COMPARING VARIOUS STAFF TRAINING MODALITIES WITHIN APPLIED BEHAVIOR ANALYSIS

by

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Behavioral skills training (BST) has continuously demonstrated to be an effective means of training others in new skills and techniques. A limitation of BST, however, is that it requires extensive time and a professional trainer. Currently, there is a lack of literature comparing BST to alternative and effective training methods that require less resources, such as written directions and video modeling. Therefore, the purpose of this study was to determine which training modality (i.e., behavior skills training, written directions, or video modeling) was most effective at increasing staff members' correct implementation of applied behavior analysis procedures (i.e., forward chaining, shaping, discrete trial training) at a therapeutic day school. Using a multiple baseline across participants design, the percentage of correct implementation was monitored when participants were exposed to BST, written directions, and video modeling. Results suggested that all three methods were effective in increasing correct skill implementation across participants, with BST being the most effective. Implications of the study include all three training modalities producing comparable improvements. Limitations of this study included the absence of real students when participants were trained to perform the skills and a lack of data on development time for each training modality. These limitations present opportunities for future research.

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The teachers of America

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CHAPTER 1

INTRODUCTION

In 2020, some organizations located in Poland completely ceased their training and development departments due to layoffs, budget cuts, and termination of trainer contracts, while other companies invested in remote training tools (Mikolajczyk, 2021). Since then, telehealth, behavioral skills training (BST), video recordings/video modeling, and written directions have become safe alternatives to not only exchange information between professionals and recipients of services, but to also provide initial and ongoing training to staff. For example, soccer coaches have used telehealth to maintain the cardiovascular health of their athletes (Kalinowski et al., 2021). Additionally, telehealth has been used to examine the effects of lockdowns related to the coronavirus-19 pandemic on university students' learning, emotional health, and financial well-being (Ilieva et al., 2021). The utility of alternative training methods to BST has increased since 2020. Specifically, Peter et al. (2021) compared BST, video modeling, and computer training to teach a variety of skills to volunteers at a therapeutic horseback riding center. Although BST led to the highest percent accuracy of skills (mean of 91.80%) compared to video-modeling (mean of 81%) and computer training (mean of 90.05%), all three training approaches led to a high degree of accuracy. Additionally, BST required the most amount of staff trainer time (Peter et al., 2021).

Finally, in 2020, Alqurshi compared teacher and student satisfaction with a variety of training methods, including written directions. Results indicated that most of the student satisfaction ranged between three and five on a 5-point Likert scale; however, 35% of students felt they gained limited knowledge from classes. Alqurshi (2020) suggests several potential improvements to increase the effectiveness of written directions when training students (Alqurshi, 2020).

Approaches to Training Staff

Behavioral Skills Training

St. Peter et al. (2021) compared the efficacy and required instructor time of BST and video modeling with 60 volunteers. Although they found that BST led to higher percentages correct during role-play, St. Peter and colleagues also noted that BST required more of the trainer's time. Additionally, Geiger et al. (2018) compared the effectiveness of BST and a computer-based training model with 50 undergraduate students on their implementation of a discrete trial training (DTT) program. Geiger et al. found that BST produced a higher percent of accuracy (96%) than the computer-based training (87%); however, after a single feedback session, computer-based training accuracy increased to 95%. This suggests that although BST was more effective in training DTT, a less resource heavy alternative can still produce similar results.

Behavioral skills training (BST) is an evidence-based procedure used to teach someone skills that are useful for them, whether the skills are workplace-related or socially based (Miltenberger, 2016). The BST model consists of four phases: instructions, modeling, rehearsal, and feedback. The instruction phase of BST consists of the instructor describing the skill being taught, along with a rationale for why the learner is learning it (Reid, 2020). Along with the explanation, the instructor provides a written summary of the skill to aid in the explanation. Following the instruction phase is the modeling phase, which consists of the instructor demonstrating each step of the skill, with or without an assistant, for the learners to observe (Reid, 2020). Additionally, the instructor provides an explanation of what they are doing and the key points of each step.

During the rehearsal phase of BST, learners practice all steps of the skill with peers

(Reid, 2020). The instructor ensures that learners are assigned roles as applicable and directs learners to what they should be attending to and specifically doing. While learners are rehearsing these steps, the instructor observes each learner. The final component of BST involves the delivery of feedback. While observing learners, the instructor provides positive feedback (to maintain behavior) and corrective feedback (to change behavior that is not proficient). For the latter, this corrective feedback acknowledges what the learner did incorrectly, and what they should do to fix the error (Reid, 2020).

