5 min video with multiple exemplars consistently showed improvements in performance.
They concluded that video modeling with multiple exemplars can be used as an efficient training tool to teach staff members how to implement FA procedures.

Collins et al. (2009) provided additional research in the area of video modeling as a training tool. Researchers investigated the effects of video modeling on staff implementation of a problem-solving intervention with adults with developmental disabilities. Additional emphasis was placed on generalization of problem-solving skills taught via video to untrained problems encountered within the residential setting. Participants included six staff members who worked in the residential setting and who had no formal behavior analysis training. Previous staff training conducted by the residential manager included at least one of the following: verbal instructions, modeling, role-play, and opportunities for questions. Training sessions involved the participants watching a 3 min video model of actors role-playing common situations while using a problem-solving script. With written instructions and previous training from the agency, participants correctly scored a mean of 38% on problem-solving steps. During post-training sessions with video modeling, participants correctly implemented a mean of 91% (range: 85-100% across participants), with five of the six participants meeting criteria before the fifth session. All six participants performed at high levels during generalization probes with novel problems. Therefore, Collins and colleagues demonstrate that video modeling can be effective in training people on simple problem-solving skills.

Catania, Almeida, Liu-Constant, & Reed (2009) examined additional evidence on video modeling. Three new direct service staff were trained on how to conduct discrete-trial sessions, at a private school for students with autism. Participants were trained
during their initial orientation as new staff, with no exposure to classroom observations in which discrete trial instruction was taking place. Baseline procedures consisted of the participants being given the necessary materials (e.g., match-to-sample lesson plan, a data sheet, and two sets of number cards 1-3) and being told to conduct the lesson as outlined. Each phase included one supervised session with a student to assess staff implementation of the skill. Intervention involved two sessions of video modeling, simulating a teacher and student session in which discrete trial practices were modeled. Participants were asked to conduct a discrete trial training session within 10 min of watching the video. Generalization sessions without the video model were measured across teaching receptive and expressive tasks. Results indicated an increase in performance among all participants, with high levels of accuracy of implementation steps completed with different lesson plan tasks. Participants maintained the skills at close to 100% during a one week follow up probe. Catania et al. (2009) demonstrated video modeling as an economical approach to training staff to implement discrete trial training protocol.

Although these studies make important contributions toward better understanding the impact of video modeling on teacher implementation of EBPs, they have limitations that leave a number of questions unanswered. First, none of these studies measured student outcomes, making it impossible to determine if teacher implementation resulted in meaningful student progress. This leaves researches with the question of whether video modeling is significant to the field of special education and applied behavior analysis. Second, not all of the strategies taught to staff in these studies would meet CEC’s definition of an EBP, which makes training effects less meaningful, as special education teachers are required to implement instruction using EBPs. Third, there were a limited
amount of studies that involved implementation of practices with students with
disabilities, with even fewer focused solely on students with ASD. Most studies included
client participation only at a minimal level (Moore & Fisher, 2007; Cythia et al., 2009;
Collins et al., 2009). With studies rarely involving students in the actual intervention,
improved student outcomes cannot be measured effectively. Fourth, researchers came in
with prescribed teaching methods instead of matching an EBP to the student goal and
student characteristics. Collaboration between researchers and teachers needs to occur
(Greenwood & Abbott, 2001) allowing teachers to identify areas of need (Alber &
Researchers must provide effective training tools that not only effect teachers
presentation of materials, but also student outcomes (Alber & Nelson, 2002; 2005;
Greenwood et al., 1993).

To address these limitations, I designed a study that tests the efficacy of video
modeling on teacher implementation of EBPs. First, the present study measures
individualized student outcomes. I examined if video modeling can serve as an effective
tool to train teachers on practices that result in improved student outcomes, evaluating if
it is a socially significant strategy. Second, all of the strategies taught meet CEC’s
definition of an EBP, meeting federal legislative mandates. Third, all three teachers
worked directly with students with ASD. As a large portion of students with disabilities
are diagnosed with ASD, it is important to find training tools that improve outcomes for
students with ASD. Fourth, this study was designed for individualization, by matching
student goals and characteristics to an EBP from Wong et al. (2015), allowing the teacher
and researcher to collaborate on student goals and characteristics, to select an EBP that best fit the individual student.

Specifically, the current study addresses the following research questions:

1. What are the effects of an instructional video model on teacher implementation of EBPs with a student with ASD when teaching social or academic skills?

2. What are the effects of teacher implementation of EBPs acquired through video modeling on student acquisition of social or academic skills identified by the teacher?

3. If the teacher struggles to implement the EBP with fidelity or the student does not make progress, what effect does performance feedback have on these outcomes?
Chapter 2: Method

Teachers and Students With Severe Disabilities

Three dyads of special education teachers and their students with moderate to severe disabilities were recruited to participate in the study. Two of the teachers, Lydia and Hannah, volunteered to participate, after their district special education administrators sent out a brief description of the study with a $200 incentive. Amy volunteered to participate after being provided information about the opportunity for professional development in a meeting with the first author, without incentive pay. Qualifications for the study included that teachers (a) provided daily instruction to a student with a severe disability (i.e., the student must have qualified for alternate assessment) and ASD, (b) reported that they were struggling to make progress on one or more of the student’s Individualized Education Program (IEP) goals, and (c) expressed willingness to learn how to implement an EBP to target one of the student’s goals.

Teacher consent, student assent, and parent permission were obtained before the study began. Researchers used simple language when asking the students if they were comfortable having researchers watch to see what they were learning in school. In chance that the student did not comprehend the question or provide an accurate response to the question, data collectors watched for both verbal and non-verbal behaviors that indicated the student no longer wanted to participate.
**Lydia and Patti.** Lydia was a White special education teacher in her mid-thirties with a bachelor’s degree and certification in moderate to intensive disabilities and early childhood special education. She had been a special education teacher for 10 years. Patti was a White 8-year-old second grade student diagnosed with ASD and an intellectual disability who had been in Lydia’s class for four months. She communicated through limited verbal communication and gestures. In the teacher interview, Lydia reported that Patti’s spontaneous verbal communication was limited to requesting desired items from adults, or reciting lines from children’s television shows. It was also reported that Patti would verbally respond to scripted situations presented by adults to which she had repeated exposure (e.g., saying hello in response to an adult saying hello). Yet, Lydia reported that without teacher prompting, Patti would not interact with peers. Patti had a composite score of 73 on the Vineland Adaptive Behavior Scales determining Patti’s functional intelligence at the borderline adaptive functioning level (VABS; Sparrow, Balla, Cicchetti, Harrison, & Doll, 1984). She had a non-verbal IQ score of 88 on the Kaufmann II showing her novel problem solving skills were in the average range. Lydia reported that Patti’s strengths included decoding written text (although she struggled with comprehension) and basic math computation (i.e., one-digit addition and subtraction). Lydia’s primary area of concern was Patti’s limited social interactions with peers throughout the school environment. Patti had not made progress in the area of social communication with peers since entering Lydia’s class. Lydia reported that this was likely because she was unsure how to approach this goal.

**Amy and Ryka.** Amy was a White special education teacher in her early-twenties with a bachelor’s degree and certification in mild to moderate disabilities and early
childhood education. She taught one year as a third grade general education teacher. At the time of the study she was in her second year of teaching, and her first in a self-contained classroom for students with ASD, with Ryka in her class for the past six months. Ryka was an Asian/Pacific Islander, 10-year-old fourth grade student diagnosed with ASD. She was non-verbal and communicated through the use of an augmentative and alternative communication (AAC) device, picture supports (e.g., Mayer Johnson symbols help, all done, more), and minimal gestures (e.g., thank you, all done). Ryka’s AAC device was accessed through direct selection and was newly introduced that year. No consistent independent initiations or responses were occurring in the school setting in the form of AAC, pictures, or sign, without prompting. On the most current diagnostic test in 2011, Ryka scored within the 1st percentile on the Battelle Developmental Inventory-2 assessment, and tested across all domains with a composite score of 40 on the VABS, scoring in the low range. Anna reported that Ryka showed strengths in the area of initiating social interactions (e.g., waving, pointing, tapping) and that she responded well to verbal, gestural, and visual prompts. Ryka demonstrated receptive language skills by following one-step directions in the classroom routine, but struggled with new vocabulary and multi-step directions (e.g., get your lunch and binder). Anna reported that she had been working with Ryka on receptive identification of numbers, shapes, letter names, and phonemic awareness since the beginning of the year and consistent progress was not occurring.