As a training approach, BST is commonly used to teach a wide variety of skills to a variety of populations in different settings. For instance, BST has been frequently used to train teachers and parents how to implement DTT (Sarokoff & Sturmey, 2004) and social skills training (Dogan et al., 2017). Moreover, BST has been used to teach children abduction-prevention skills (Johnson et al., 2005), lockdown drill procedures (Dickson & Vargo, 2017), and the prevention of gun play (Miltenberger et al., 2004).

In the study by Dogan et al. (2017), BST was utilized to train four parents of children with Asperger syndrome on the use of BST to increase their children’s social skills (i.e., joining a conversation, asking for help). During baseline, participants’ percentages of correct implementation ranged between 0% and 13%. After receiving BST, participants’ correct implementation ranged between 77% and 97%. During the follow-up condition, data indicated that participants’ performance maintained, with percentages ranging from 80% to 100%. As a result of the parent implemented BST for social skills, the children’s percentage of correct steps increased between 12% and 88% (Dogan et al., 2017).

Moreover, Johnson et al. (2005) utilized BST to train abduction prevention skills to 13 preschool aged children. These skills included saying “no” when lured by a stranger, walking or running away from the stranger, and telling an adult about the abduction attempt. Johnson and colleagues (2005) developed a five-point scale to test the children's safety responses when an abduction attempt was contrived. Per the scale, zero indicated that the child left with the abductor, one indicated that the child did not leave with the abductor but did not say "no" or escape from them, two indicated that the child said "no" but did not leave the area or inform an adult, three indicated that the child said "no" and left the area but not tell an adult, and four indicated that the child said "no", left the area, and told an adult (Johnson et al., 2005). During baseline the children's scores ranged between zero and two. After BST, all remaining participants demonstrated the correct abduction prevention skills, meaning they all did not leave with the abductor, and reliably scored a four on the four-point scale. (Johnson et al., 2005).

According to Reid (2020), BST is the most effective way to teach new behavior intervention skills to staff members. As seen in Sawyer et al. (2017), BST was utilized to train pre-service special education teachers to use seven different evidence-based practices, including differential reinforcement, functional communication training, and least-to-most prompting. During pre-test, performance averaged 10% correct implementation, and scores during post-test averaged 85% correct implementation. Similarly, Sarokoff and Sturmey (2004), utilized BST to train three special education teachers on how to utilize DTT to teach a three-year-old with autism match-to-sample skills. Compared to baseline, where the teachers' average percentage of correct implementation was 45%, teachers' correct implementation of DTT increased after BST, to an average of 98%.

Despite the large evidence supporting the use of BST, there are limitations. For instance, any type of training that requires a face-to-face component, such as BST, requires that organizations and/or trainers rely on intensive resources, such as highly trained professionals to provide the training. Moreover, large amounts of time are not only required to conduct the training, but also to conduct follow-up observations and deliver feedback as necessary (Lim & Hu, 2020; Ramon et al., 2015). Additionally, a proficient and experienced trainer is required to provide BST (Graff & Karsten, 2012). St. Peter et al. (2021) compared the efficacy and required instructor time of BST and video modeling with 60 volunteers. Although they found that BST led to higher percentages correct during role-play, St. Peter and colleagues also noted that BST required more of the trainer's time.

Additionally, Geiger et al. (2018) compared the effectiveness of BST and a computer-based training model with 50 undergraduate students on their implementation of a DTT program. Geiger et al. found that BST produced a higher percent of accuracy (96%) than the computer-based training (87%); however, after a single feedback session, computer-based training accuracy increased to 95%. This suggests that although BST was more effective in training DTT, a less resource heavy alternative can still produce similar results. Therefore, other training approaches may be sought out that do not require as much time, expertise, and funds, such as video modeling and written directions.

Video Modeling

Video modeling has repeatedly demonstrated empirical effectiveness in teaching new skills. Some of the skills taught via video modeling have included the delivery of acceptance and commitment therapy (Magnacca et al., 2021) and the implementation of preference assessments (Higgins et al., 2017). Video modeling allows a trainer to create a reusable resource to demonstrate and teach a skill, but also allows some flexibility in its development and implementation. Moreover, some of the benefits to utilizing video modeling include the use of fewer trainers and resources, and the versatility of providing the training across environments (i.e., in the work environment, at home, online).