**Hannah and John.** Hannah was a White special education teacher in her early-thirties with a bachelor’s degree and certification in mild to moderate disabilities and a master’s degree in moderate to intensive disabilities. She had been teaching for 9 years,
and John had been in her class for the past 5 months. John was a White 13-year-old sixth grade student with ASD who communicated with verbal language. He had medical diagnoses of Fragile X syndrome and epilepsy. The most recent information received from 2011 stated that John was assessed using the Kaufman Test of Educational Achievement, Second Edition (KTEA II) and obtained a composite reading score of 58, math composite of 50, concepts and application composite of 45, and written language of composite of 61, with the mean of all composite scores being 100 he scored below average across all areas. He was also given the Kaufman Assessment Battery for Children, 2nd Edition (KABC-II) with the following scores, short-term memory-52, long term memory-54, and visual processing-53 all in the well below average range. Additional testing on the Woodcock-Johnson Test of Cognitive Ability-Third Edition (WJ-III) in 2014 showed that John was performing well below average in the areas of verbal ability, thinking ability, processing speed, and short term memory. Hannah had been working on single digit subtraction and multiplication problems since he became a student in her class, with little progress.

Schools and Instructional Settings

Lydia and Amy taught in two different elementary schools, and Hannah taught in a middle school setting, in rural and suburban communities. Lydia taught in a suburban school that served more than 500 students (grades PK-5) with 17% of students who received free and reduced-price lunch meals, with approximately 85% of whom were White and the remaining 15% were Asian, Black, Hispanic, or Multiracial. Amy taught in a suburban public school that specialized in serving students with ASD, with 100% of students on the autism spectrum who were alternatively assessed. It served approximately
# Guide to Choosing EBP

<table>
<thead>
<tr>
<th>Teacher and Student</th>
<th>Student Diagnosis</th>
<th>Student Challenges</th>
<th>Student Strengths</th>
<th>Instructional History</th>
<th>Student Goal</th>
<th>Teacher Preferences</th>
<th>Selected EBP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lydia and Patti</td>
<td>ASD; ID</td>
<td>limited expressive communication skills; no reciprocal social communication</td>
<td>read at 2nd grade reading level; math computation; decoding skills in reading</td>
<td>responded well to modeling and verbal prompts; reinforced by tickles, sensory activates, therapy ball; no significant behavior problems</td>
<td>Patti will initiate or respond appropriately to peers during recess 10 times with peers without disabilities during recess.</td>
<td>no edibles</td>
<td>peer network and social script</td>
</tr>
<tr>
<td>Amy and Ryka</td>
<td>ASD; ID</td>
<td>limited expressive communication skills using picture symbols and AAC device; counting; number identification</td>
<td>following directions; attempted initiations of social interactions (e.g., wave, tap ones shoulder)</td>
<td>responded well to verbal and gestural prompts; working on letter sound correspondence and letter identification; reinforced by social interactions, bubbles, and edibles; minor behavior problems (e.g., hitting, yelling)</td>
<td>Ryka will receptively identify basic shapes (i.e., square, rectangle, circle, heart) from a field of three, with 80% accuracy across assessed opportunities by the end of the year.</td>
<td>no oppositions</td>
<td>simultaneous prompting and time delay</td>
</tr>
<tr>
<td>Hannah and John</td>
<td>ASD</td>
<td>struggled with multistep processing; one-to-one correspondence; maintaining focus; read at kindergarten grade level</td>
<td>memorization tasks with repeated exposure (i.e., sight words)</td>
<td>responded well to model and visual prompts and verbal praise; communicated through verbal language, writing, and drawling</td>
<td>John will solve single digit multiplication multiples of 5.</td>
<td>no oppositions</td>
<td>simultaneous prompting and time delay</td>
</tr>
</tbody>
</table>

*Table 1.* Guide to choosing EBP. Student characteristics, student goal, and teacher preferences were used to select an EBP from the list identified by Wong et al. (2015). ASD-Autism Spectrum Disorder; ID-Intellectual Disability
60 students (ages 10 to 21-years-old), with approximately 60% of whom were White and 21% whom were Black and with the remaining 19% Asian, Hispanic, or Multiracial. Hannah taught in a suburban intermediate school (grades 6-8) that served nearly 600 students. Approximately 50% of students in the school received free or reduced-price lunch meals, and approximately 60% of students were White and 23% were Black and the remaining 17% were Hispanic, Asian, or Multiracial. All three of the schools were located in the midwest region of the United States.

Patti attended recess from 11:30-11:50 with approximately 40 peers without disabilities in the second grade. Two paraprofessionals supervised recess, while Lydia occasionally observed from either her classroom window that faced the playground or the edge of the playground, during baseline conditions. Typically recess occurred on the outdoor playground area that contained a jungle gym, two swing sets in different locations, a large paved area with basketball hoops and hopscotch grids, and a grass area that was commonly set up for kickball. When inclement weather occurred, twice within the study, students were divided into two classrooms, with one paraprofessional supervising each room. Indoor recess activities including interlocking plastic building blocks, puzzles, paper and crayons, and chalk for the blackboard were provided.

Amy primarily worked with Ryka one-on-one in a self-contained special education classroom at the beginning or end of the day. There were typically four other students in the classroom at the time of instruction that worked in the room. During instruction Ryka sat at a rectangular table facing away from her peers with Amy facing towards her on the opposite side of the table. When staffing allowed, approximately five
sessions were held in the teacher library next to Amy’s classroom. This room held curricular and other teacher resources, with a circular table in the center of the room. Amy allowed Ryka to choose a seat and sat adjacent to her. Ryka and Amy were the only two utilizing the room during those times.

Hannah worked one-on-one with John in a special education resource room. Initially, all instruction took place at a bean shaped table where Hannah sat across from John. Approximately eight students were in the room at that time working on independent seatwork, leisure time (i.e., computer), or individual instruction with the co-teacher and paraprofessional in the room. The last two weeks of the study, one-on-one instruction was held in a conjoining room with tables, chairs, and a door to eliminate stimuli that could have been distracting the student during the instructional time.

**Materials and Instructions**

**Video modeling of EBPs.** Researchers created three instructional videos, modeling EBPs, that were individualized to address the target skill chosen by the teacher. Because I selected time delay for two teachers and peer networking for one teacher, I created individualized video models for each teacher that demonstrated how to implement each strategy in the context that the teacher would be implementing the strategy. Lydia’s video was 20 min and 45 s, Amy’s video was 5 min and 31 s, and Hannah’s video was 6 min and 6 s. Content included an overview of the EBP, a rationale of why the EBP was chosen and likely to be effective, and a model of each of the steps within the EBP. In each video, two researcher’s role played each implementation step to model appropriate teacher behavior and possible student responses. Videos were posted
to a free video sharing website, where teachers were allowed unlimited access during the intervention.

**Video Content.** Lydia was given steps to implement a peer network (Owen-DeSchryver, Carr, Cale, & Blakeley-Smith, 2008; Wong et al., 2015) to promote interactions between Patti and her typically developing peers during recess. Video content included three strategies (a) recruiting and meeting with peers to setup the peer network, (b) preparing and teaching social scripts in the classroom, and (c) actions to be performed during recess (e.g., prompting, reinforcing, and checking in with peers). Lydia was instructed to recruit 3-4 peers without disabilities who went to recess with Patti and meet with them for 15-20 min. During the meeting, Lydia was instructed to follow an agenda including introductions, background on Patti, general goals of the peer network, peer support strategies, when to seek assistance, confidentiality and respectful language, discussion and questions, and when it would occur. Second, the video discussed how to prepare new social scripts and how to practice them with Patti. Finally, the video addressed prompting Patti to read the script, reinforcing her when she read the script, and how to check in with Patti’s peers.

Amy’s video introduced the evidence-based strategies of simultaneous prompting and constant time delay procedures (Wong et al., 2015) to teach receptive shape identification from a field of three. A rationale was provided, along with instructions and modeling of teacher behavior (conducted by the author) and student behavior (role-played by the data collector) of each step within the two procedures. The video instructed Amy to implement four trials of simultaneous prompting and three trials of constant time delay with the same shape. Directions were given to repeat this sequence until time ran
out, Ryka displayed behaviors that indicated she was done, or Ryka had zero errors. Guidelines were given on the criterion of adding a new shape, at 100% accuracy during constant time delay sessions.

Hannah’s video similarly introduced simultaneous prompting and constant time delay procedures, with the target skill of teaching the student multiplication facts of multiples of five. Again, a rationale for the instructional strategy and verbal instructions were given. The author and data collector modeled these behaviors in the video. The mode of presentation was a “See: Say” format, in which Hannah showed the student the flash card and expected the student to verbally respond. Hannah was instructed to start with five unknown multiplication facts within the set, cycle through the cards using simultaneous prompting four times and then cycle through three constant time delay trials. She was instructed to repeat the sequence until the student had zero errors or the allotted time was up. The video described how Hannah should add in new cards, by adding in two new cards and starting the sequence again, then mix together the new and old math facts and run through two constant time delay sessions. Hannah was asked to conduct a probe at the end of the session with all 19 of the cards.

**Instructional Packet.** Instructional packets included a folder with the following information: (a) written handout with directions to the video link, (b) handout with written instructions discussed in the video (e.g., steps in simultaneous prompting, steps in constant time delay, the sequence of trials to be performed, criteria to mastery), and (c) materials needed to run the intervention (e.g., social scripts, shape cards, multiplication cards). The handout with the link to the video instructed teachers to watch the video and review the handout, welcomed teachers to watch the video as many times as desired, and
instructed them to begin implementing the intervention as outlined in the video. The second page in the folder was a one-page implementation checklist of the EBPs. Each checklist directly stated the steps that were modeled in the video and that would be used to measure teacher implementation fidelity. Additional materials were provided to teachers that were needed to implement the intervention. Lydia was given a peer network planning sheet and the social scripts depicted in the video. Amy had been using a range of shape manipulatives mixed with pictures of shapes during baseline, so to ensure stimuli were presented in the same format, she was provided with laminated shape cards. Later in the feedback phase, a token economy system with visuals of stars and the edible reinforcement were also provided. Lastly, since Hannah had not been using flash cards to teach multiplication facts and was not collecting data on performance during baseline, note cards were provided with multiplication facts by five along with a data sheet to track the number of correct verbal responses.

**Dependent Measures and Recording**

The dependent variable was the teacher’s percentage of implementation fidelity for the individualized EBPs. Individualized student outcomes on aligned IEP goals identified as a problem by the teacher were the secondary dependent variable.

**Teacher implementation fidelity.** Measurement of the dependent variable occurred during typical instructional or leisure time (i.e., academic or recess) two to three times a week. The degree to which implementation of EBPs were coded was based on fidelity of steps adapted from the implementation steps developed by the National Autism Center (2009). Each individual measurement system is outlined below.
Lydia. Data collection for Lydia began when the students entered the playground and ended when the students lined up to go inside lasting approximately 20 min. Observers measured the teacher fidelity by placing a check mark next to each component the teacher successfully implemented, summing the number of components presented, and recording the percent of components implemented as instructed. In the video, Lydia was instructed on four different steps: providing a social script, prompting the social script, checking in with peers, and providing praise to the target student. Providing the social script was defined as Patti holding a 3 x 5 index card with a social script written on it. Researchers coded if the social script was present within the sessions. Prompting the social script included verbal, gestural, and or model prompts in which the teacher encouraged the student to approach a student and read the script. Checking in with peers was recorded when Lydia communicated with at least one peer to provide social support. Lastly, praise was recorded when Lydia provided either verbal or gestural praise (e.g., thumbs up) to the student after she engaged in pro-social behavior.

Observers recorded student data using a momentary time sampling procedure and a smartphone interval timer, recording both Patti and peer interactions during 10 s intervals with a 5 s off recording interval. Patti’s prosocial interactions with peers were defined as follows: focal child directs verbal or nonverbal (e.g., gestures, signs) communicative behaviors toward a peer without severe disabilities. This definition included use of gestures (e.g., wave, point, tickle), vocal approximations, and verbal speech to communicate toward a peer without severe disabilities. Peer interactions were defined as such: peers without severe disabilities direct verbal or nonverbal (e.g., gestures, signs) communicative behavior toward focal child. If a peer initiated an
interaction toward a group of children including the focal child, it was coded as an interaction only if the peer’s interactive behavior was clearly directed toward, or included, the focal child.

_Amy._ Data were collected at the convenience of the teacher, occurring after the student unpacked in the morning or during their academic centers time at the end of the day. Observers measured teacher fidelity by recording up to five trials of simultaneous prompting and up to five constant time delay trials. Within each simultaneous prompting trial observers recorded (a) occurrences of the presentation of the materials and task direction (e.g., “find triangle”), (b) if Amy pointed to the target shape and stated its name within 1 s, and (c) if Amy paused for a student response or for 2-5 s with no response. If a correct learner response was provided, observers recorded if Amy provided verbal praise and restated the correct response. If there was an incorrect response or no response after 3 s, the observer recorded if Amy went back to providing a gestural prompt towards the shape and restated its name. The implementation steps were scored based on implementation steps written by Neitzel & Wolery (2009). Within each constant time delay trial, observers recorded (a) occurrences of the presentation of the materials and task direction, and (b) if Amy paused for a student response or for 2-5 s. If a correct learner response was provided, observers recorded if Amy provided verbal praise and restated the correct response. If an incorrect response was provided, the observer recorded if Amy inserted a corrective prompt. Presentation of the task materials and task demand was defined as Amy presented the student with the shape manipulatives in a field of three including the target shape (e.g., square, circle, triangle) and gave a task direction related to shape identification “find the square”. Pointing to the shape was defined as
Amy pointing directly at the shape (e.g., square) while saying the shapes name. Pausing for a student response for 2-5 s with no response was defined as Amy not providing any prompts or any communication with Ryka until either she responded, or between 2 and 5 s had passed. Correct learner responses included when Ryka gave a correct receptive response by touching or handing the teacher the target shapes. Incorrect learner responses included when Ryka provided any response not defined as a correct response, or did not provide a response at all. A percentage was calculated by dividing the total steps implemented correctly by the total number of opportunities to correctly implement steps.

**Hannah.** Data collection for Hannah occurred during a one-on-one math instructional time near the end of the school day. The same data collection procedures used with Amy were used to collect data on the intervention of simultaneous prompting and constant time delay procedures for Hannah. The definitions varied and are described below. Presentation of task direction and materials was defined as a written equation was presented (e.g., 5 x 3=) and Hannah gave a task direction related to multiplication (e.g., “what is 5 x 3?”), a gesture towards the equation, or eye contact. The teacher verbally stated the correct answer, which was defined as Hannah verbally stating the correct answer to the corresponding multiplication flash card. Pauses for student response for 2-5 s with no response was defined as no prompts or communication with John until either; John responded, or between 2 and 5 s had passed. The student behavior of responding correctly was defined as saying or writing the correct corresponding fact to the written problem. Incorrect responses were defined as any other response that would not fit into the category of a correct response or no response. Implementation fidelity was calculated by the total number of steps implemented correctly divided by the total number of
opportunities to correctly implement steps. John’s probes were presented in a “See: Write” format with five multiplication equations listed, expecting John to write the answer to the equation next to each problem.

**Observation Training and Interobserver Agreement**

The first author, two doctoral students, and one university faculty member in the field of special education served as observers in the study. The university faculty member and doctoral student helped in the creation of the protocol and data collection sheets, so no additional training was necessary. The second doctoral student was provided with a verbal and written description of the protocol and data sheets before first collecting data. Any questions regarding data collection were brought to the author’s attention immediately after the session ended and if agreement fell below 80% retraining was to occur. Any follow-up questions were addressed before the next observation. A second observer collected data on 43% of all observations, across participants and experimental conditions. A point-by-point agreement was calculated for Patti’s student data, by dividing the number of intervals the primary and secondary observer codes matched by the total number of intervals. IOA agreement for Lydia was collected on four sessions with 100% agreement and for Patti on five sessions with 98% agreement (range: 93-100%). For Amy IOA was collected on seven sessions with 99% agreement (range: 98-100%). IOA was collected on three sessions for Hannah with 99% agreement (range: 98–100%) and with John across twelves sessions with 100% agreement.

**Experimental Design and Procedures**

A multiple probe design across participants was used to evaluate the effectiveness of the intervention, involving repeated intermittent measurement of the dependent
variable. Introduction of the independent variable was staggered across participants, when a stable trend was observed (Gast & Ledford, 2014).

**Pre-baseline.** Interview sessions were set up to gain detailed information about the target student and their instructional goals. Structured interview questions were used to gather information about (a) the target student, including diagnosed disability, strengths, and weaknesses; (b) the student’s goal, including criteria, measurement strategies, and why this goal was significant to the student; (c) the teacher’s current approach, which included presentation of researchers materials, modeling instruction, and notions on why this approach was not resulting in student progress; (d) student characteristics and history that might influence the intervention choice, including strategies the teacher implemented and observed student growth, strategies implemented in which no growth was measured, student mode(s) of communication, receptive language, reading level, prompting strategies that have shown to be effective or ineffective, student motivation and reinforcement; (e) and the teacher’s instructional preferences, including use of tangibles/edibles, other oppositions they had in implementing specific interventions. For a complete copy of the structured interview, see Appendix A.

From the information provided about the student and their goal, I identified an EBP that was a good match for the student goal, student characteristic, and teacher preferences (see Table 1). I selected constant time delay for Ryka and John, and a combination of a peer network and social scripts for Patti. All EBPs were selected from the Wong et al. (2015) review, which applied the definition of an EBP as outlined by the Council of Exceptional Children’s (CEC; Cook et al., 2014). CEC states that EBPs must
be supported by positive effects in one of the following (a) two methodologically sound group comparison studies with random assignment group with at least 60 participants; (b) four methodologically sound group comparison studies with non-random assignments groups with at least 120 participants; (c) or five methodologically sound single-subject studies with at least 20 total participants or, meet at least 50% criteria for two or more study designs described above and include no methodological sound studies conducted with negative effects and at least a 3:1 ratio of methodically sound studies with positive effects to methodically sound studies with neutral/mixed effects (Cook et al., 2014).