For example, in the study by Lim and Hu (2020), video modeling was utilized to determine the effectiveness of teaching three staff members, who work with students with autism spectrum disorder (ASD), how to implement a token economy. The video model demonstrated how to utilize a token economy, how to respond to maladaptive behaviors (e.g., elopement, throwing items), and implement error correction. Results suggested that video modeling was effective at training staff members to implement a token economy. In addition, results showed that video modeling was an efficient method of training. Notably, it required relatively few sessions of training (i.e., four sessions at 10 minutes each) and did not require a skilled trainer to deliver it (Lim & Hu, 2020).

Another study by Catania et al. (2009) used a video model to train three direct-care staff members how to implement DTT with young adults with ASD. The video model consisted of two Board Certified Behavior Analysis (BCBAs), one acting as the student and the other the instructor, performing DTT. A voiceover was also provided to introduce the video and explain each of the skill's steps. Results found that video modeling was both an effective training method to teach staff members the implementation of DTT and an efficient option, as it did not require many resources to implement. An additional study by Weldy et al. (2014) used video modeling to teach nine staff members how to implement stimulus preference assessments. The video was presented as a PowerPoint presentation that contained audio to provide an explanation of the skill, and video to provide a demonstration of the assessment. Results showed that all participants met the mastery criteria for the implementation of a stimulus preference assessment after receiving training through a video model.

Video modeling has also been compared to live training modalities. For instance, Macurik et al. (2008) compared video modeling with live training to teach support staff how to implement behavior intervention plans for challenging behavior. One group of participants were exposed to a video of a BCBA explaining the details of an intervention plan along with informational bullets. Conversely, the other group was trained in-person by the BCBA. Through knowledge quizzes and observations, results suggested that both methods were effective (89% average of correct answers for live training and 90% average for video training). However, authors concluded that video training was more efficient when considering time spent completing the trainings (average of 33 minutes per staff member for live training vs. an average of 22 minutes per staff member for video modeling) and delivering the trainings (estimated 646 minutes of implementation for live training vs. an average of 270 minutes per staff member for video modeling; Macurik et al., 2008).

Written Directions

Written directions are also considered an alternative to more resource- and time-intensive trainings, such as BST. Although fewer studies, compared to other methods for training staff, have demonstrated its effectiveness, written directions have been used to teach a variety of skills. Like video modeling, written directions allow BCBAs to create a reusable resource for training staff that can be flexible in its development and implementation. For example, Berkman et al. (2019) utilized enhanced written instructions (EWI) to train staff members how to create graphs on a computerized graphing program. The EWI included typed out steps, screenshots, images of completed graphs, and explanations for each step. Results found that the EWI improved the creation of graphs for all participants.

Alternatively, Ramon et al. (2015) used written directions to teach staff members who to conduct a multiple stimulus without replacement (MSWO) preference assessment. The written instruction manual consisted of a nontechnical explanation of what an MSWO is, its importance for individuals with developmental disabilities, and step-by-step instructions on how to implement the assessment. Text boxes and checklists were provided to supplement the textual explanations and participants were asked to complete an exercise and evaluate their own learning at the end of each unit before moving on to the next one. Despite there being an increase in performance, participants did not meet mastery criteria.

Finally, Graff and Karsten (2012) evaluated the effectiveness of written instructions with feedback to teach preference assessment implementation to teachers at a school for individuals with autism. Written instructions were either presented alone, as enhanced written instructions, or with a data sheet. Results found that the written directions were initially ineffective at training staff members on how to implement preference assessments. Yet when graphs, pictures, and diagrams were included, the enhanced written directions were effective at increasing implementation of the preference assessment.

Approaches to Teaching New Behavior

Considering the various approaches to training staff, there are also different ways that staff can teach others new skills. Some of these ways include forward chaining, shaping, and DTT.