**Baseline.** After selecting a target skill (see Table 1), I scheduled a time to observe the participant work with the selected student on the skill during the regularly allotted time period. Participants were asked to provide instruction as normal. Data collectors stood or sat within viewing/hearing distance of the participants, but did not provide any support, direction, or feedback during or after the session. Lydia’s baseline sessions were observed for the duration of recess, 20 min in length. Amy and Hannah’s baseline sessions lasted for the duration of five simultaneous prompting trials, approximately 5 min or less.

**Video Modeling.** The video modeling phase began when each teacher was given an instructional packet that included directions for accessing the web-based video model (see Materials and Instructions above). I verified that the teacher could access the web-based video model from a school computer, and I read the instructions on the first page of the handout. I did not give any other training or support during this phase. I told teachers that I would not be able to answer questions or provide any further support related to implementation of the EBP during the video modeling phase, because I needed to
measure the impact of video modeling in isolation. Through a web-based tracking tool, I measured the number of times each teacher accessed their video model. Lydia accessed her video model three times (once before the first session, and two between the first and second sessions), Amy seven times (twice before the first session, once after the first session, and then four additional times), and Hannah six times (twice before the first session, once on the day of the first session, and then three additional times following the session).

**Feedback.** After a clear trend was shown in the teacher data with teacher implementation fidelity falling below 80% and/or student data at a low or declining trend, researchers provided instructional feedback directly related to teacher and student performance to improve implementation fidelity and/or modify instruction based on student behavior. Feedback included specific praise for correct steps, corrective feedback for incorrect steps, and suggestions on how to rearrange instruction to increase student performance (e.g., presentation of materials, attentional cues, reinforcement systems). Each feedback session was short in duration (e.g., approximately five minutes or less) and when adaptations were recommended they were accompanied with a written description.

Lydia was given feedback on implementation fidelity that included having her prompt peers when Patti was not engaging in social play, when peers chose activities in which Patti needed additional support due to skill deficits, or when peers stopped engaging with Patti. Feedback on appropriate times to prompt the use of a new social script to redirect Patti to a preferred activity or conversation topic and to prompt a social script when Patti was no longer engaged or participating appropriately were given.
Additionally, it was recommended that Lydia provide praise to Patti and the peers during and after recess each day.

Amy corrected her implementation error after the first session, so feedback sessions focused solely on Ryka’s behavior. Given that Ryka was choosing a shape without looking at all of the choices, feedback was given on how to change the presentation of materials (e.g., spread out in a triangular shape) and adding in an attentional cue (i.e., “hands down, look” scanning choices with finger). Ryka was easily distracted by others in the room and would look at them instead of her work, so a change in seating placement or environment was recommended to eliminate some of the distractions. Additionally, a reinforcement system contingent on correct responses, a token economy and the use of edible reinforcement, to increase Ryka’s motivation and correct responses were suggested.

Hannah had no implementation errors, but due to John’s low performance she was given suggestions on various adaptations within the feedback phase. I directed Hannah to use a reinforcement system contingent on correct responses, rather than elapsed time. To ensure John was not reinforced for making a choice without looking at the card, Hannah was instructed to not give him a check mark on his reinforcement card unless he made eye contact with the choice. Hannah had been switching up the multiplication facts each session, so she was instructed to teach the same five cards until mastery before moving on to a new set. When this did not change John’s performance, it was suggested that Hannah present the flashcards in a receptive field of three. She was instructed to run one round of simultaneous prompting followed by as many time delay trials necessary for John to reach the criteria specified on his reinforcement system. After Hannah showed six
consecutive sessions of 100% implementation fidelity in the intervention and feedback sessions, and John did not make progress, researchers ran the intervention for the remaining five sessions.

**Researcher Implementation.** Given John's lack of progress despite teacher procedural fidelity, and our observation notes from instruction, I hypothesized that Hannah might be inadvertently reinforcing incorrect responding by providing social reinforcement. For example, she would joke around with John and provide positive social interactions across both correct and incorrect responses. Therefore, I inserted a researcher implementation condition to test if more strictly designed procedures that eliminated any possible reinforcement of incorrect responding might promote increased rates of correct responding. Researcher implementation sessions were run by a doctoral student and myself to model instruction and adjust instruction based on John’s performance. Because John was reinforced by social interactions with staff members, researchers redirected his comments unrelated to instruction back to the task, and reminded him he could talk about the topic when he reached criteria. Social reinforcement was given contingent on correct answers (e.g., high five immediately after a correct response). At times in the simultaneous trials, John would touch the multiplication problem after he was given the controlling prompt (i.e., gestural prompt), without visually attending to the card. I added a verbal attentional cue, “you need to look at the card if you want to get your check marks”. Additionally, the number or multiplication cards introduced within the session was reduced to three, until mastery of 80% within the set was obtained. Two additional cards were to be introduced at a time following mastery of the first three cards. I implemented these procedures until logistical issues precluded me to continue.
Social Validity

At the end of the intervention participants were given a social validity survey to assess their opinions on the intervention. Participants were asked to what degree they felt the video they received was effective in helping them implement the new strategy, to what degree they felt the feedback they received was in helping them implement the strategy, and to what degree they felt the instructional practice implemented with the student was effective using a 5-point Likert scale (1 = Not effective at all, 2 = Not very effective, 3 = Somewhat effective, 4 = Quite effective, 5 = Very effective). They were also asked how likely it was that they would use the same strategy with the student or other students in the future, how likely it would be that they would participate in a similar professional development opportunity in the future, and the likelihood they would recommend this kind of professional development opportunity to their colleagues using a 5-point Likert scale (1 = Not at all likely, 2 = Not very likely, 3 = Somewhat likely, 4 = Quite likely, 5 = Very likely). Additionally, six open ended questions were asked regarding what the participant liked/did not like about the video model, what they liked/did not like about the consultation, anything they did not like about the instructional strategy, and any other opinions they wanted to share that would be helpful.
Chapter 3: Results

Introduction of video modeling coincided with an immediate and substantial increase in implementation fidelity of EBPs for all three teachers. Amy and Hannah implemented EBPs at high levels of fidelity with video modeling alone, but Lydia did not reach mastery until after receiving performance feedback. Student data varied across participants. Patti and Ryka made substantial progress on their IEP goals, but John did not demonstrate progress. A functional relation was demonstrated between video modeling and teacher implementation fidelity, but not between teacher implementation and student outcomes. Data for all participants are represented in Figure 1. Data for individual participants are analyzed below in terms of trend, level, and variability.

Teacher Implementation Fidelity

Lydia. Across 13 baseline sessions, Lydia implemented 0% of peer network fidelity steps. According to observer notes, Lydia did not implement any focused intervention during recess, although she did occasionally observe Patti from her classroom window or from the edge of the playground. Immediately after receiving access to the video model, there was initially a substantial increase in level to 75% of steps implemented accurately (i.e., three out of four components) for two consecutive sessions. For the following two sessions, data trended downward to a level of 0% accuracy of fidelity steps. Once feedback began in session 18, accuracy immediately increased to 100% and maintained for the duration of data collection.
**Amy.** During baseline conditions, Amy implemented 0% of fidelity steps accurately. According to observer notes, before intervention occurred Amy addressed the goal of shape identification by asking Ryka to hold shape manipulatives, count the sides, and by having her find them on her communication device. Immediately after receiving access to the video model, Amy’s level of fidelity increased to 77% of steps completed accurately. In the remaining intervention sessions, Amy implemented instruction with 100% accuracy. Feedback from the researcher was provided from session 11 to 25. Amy implemented instruction at a level of 100% accuracy across sessions in which feedback was provided.

**Hannah.** During baseline conditions, Hannah showed 0% accuracy across all sessions. According to observer notes, Hannah was addressing the multiplication goal by giving John a visual representation of the equation and having John count the amount within each group and the total number of groups, then having him write out the equation and verbally skip count by five. Immediately after receiving access to the video model, Hannah implemented all fidelity steps with 100% accuracy. She consistently implemented the intervention with 100% accuracy across four sessions with a steady trend, no variability, and at a high level from session 4 to 9. Hannah continued to show 100% accuracy during feedback sessions across both remaining sessions.

**Individual Student Outcomes**

**Patti.** During baseline conditions, Patti was interacting with peers at very low levels (range: 0–20.5%) with low variability. When Lydia implemented peer network arrangements and prompted social scripts, Patti’s interactions with peers increased immediately to an average of 34.4%. Within these interactions, Patti was initiating or
responding to peers about one fifth of the time (i.e., average of 17.9%). Following teacher feedback sessions, the average number of intervals with interactions increased to 61.3% of intervals with Patti communicating with peers increasing to an average of 25.6%.

**Ryka.** During baseline condition, Ryka demonstrated moderate variability in skill acquisition. Baseline data ranged from 0 to 50% accuracy across two shapes (i.e., triangle and circle), with three of the sessions at 0% accuracy. Ryka’s data were highly variable during initial teacher implementation of the intervention, fluctuating between 0% and 75%, accuracy. After 5 days of teacher intervention, feedback was provided during sessions 10–16. During this time Ryka’s performance ranged from 0 to 50% with low variability and a mean level of 38%. After contingent reinforcement and feedback were introduced in session 17, Ryka’s data trended to 100% over the subsequent four sessions and maintained at that level.

**John.** John demonstrated 20% accuracy across two consecutive sessions during the baseline phase and then performed at 0%. When the intervention was introduced, John’s performance remained steady at a level of 20% for four consecutive sessions. During the feedback phase decreasing to a level of 0% during session 8, and then back to 20% in session 9. For the remaining five sessions, researchers ran instruction, and John’s performance ranged from 0% to 20% accuracy, with a steady trend and low variability. Although John was not generalizing the multiplication facts to the written probe, he was showing moderate success (e.g., mastery of 4 new cards) in verbally responding to the presentation of multiplication facts during time delay trials at the end of the study.
Social Validity

All three teachers had positive opinions of the video model, consultation, and chosen EBP. Two teachers reported the video model was very effective in helping them implement the EBP, and one reported it was quite effective. When asked what they liked about the video model, Amy and Lydia commented that they liked how the video provided a range of student responses with specific examples of how to respond. Hannah liked seeing the procedure and having the ability to go back and reference it at any time. She also stated that the length of the video was long “enough to fully demonstrate the procedure without being overwhelming”. When asked what (if anything) they did not like about the video model, no negative reports were given. Amy and Hannah further praised the video, with Hannah stating that she felt the video was professional, but not intimidating. All three participants reported that the feedback they had received was very effective in helping them implement the strategy. When asked what they liked about coaching with feedback, Amy wrote that she “loved having immediate feedback, so it was fresh in my mind and I could implement changes quickly”. Hannah reported that “the professionals were approachable, helpful, and supportive. Feedback was clear and suggestions and adjustments were helpful. The experience was extremely positive”. When asked if there was anything they did not like about the consultation, no negative comments were made. All three participants reported that they would not change anything about the intervention. In response to what degree they felt the instructional practice implemented with the student was effective, Lydia and Amy reported that it was
Figure 1. Teacher implementation of evidence-based practices (circles) and student performance on individualized outcomes (squares). Lydia implemented a peer network and social scripts; Amy and Hannah implemented constant time delay. Patti was probed on interactions with peers during recess, Ryka on receptively identifying two target shapes (triangle and circle), and John on writing the answer to multiplication equations.
very effective, while Hannah reported it was somewhat effective. Hannah noted that it was “not effective initially, but with adjustments, we began to see progress”. When asked how likely it would be for them to use the same strategy with the target student or a different student in the future, Lydia and Amy chose very likely, and Hannah chose quite likely. Amy commented that she had already used simultaneous prompting and time delay procedures with Ryka to teach name identification and had seen progress. When asked what they did not like about the instructional strategy and what they thought would be helpful for future instructional plans for other teachers, Hannah stated that initially the sessions were difficult to get through due to low levels of student accuracy, but as adjustments were made, he had much more success. When asked how likely they were to participate in similar training opportunities in the future, Lydia and Hannah wrote very likely, and Amy wrote quite likely. All three participants expressed that they were very likely to recommend this kind of training to colleagues. Lastly, at the end of the study I left Hannah with a list of suggestions to continue instruction including criteria for new multiplication cards, behavioral suggestions, and a preference assessment. Hannah agreed to continue instruction, and later forwarded a data sheet that showed substantial student performance six weeks after the study was over.
Chapter 4: Discussion

Implementation of EBPs can improve outcomes for students with severe disabilities, but many special educators do not implement these practices accurately in the classroom. Efficient and effective teacher training methods are needed to close this research-to-practice gap. One possible avenue might be video modeling, which involves teachers watching a video of correct implementation of EBPs. In this study, I investigated the impact of video modeling on three special education teachers’ implementation of EBPs, and the impact of implementation on individualized outcomes for students with severe disabilities. My findings showed that video modeling promoted increased teacher implementation fidelity, but implementation did not always translate into student progress. Two of the three students met their individualized goals after teachers received performance feedback that included adaptation to instruction, and one did not make progress. These findings extend the literature on teacher training in a number of key ways.

First, results from this study replicate previous findings that video modeling is a promising tool for effectively training staff (Moore & Fisher, 2007; Collins et al., 2009; Catania et al., 2009). All three participants performed implementation steps at high levels of accuracy (above 75%) immediately after watching the video model. Lydia performed at 75% implementation fidelity across the first two sessions, watching the video before the first session and two times between the first and second session. Amy re-watched the
video after the first intervention session, and improved treatment fidelity correcting all
errors by session two. She maintained 100% implementation fidelity and data showed her
watching the video four additional times following the second session. Hannah
maintained 100% implementation fidelity across intervention sessions and she
periodically reviewed the video three times after the first session.

Video modeling is unique in that it allows teachers to go back and access expert
training at any time after they have attempted implementation with their student.
Interestingly, Amy and Hannah had higher implementation fidelity across time
correlating to their increased views of the video model across time. Lydia did not watch
the video model as frequent as Amy and Hannah, conceivably due to her video model
being longer in duration by approximately 15 min. It appears that video modeling is
effective for some people immediately, and for others after repeated access. Some
teachers, such as Lydia, might need additional support or shorter video models with
repeated exposure to achieve implementation fidelity. Lydia’s rapid increase in
implementation fidelity following one session of performance feedback indicates that the
when video modeling alone is not effective, that a combination of video modeling and
brief performance feedback may be effective. Further supporting a need for higher
quality initial training like video modeling, with the anticipation that some teachers will
still require follow up support to achieve implementation fidelity.

Second, results from the study indicate that high procedural fidelity of EBPs alone
did not always result in student progress on the target goal. Although implementation
fidelity of EBPs are crucial, there are other additional factors that impact whether a
student will make progress. Even when EBPs are implemented with fidelity over time,
fidelity alone may not always result in optimal student outcomes (Cook & Odom, 2013). The efficacy of the practice is multifaceted, with influencing factors such as individual teacher characteristics (e.g., years of experience, licensure/credentials), child characteristics (e.g., risk factors, level and type of behavior problem), and organization variables (e.g., program type/requirements) effecting student performance (Sutherland, McLeod, Conroy, and Cox, 2013).

In the present study, several of these additional factors may have impacted student data. For example, Amy had a background as a general educator, and had little experience demonstrating systematic intervention plans. Therefore, it is not surprising that she was unsure how to adjust her instruction when Ryka’s performance was highly variable. In addition, John made little progress even after Hanna accurately implemented all steps of constant time delay. In this case, I suspect that John may have had unique characteristics that made it difficult to identify instructional adjustments that would optimize his performance. It was difficult for Hannah to identify reinforcers that were consistently effective. Additionally, the mode of student behavior being targeted in instruction was measured in verbal or receptive responses whereas, the mode of assessment in the probe sessions were measured in written response. Therefore, the organizational variable of having a variance between the mode of presentation in instruction and probe could have also limited student progress, as it required the student to generalize to a different mode of response. In Lydia’s case, implementation errors after video modeling did not preclude Patti from making substantial growth towards her social goal. Because Lydia had not been implementing any social intervention for Patti at recess
during baseline, even partially implemented intervention was markedly superior to no intervention at all.

Third, when students did not make optimal progress, teachers were not able to independently make adjustments to their instruction. All three teachers required performance feedback from a coach to optimize their instruction. As Amy implemented instruction with 100% treatment fidelity following the second session, her student Ryka did not show a corresponding increase in academic progress until feedback was given to Amy. Suggested changes in how the materials were presented, how to gain the student’s attention, and how to motivate the student, correlated with an increase in Ryka’s correct responses. Although Amy was performing the intervention with procedural fidelity, external factors needed to be addressed. While Lydia only implemented portions of the peer network with fidelity, substantial growth in Patti’s social interactions occurred. However, when feedback was given further progress in Patti’s social interactions with peers at recess occurred. Similarly, when John was not making progress on his goal, Hannah stuck strictly to the protocol outlined in the video. EBPs are designed to be disseminated across students with flexibility (Harn, Parisi, & Stoolmiller, 2013), but mastery of procedural steps does not provide teachers the skills needed in making decisions regarding changes that are necessary in enhancing student progress.

Overall, data from the study exemplified that accurate implementation of EBPs was not always effective without modifications directly related to the student’s individual performance. This is an essential finding, as the goal of improving teacher treatment fidelity is to increase student progress. Even though the EBPs were originally chosen to best fit each individual student goal, aspects of instruction within the EBP framework
needed to be modified in order for student progress to occur. Essentially two skillsets are necessary in optimizing student success within the evidence based practice. One, teachers must achieve procedural fidelity, implementing instruction utilizing all the key components. And two, teachers must modify their instruction within the EBP when it is not optimally effective, evaluating and adjusting aspects of instruction (e.g., controlling prompt, reinforcement, instructional length, sequence, mode of presentation). EBPs have been studied across a range of students with varying characteristics, designed to allow teachers to individualize instruction to best fit the target student (Harn et al., 2013). This study shows that teachers are not independently making adjustments within the flexible structure of the EBPs. Further highlighting the need to fill the gap in current research, emphasizing the importance of measuring student outcomes in conjunction with training effects.