Forward Chaining

When teaching an individual a new skill, chaining can be used, which involves breaking a skill down into smaller steps and systematically teaching each step until the skill is completed independently (Cooper et al., 2020). Per Cooper et al. (2020), a forward chain teaches the steps in the order they sequentially occur. The learner's behavior contacts reinforcement when the first step is completed according to the task analysis. As performance improves, the next step in the sequence is added to the criterion. As the number of steps increases, the learner must execute them all in order before contacting reinforcement.

Shaping

Shaping, another method used to teach new behavior, involves reinforcing someone's behavior to resemble closer and closer approximations of the desired skill (Cooper et al., 2020). Reinforcement is only provided for the approximation that is currently being targeted, while all prior approximations are put on extinction. Some skills that are commonly taught through shaping include clarity of handwriting, the volume of one's voice, and the amount of time one spends playing an instrument. Shaping can also be utilized to teach someone to emit the correct pronunciation of vocalizations. Overall, shaping teaches someone a new skill through the use of differential reinforcement by reinforcing successive approximations of a terminal behavior and putting already mastered approximations on extinction.

Discrete Trial Training (DTT)

Finally, discrete trial training (DTT) is another method for teaching new behavior that includes a discriminative stimulus, prompts, prompt fading, reinforcement, and error correction as needed. A discriminative stimulus is important in DTT, as it serves as the signal that evokes a specific response. Prompts are important as they can initially help teach the correct response. Prompt fading methodically removes those supports, as the person is expected to respond more independently. Reinforcement is also included in DTT to increase correct responses over time. Finally, error correction is important in DTT, as it helps prevent the learner emitting an incorrect response, and allowing for more opportunities to contact reinforcement. According to Bravo and Schwartz (2022), DTT can be used to teach different responses (e.g., motor and verbal imitation, academic skills, communication, play skills) in more controlled environments (e.g., educational settings, clinical settings).

Purpose of the Current Study

Previous research has compared the effectiveness of one training method against another; however, the effectiveness of all three training methods (i.e., BST, written directions, and video modeling) have yet to be compared. Therefore, the purpose of this study was to compare the three training modalities (i.e., BST, video modeling, and written directions) on their effectiveness in teaching staff how to implement three applied behavior analysis (ABA) skills (i.e., forward chaining, shaping, DTT). These three staff training modalities were chosen since they are acceptable alternatives to in-person training. Moreover, each of these three ABA skills were chosen since they can improve the effectiveness of staff members when working with those they serve.

CHAPTER 2

METHODS

Participants and Recruitment

The participants for this study included three individuals who worked at a therapeutic day school for students and adults with autism. The inclusionary criteria to participate included 1) being at least 18 years of age, 2) being fluent in reading, writing, and speaking English, 3) spending at least 75% of their workday directly working with the students, 4) having had no prior formal training on the skills in this research study (i.e., forward chaining, shaping, DTT), and 5) scoring less than 50% during the baseline (BSL) condition for each skill in this research study. The exclusionary criteria to participate included 1) being under the age of 18, 2) not being fluent in reading, writing, and speaking English, 3) spending less than 75% of their workday directly working with the students, 4) having received prior formal training of any of the targeted skills, and/or 5) scoring more than 50% in the BSL condition for any of the targeted skills. Participants were recruited by email using a recruitment flyer approved by Southern Illinois University's (SIU's) Internal Review Board (IRB). If participants met the inclusionary criteria, an informed consent from approved by SIU's IRB was provided to them.

Setting

Procedures were conducted in a training room at the school. The training room included 1) four rectangular tables, 2) three chairs per table, 3) an interactive whiteboard (i.e., SMART board), 4) a laptop, 5) a sink, and 6) any required training materials as described below.

Materials

The materials that were utilized for this study included a Demographics Questionnaire, Skill Task Analyses, skill data sheets, a Social Validity Survey devised for the purposes of the current study, Training Videos for each skill, Written Directions of each skill, a Treatment Integrity Checklist, and a laptop to show the video modeling.

Demographics Questionnaire

The Demographics Questionnaire (see Appendix A) is a fill in the blank questionnaire that was distributed at the beginning of the study to inquire about participants' background information. Specifically, it obtained information about their age, education background, racial and ethnic backgrounds, gender, and the amount of perceived formal training they have received for the three target skills (i.e., forward chaining, shaping, DTT).