**Implications for Practice**

Results from this study have several implications for special education teachers and those interested in training teachers. Current research on professional development and its relationship to teacher outcomes states that it is of higher quality if it is sustained over time and involves a substantial number of hours (Garet, Porter, Desimone, Birman, & Yoon, 2001). This study demonstrated that video modeling can be an alternative professional development method for those interested in increasing teacher’s implementation of EBPs in a cost and time effective manner. With the availability of a permanent product that can easily be disseminated within the classroom, educators can use video modeling to effectively train teachers while eliminating extensive hours of training. These results demonstrate that high procedural fidelity did not always ensure
student progress, and that teachers relied on feedback sessions to make adjustments to increase student performance when EBPs were not enough. Emphasizing the need to train teachers on how to adjust their instruction based on student behavior. Teacher educator programs, textbooks, and practitioner articles need to expand their focus from if and when teachers should make instructional changes to how these changes should occur.

**Limitations and Future Research**

Limitations presented in this study create a pathway for future research. First, although there is substantial overlap of data, data collection did not begin and end across all participants at the same time. Lydia’s participation in the study had to end early due to health related matters. Additionally, there was not alignment across student probe data. In future research studies, researchers might align probes for all participants immediately before beginning intervention and on the first intervention session, across all participants (Cooper, Heron, & Heward, 2007). Second, Hannah only participated in three baseline sessions before intervention was introduced due to availability. In respect to Hannah’s time, intervention began on session four. As specified by WWC, future researchers might collect at least five days of baseline data to ensure a steady trend occurs (Cooper et al., 2007). Third, John’s accuracy did not increase with the implementation of the intervention. The mode of student behavior being targeted in the instruction (i.e., receptive or verbal) was different from the mode of assessment in the probe sessions (i.e., written). Future researchers might utilize a probe that assesses student’s success in the same mode of presentation as the instruction and feedback are given. Also, future researchers might extend their data collection until an effect is seen. Fourth, maintenance data were not collected in this study due to time restrictions, with limited availability of
participants and time constrains at the end of the study. In future research studies, researchers might include maintenance data to measure progress over time. Fifth, generalization of implementation fidelity across different participants did not occur due to time constrains. In future research studies, researchers might program for generalization of skills across students and environments to examine effect on teacher treatment fidelity and student progress.

**Conclusion**

The results of this study suggest that video modeling can be used as an effective training tool to teach teachers to implement EBPs with students with moderate to severe disabilities. Although video modeling is an efficient means to promote improved implementation fidelity of EBPs, this study demonstrates that high fidelity alone does not guarantee student progress. Teachers must also be prepared in adapting their instruction based on student performance—especially for students with severe disabilities. Not only do we need to ensure teachers are using EBPs in the practical setting, but that they have knowledge on how to make adjustments to their instruction based on student performance. Findings from this study suggest that video modeling offers a solution to supporting teachers in the use of EBPs, however, additional research is needed to develop highly competent teachers who serve students with severe disabilities in all aspects to deliver effective instruction.
References


Brock, M. E., Biggs, E., Carter, E. W., Cattey, G., & Raley, K. (2016). Implementation and generalization of peer support arrangements for students with significant


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doi:10.1080/10459881003785506


Appendix A: Initial Teacher Interview
1. What is the student’s disability?

2. What kinds of skills does the student struggle with (i.e., weaknesses)?

3. What kinds of skills is the student good at (i.e., strengths)?

**Student Goal**
We must have an observable and measurable goal (a) is aligned with an IEP goal or the general education curriculum, (b) that can be measured with 10 trials, (c) that can be targeted/assessed at the same time daily, (d) for which the student’s performance is currently poor, (e) and for which you think that the approach you are currently using is unlikely to be effective. Do you have a goal in mind that would meet these criteria?

1. Student goal (must meet criteria above):

2. How might we measure if the student is making progress on this goal? Is there a strategy that you are already using?

3. Why is this an important goal for this student?

**Current Approach**
1. What, if anything, are you doing right now to target this goal? If possible, show me your materials walk me through exactly what you are doing.

2. Why do you think your current approach might not be working?

**Student Characteristics and History that Might Impact Choice of Intervention Strategy**
1. In general, what kind of strategies has the student responded well to in the past?

2. In general, what kind of strategies has the student responded poorly to in the past?

3. How does the student communicate?

4. How well do you think the student understands what you are saying to him/her? How do you know?
5. Does the student read? If so, how well?

6. How does the student respond to verbal prompts?

7. How does the student respond to gestural prompts (e.g., pointing)?

8. How well can the student, if prompted, imitate someone else’s actions (i.e., a model)?

9. How does the student respond to visual prompts (e.g., pictures)?

10. How does the student respond to physical prompts (e.g., hand-over-hand)?

11. How motivated is the student to do what you ask him/her to do?

12. What kinds of reinforcers are you currently using with the student, and how well do you feel they are working? How did you identify these reinforcers?

13. Do you know of any other possible reinforcers that might work well for this student that you are not currently using?

14. Is there anything else that you haven’t told us about the student that might influence how we pick an intervention strategy?

**Teacher Preferences**

1. Are you opposed to giving the student tangibles (object) or edibles (food) to reinforce correct responses or desired behavior?

2. Is there any strategy that you have heard of or that you have seen someone else do that you are opposed to doing?
Appendix B: Lydia and Patti’s Coding Manual
Coding Manual for Lydia and Patti

Teacher Behavior: Implementation of Peer Network Arrangements
Use the attached data sheet to measure the presence absence of each of the following implementation components. There is no need to capture the number of time a component happened; but simply that it occurred during the observation.

Definitions, Examples, and Non-Examples

*Provides social script*: The student holds a 3x5 index card with a social script written on it. You may or may not observe the teacher handing the social script to the student, because it may have been handed before exiting the school. The script will be written on a 3x5 index card.

- **Examples**: student walks out to play ground with a 3x5 index card; teacher walks to play ground with student and hands 3x5 index card to student once at playground; teacher arrives a few minutes after recess has started and hands student 3x5 index card

- **Non-Examples**: at no time during recess does the student hold a 3x5 index card with a social script written on it

*Prompt social script*: Using verbal, gestural, and or model prompts, the teacher encourages the student to approach a student and read the script.

- **Examples**: teacher points toward peer(s), teacher points toward card, teacher models how to read social script, teacher tells student to approach peers and read script

- **Non-Examples**: teacher tells student to have a good time at recess, teacher does not provide any prompts to student

*Checks in with peers*: The teacher communicates with at least one peer who was recruited to provide social support.

- **Examples**: teacher praises peers, teacher asks peers how things are going, teacher prompts peers to engage with target student

- **Non-Examples**: teacher waves to peers but does not talk to them, teacher does not say anything to peers

*Provides praise to target student*: The teacher provides either verbal or gestural praise to the student after she engages in pro-social behavior.

- **Example**: teacher praises target student for reading social script, interacting with peers, or playing positively with peers

- **Non-Examples**: teacher says more than target word (e.g., “say away”, “the word is away”, “can you say away”); teacher provides some other prompt, such as beginning sounds only (“uh, uh”), pointing, etc.
Student Behavior: Interactions with Peers
Use the attached data sheet to record correct and incorrect responses and calculate the percentage of correct responses each day. Follow the directions at the top of the data sheet to run the probe.

Definitions, Examples, and Non-Examples

Focal Child Interaction: focal child directs verbal or nonverbal (e.g., gestures, signs) communicative behaviors toward a peer without severe disabilities. This definition includes use of a communication system (e.g., PECS, AAC device) to communicate toward a peer without severe disabilities.

Examples:
• A focal child says yes after asked by a peer if she would like to join a group.
• The focal child waves to a peer, who is looking down and does not respond.
• The focal child raises his hand to initiate a “high five” with a peer without severe disabilities.

Non-examples:
• The focal child is asked to read a list of directions out loud to the group. He reads the directions to the entire group.
• The counselor says to the focal child, “Say hi.” The focal child looks at the peer network for couple seconds and turns his head away.
• The focal child is walking by a counselor and a group of peers while making a comment not directed toward a specific person, “Oh, I forgot wear my running shoes.

Peer Interaction: Peers without severe disabilities direct verbal or nonverbal (e.g., gestures, signs) communicative behavior toward focal child. If a peer initiates toward a group of children including the focal child, code as an interaction if the peer’s interactive behaviors clearly directed toward or includes the focal child.

Examples:
• A peer says to the focal child, “Hey, let’s go!”
• A peer asks a group of children, including the focal child, “Do any of you like to watch football?”
• A peer gives a field hockey stick focal child and also says, “Here you go.”

Non-examples:
• A peer is talking to the counselor and the focal child is looking or smiling at the peer.
• While distributing field hockey sticks, a peer walks by the focal child silently hands her a hockey stick.
• A peer who sits next to the focal child makes a comment to herself, “I wish I had remembered to bring my sunglasses today.”
Appendix C: Amy and Ryka’s Coding Manual
Teacher Behavior: Implementation of Constant Time Delay

Use the attached data sheet to measure the occurrence of non-occurrence of the behaviors defined below. Score up to 5 simultaneous prompting trials and up to 5, time delay trials.

1. Score the first trial as soon as the teacher presents the task direction and materials to the student. Begin the subsequent trials when the direction is given again.
2. Begin by scoring simultaneous prompting trials. Score up to 5 trials. Discontinue simultaneous prompting trials and transition to scoring time delay trials if any of the following occur:
   a. The student provided a correct prompted response for 3 consecutive trials during the observation session, and then the teacher inserts a response interval with no prompts. (The teacher may choose to provide additional simultaneous prompting trials after 3 prompted correct responses, in which case you would wait to transition until the teacher inserts a response interval with no prompts.)
   b. The student provided a correct prompted response for 3 consecutive trials during a previous session, and the teacher inserts a response interval with no prompts into the first trial. In this case, you would only score time delay trials.
3. Score up to 5, time delay trials.

Definitions, Examples, and Non-Examples

Presents the task direction and materials: The teacher presents the student the shape manipulatives in a field of three including the target shape (e.g., square, circle, triangle) and gives a task direction related to shape identification “find the square”.
   • Examples: teacher gives the student the shapes and says, “touch the square”; teacher gives the student the shapes and says “point to the square”; teacher gives the student the shapes and says “hand me the square”
   • Non-Examples: Teacher says “we’re going to identify shapes” but has not provided the student with the manipulatives; teacher gives student the shapes but does not give any sort of task direction such as “find the square”

Points to and says the shapes name:
The teacher points to the shape (e.g., square) and says the shapes name.
   • Examples: The teacher asks the student to identify the square and immediately points to the square saying “square”, the teacher asks the student to identify the circle and immediately points to the circle labeling it “circle”.
   • Non-Examples: The teacher asks for the square then tells the student “there is a square, circle, and rectangle”; the teacher asks for the square then says, “a
“square has four sides”; the teacher asks for the square then waits for 3 seconds before providing a prompt.

**Pauses for student response or for 2-5 seconds with no response:** provides no prompts or communication with student until either student responds, or in between 2 and 5 seconds have passed.

**Correct student response:** [see student definitions below]

**Incorrect/No Response:** the student provides any response that would not be defined as a correct response, or does not provide any response at all

**Provides verbal praise:** any verbal praise

- Examples: good job, great job, nice, way to go, you’re right, etc.
- Non examples: uh-huh, no response, head nod only

**Restates correct response:** that’s the square!

- Examples: you found the square; it’s a square, yes, square
- Non-example: lack of response or any response that does not restate the correct shape

**Student Behavior: Percentage of correct number counted**

Use the attached data sheet to record correct and incorrect responses and calculate the percentage of correct responses each day. Follow the directions at the top of the data sheet to run the probe.

**Definitions, Examples, and Non-Examples**

Correct response: the student gives a correct receptive response by touching or handing the teacher the target shapes.

- Example: student points to the target shape square, the student picks up the shape (e.g., square) and hands it to the teacher
- Non-examples: student picks up two shapes and hands them to the teacher, student pushes multiple shapes toward the teacher, student picks up shape and holds it in her hand, student points to each shape in front of her
Appendix D: Hannah and John’s Coding Manual
Teacher Behavior: Implementation of constant time delay

Use the attached data sheet to measure the occurrence of non-occurrence of the behaviors defined below. Score up to 5 simultaneous prompting trials and up to 5, time delay trials.

4. Score the first trial as soon as the teacher presents the task direction and materials to the student. Begin the subsequent trials when the direction is given again.

5. Begin by scoring simultaneous prompting trials. Score up to 5 trials. Discontinue simultaneous prompting trials and transition to scoring time delay trials if any of the following occur:
   a. The student provided a correct prompted response for 3 consecutive trials during the observation session, and then the teacher inserts a response interval with no prompts. (The teacher may choose to provide additional simultaneous prompting trials after 3 prompted correct responses, in which case you would wait to transition until the teacher inserts a response interval with no prompts.)
   b. The student provided a correct prompted response for 3 consecutive trials during a previous session, and the teacher inserts a response interval with no prompts into the first trial. In this case, you would only score time delay trials.

6. Score up to 5, time delay trials.

Definitions, Examples, and Non-Examples

Presents the task direction and materials: A written equation is presented (e.g., 5X3=) and gives a task direction related to multiplying such as, “what is 5X3?” a gesture towards the equation, or eye contact.

- Examples: teacher holds up the flash card and says, “what’s the answer?”; teacher holds up the multiplication flash card and gestures to the equation; teacher holds up the multiplication flash card and makes eye contact with either the equation or the student, teacher holds up the flash cards and says “what is 5X3”, teacher lays the multiplication flash card on the table face up and says “5X3=?”

- Non-Examples: the equation states 5X3= and the teacher says “10”, the equation given is 5X3= and the teacher points to a number on a skip counting chart

Verbally states correct answer: The teacher verbally states the correct answer to the multiplication problem presented on the flash card.

- Examples: the equation given is 5X3= and the teacher says “15”, the equation given is “2X5=” and the teacher says “10”

- Non-Examples: the equation states 5X3= and the teacher says “10”, the equation given is 5X3= and the teacher points to a number on a skip counting chart
Pauses for student response or for 2-5 seconds with no response: provides no prompts or communication with student until either student responds, or in between 2 and 5 seconds have passed.

Correct student response: [see student definitions below]

Incorrect/No Response: the student provides any response that would not be defined as a correct response, or does not provide any response at all

Provides verbal praise: any verbal praise
  • Examples: good job, great job, nice, way to go, you’re right, etc.
  • Non examples: uh-huh, no response, head nod only

Restates correct response: 5X3 is 15!
  • Examples: that’s right, 15; nice, 15.
  • Non-example: lack of response or any response that does not restate the correct amount

Student Behavior: Percentage of correct amounts counted
Use the attached data sheet to record correct and incorrect responses and calculate the percentage of correct responses each day. Follow the directions at the top of the data sheet to run the probe.

Definitions, Examples, and Non-Examples
  Correct response: the student correctly gives a correct written and/or verbal response by saying writing and/or saying the final answer
  Example: Student is given the multiplication problem, 5X3=, and student writes 15; Student is given the multiplication problem, 5X3=, and student says “fifteen”; Student is given the multiplication problem, 5X3=, and student says, and then writes 15
  Non-examples: Student is given the multiplication problem, 5X3=, and student writes and/or says “eight”.

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Appendix E: Social Validity Survey
1. To what degree do you feel that the video you received was effective in helping you to implement a new strategy (circle a choice below)

1 = Not Effective at All
2 = Not Very Effective
3 = Somewhat Effective
4 = Quite Effective
5 = Very Effective

2. Was there anything in particular that you liked about the video model?

3. Was there anything that you did not like about the video model? Or something that you think would be helpful for us to know in the future as we make video models for other teachers?

4. To what degree do you feel that the consultation you received (after the video model) was effective in helping you to implement a new strategy? (circle a choice below)

1 = Not Effective at All
2 = Not Very Effective
3 = Somewhat Effective
4 = Quite Effective
5 = Very Effective

5. Was there anything in particular that you liked about the consultation?
6. Was there anything that you did not like about the consultation? Or something that you think would be helpful for us to know in the future as we consult with other teachers?

7. To what degree do you feel that the instructional practice you implemented with your student was effective? (circle a choice below)
   
   1 = Not Effective at All  
   2 = Not Very Effective  
   3 = Somewhat Effective  
   4 = Quite Effective  
   5 = Very Effective  

8. How likely would you be to use the same strategy with the same student or a different student in the future?
   
   1 = Not at All Likely  
   2 = Not Very Likely  
   3 = Somewhat Likely  
   4 = Quite Likely  
   5 = Very Likely  

9. Was there anything about the instructional strategy you used with the student that you did not like? Or something you think would be helpful for us to know in the future as we design instructional plans for other teachers?

10. What is the likelihood that you would participate in a similar professional development opportunity in the future? (circle a choice below)
   
   1 = Not at All Likely  
   2 = Not Very Likely  
   3 = Somewhat Likely  
   4 = Quite Likely  
   5 = Very Likely
11. What is the likelihood that you would recommend this kind of professional development opportunity to a colleague? (circle a choice below)

1 = Not at All Likely
2 = Not Very Likely
3 = Somewhat Likely
4 = Quite Likely
5 = Very Likely

12. Is there anything else that you would like to share with us that might be helpful to us in the future, or helpful for us to share with other teachers and researchers when we write about this study?
Appendix F: Lydia and Patti’s Data Collection Sheet
Data Collection

Directions: Write the date in the first available column. Place a check next to each component that the teacher implements. Sum the components implemented, and calculate a percentage by dividing by four.

<table>
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<tr>
<th>Component</th>
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<td>Provides social script</td>
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<td>Provides praise to target student</td>
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<td>Percentage of components implemented (sum ÷ 4)</td>
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Directions Use a smartphone interval timer with 10 seconds on (observation interval) and 10 seconds off (recording interval). During the recording interval, mark the interval if an interaction occurred at any point during the observation interval.

Intervals with SWD interactions: ______ Intervals with both SWD AND peer interactions: ______
Intervals with Peer Interactions: ______ Total Intervals: ______
Appendix G: Amy and Ryka’s Data Collection Sheet
Simultaneous Prompting

**Trial #1**
- 1. Presents materials and task direction
- 2. Within 1 second, points to target shape and states its name
- 3. Pauses for student response or for 2-5 seconds with no response
- 4a. Correct Learner Response
- Provides verbal praise (e.g., Good job!)
- Restates correct response (e.g., a square)
- 4b. Incorrect/No Learner Response
- Goes back to step 2 (points to shape and states its name)

**Trial #2**
- 1. Presents materials and task direction
- 2. Within 1 second, points to target shape and states its name
- 3. Pauses for student response or for 2-5 seconds with no response
- 4a. Correct Learner Response
- Provides verbal praise (e.g., Good job!)
- Restates correct response (e.g., a square)
- 4b. Incorrect/No Learner Response
- Goes back to step 2 (points to shape and states its name)

**Trial #3**
- 1. Presents materials and task direction
- 2. Within 1 second, points to target shape and states its name
- 3. Pauses for student response or for 2-5 seconds with no response
- 4a. Correct Learner Response
- Provides verbal praise (e.g., Good job!)
- Restates correct response (e.g., a square)
- 4b. Incorrect/No Learner Response
- Goes back to step 2 (points to shape and states its name)

**Trial #4**
- 1. Presents materials and task direction
- 2. Within 1 second, points to target shape and states its name
- 3. Pauses for student response or for 2-5 seconds with no response
- 4a. Correct Learner Response
- Provides verbal praise (e.g., Good job!)
- Restates correct response (e.g., a square)

**Trial #5**
- 1. Presents materials and task direction
- 2. Within 1 second, points to target shape and states its name
- 3. Pauses for student response or for 2-5 seconds with no response
- 4a. Correct Learner Response
- Provides verbal praise (e.g., Good job!)
- Restates correct response (e.g., a square)
- 4b. Incorrect/No Learner Response
- Goes back to step 2 (points to shape and states its name)

Notes:
Time Delay

**Trial #1**
- □ 1. Presents materials and task direction
- □ 2. Within 1 second, points to target shape and states its name
- □ 3. Pauses for student response or for 2-5 seconds with no response
  - □ 4a. Correct Learner Response
  - □ 4b. Incorrect Learner Response
    - Provides verbal praise (e.g., Good job!)
    - Restates correct response (e.g., a square)

**Trial #2**
- □ 1. Presents materials and task direction
- □ 2. Within 1 second, points to target shape and states its name
- □ 3. Pauses for student response or for 2-5 seconds with no response
  - □ 4a. Correct Learner Response
  - □ 4b. Incorrect Learner Response
    - Goes back to step 2 (points to shape and states its name)
    - Restates correct response (e.g., a square)

**Trial #3**
- □ 1. Presents materials and task direction
- □ 2. Within 1 second, points to target shape and states its name
- □ 3. Pauses for student response or for 2-5 seconds with no response
  - □ 4a. Correct Learner Response
  - □ 4b. Incorrect Learner Response
    - Provides verbal praise (e.g., Good job!)
    - Restates correct response (e.g., a square)

**Trial #4**
- □ 1. Presents materials and task direction
- □ 2. Within 1 second, points to target shape and states its name
- □ 3. Pauses for student response or for 2-5 seconds with no response
  - □ 4a. Correct Learner Response
  - □ 4b. Incorrect Learner Response
    - Goes back to step 2 (points to shape and states its name)
    - Restates correct response (e.g., a square)

**Trial #5**
- □ 1. Presents materials and task direction
- □ 2. Within 1 second, points to target shape and states its name
- □ 3. Pauses for student response or for 2-5 seconds with no response
  - □ 4a. Correct Learner Response
  - □ 4b. Incorrect Learner Response
    - Provides verbal praise (e.g., Good job!)
    - Restates correct response (e.g., a square)

**Notes:**
Appendix H: Hannah and John’s Data Collection Sheet
Simultaneous Prompting Trials

Trial #1
- 1. Presents materials and task direction
- 2. Within 1 second, states the correct answer
- 3. Pauses for student response or for 2-5 seconds with no response
  - □ 4a. Correct Learner Response
  - □ Provides verbal praise (e.g., Good job)
  - □ Restates correct response (e.g., yes, 15)
  - □ 4b. Incorrect/No Learner Response
  - □ Goes back to step 2 (state the correct answer)

Trial #2
- 1. Presents materials and task direction
- 2. Within 1 second, states the correct answer
- 3. Pauses for student response or for 2-5 seconds with no response
  - □ 4a. Correct Learner Response
  - □ Provides verbal praise (e.g., Good job)
  - □ Restates correct response (e.g., yes, 15)
  - □ 4b. Incorrect/No Learner Response
  - □ Goes back to step 2 (state the correct answer)

Trial #3
- 1. Presents materials and task direction
- 2. Within 1 second, states the correct answer
- 3. Pauses for student response or for 2-5 seconds with no response
  - □ 4a. Correct Learner Response
  - □ Provides verbal praise (e.g., Good job)
  - □ Restates correct response (e.g., yes, 15)
  - □ 4b. Incorrect/No Learner Response
  - □ Goes back to step 2 (state the correct answer)

Trial #4
- 1. Presents materials and task direction
- 2. Within 1 second, states the correct answer
- 3. Pauses for student response or for 2-5 seconds with no response
  - □ 4a. Correct Learner Response
  - □ Provides verbal praise (e.g., Good job)
  - □ Restates correct response (e.g., yes, 15)
  - □ 4b. Incorrect/No Learner Response
  - □ Goes back to step 2 (state the correct answer)

Trial #5
- 1. Presents materials and task direction
- 2. Within 1 second, states the correct answer
- 3. Pauses for student response or for 2-5 seconds with no response
  - □ 4a. Correct Learner Response
  - □ Provides verbal praise (e.g., Good job)
  - □ Restates correct response (e.g., yes, 15)
  - □ 4b. Incorrect/No Learner Response
  - □ Goes back to step 2 (state the correct answer)

Notes:
Time Delay Trials

Trial #1
- 1. Presents materials and task demand
- 2. Pauses for student response or for 2-5 seconds with no response
- 4a. Correct Learner Response
- 4b. Incorrect Learner Response
- Provides verbal praise (e.g., Good job!)
- Restates correct response (e.g., yes, 15)
- 3b. Incorrect/No Learner Response
- Inserts a simultaneous prompting trial

Trial #2
- 1. Presents materials and task demand
- 2. Pauses for student response or for 2-5 seconds with no response
- 4a. Correct Learner Response
- Provides verbal praise (e.g., Good job!)
- Restates correct response (e.g., yes, 15)
- 3b. Incorrect/No Learner Response
- Inserts a simultaneous prompting trial

Trial #3
- 1. Presents materials and task demand
- 2. Pauses for student response or for 2-5 seconds with no response
- 4a. Correct Learner Response
- Provides verbal praise (e.g., Good job!)
- Restates correct response (e.g., yes, 15)
- 3b. Incorrect/No Learner Response
- Inserts a simultaneous prompting trial

Trial #4
- 1. Presents materials and task demand
- 2. Pauses for student response or for 2-5 seconds with no response
- 4a. Correct Learner Response
- Provides verbal praise (e.g., Good job!)
- Restates correct response (e.g., yes, 15)

Trial #5
- 1. Presents materials and task demand
- 2. Pauses for student response or for 2-5 seconds with no response
- 4a. Correct Learner Response
- Provides verbal praise (e.g., Good job!)
- Restates correct response (e.g., yes, 15)

Notes:
Appendix I: Ryka’s Probe
Write in today’s date in the first open column below
Present the shapes so that they are in random order in a field of three
Tell the student to “Please do your best to find the shapes.”
If the student provides any response, say “okay”, and move on to the next shape.
If the student does not provide any response, say “okay” and move on to the next shape after 3 full seconds.
When you are finished, tell the student, “Thank you for working with me and trying your best.” Give the student a high five or a handshake.
Put a check mark next to each correct shape (under today’s date)
Sum the correct responses, and write in the percentage

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Sum of correct

% correct
Appendix J: John’s Probe
Date:____________________

5 \times 2 =

5 \times 6 =

3 \times 5 =

9 \times 5 =

5 \times 5 =