Skill Task Analyses

A total of three Skill Task Analyses were used (i.e., one for each target skill) to assess participants' performance of target skills during the BSL and post-training conditions, and to assess interobserver agreement. The Skill Task Analyses (see Appendices B, C, and D) consist of a series of steps that are critical to implement each skill. Specifically, the Forward Chaining Task Analysis (see Appendix B) consists of eleven steps, the Shaping Task Analysis (see Appendix C) consists of seven steps, and the DTT Task Analysis (see Appendix D) consists of eight steps.

Skill Data Sheets

A total of three Skill Data Sheets was used (i.e., one for each target skill). The Forward Chaining Data Sheet (see Appendix E) was used by the participant to collect data on the learner's performance during the forward chaining activity, the Shaping Data Sheet (see Appendix F) was used by the participant to collect data on the learner's performance during the shaping activity, and the DTT Data Sheet (see Appendix G) was used by the participant to collect data on the learner's performance during the DTT activity. Each Skill Data Sheet was provided to the participant during each condition for the respective skills.

Social Validity Survey

The Social Validity Survey (see Appendix H) was devised for the purposes of this study and consisted of a six-question survey that was provided to each participant following completion of the study. Using a five-point Likert-type scale (i.e., very poor, somewhat poor, neutral, somewhat well, and very well), the Social Validity Survey measured the participants' acceptability of procedures used in the study, participants' self-reported understanding of each of the skills learned, and whether they believe the skills are useful to implement in their classrooms.

Training Videos

A total of three Training Videos were used to train the respective target skills during the video modeling condition. Training Videos began with a brief explanation of the rationale for learning skill being trained, followed by when and how it is best utilized, and real-life examples of how the technique is used to teach a skill. The videos also included the researcher and a colleague modeling each of the three target skills (i.e., forward chaining, shaping, and DTT). The forward chaining video (see Appendix I) was a five minute and 25-second-long video that demonstrated how to teach hand using forward chaining. The shaping video (see Appendix J) was a four minute and 14-second-long video that demonstrated how to teach vocal mands for bubbles using shaping. Finally, the DTT video (see Appendix K) was a six minute and two seconds video that demonstrated how to teach the tact of "dog" with a stimulus card using DTT.

Written Directions

Three sets of Written Directions were used to train the respective target skills during the BST condition and the written direction condition. Written Directions (see Appendices L, M, N) included a concise explanation of the steps needed to perform the skill correctly (Reid, 2020).

Treatment Integrity Checklist

To ensure that all procedures were implemented correctly and thoroughly, treatment integrity was assessed using the Treatment Integrity Checklist (see Appendix O).

Dependent Variable

The dependent variable was the percentage of accurate performance, which was obtained from the respective Skill Task Analyses (i.e., forward chaining, shaping, DTT; see Appendices C. D. and E). A correct response was operationally defined as a step performed by the participant independently (i.e., in the absence of prompting) and that corresponded with the step indicated on the respective Skill Task Analysis. Examples of a correct response include completing a step in the absence of stimulus or response prompts and completing the sequence of steps in the order as indicated on the respective Skill Task Analysis. Examples of an incorrect response included completing one or more steps in the presence of a stimulus or response prompt, completing the sequence of steps in an order that differed from the Skill Task Analysis, omitting the performance of a step from the Skill Task Analysis, and/or performing an additional step that was not included on the Skill Task Analysis (i.e., error of commission). The percentage of accurate performance was calculated by dividing the number of steps performed correctly by the total number of steps and multiplying the number by 100.

Experimental Design

A concurrent multiple baseline across participants design (Cooper et al., 2020) was used for the current study. Phases for the study included baseline, training, post-training, generalization, and maintenance (see Figure 1 for a diagram displaying the sequence of experimental conditions).

Procedures

Pre-Baseline

Prior to beginning the study, participants were randomly assigned to a training condition through a lottery, where they picked a slip of paper from a hat that will state “1,” “2,” or “3.” If participants chose a paper with the number one, BST served as the training modality. If participants chose a paper with the number two, written directions served as the training modality. If participants chose a paper with the number three, video modeling served as the training modality. Participants learned all three skills in the same order (i.e., forward chaining, shaping, and DTT), but the training modality depended on the condition they were assigned to. Each condition was assigned the same number of participants (i.e., one).

Baseline

During the baseline (BSL) condition, the discriminative stimulus (S^D) of “Show me (forward chaining / shaping / DTT)” was delivered. Data on participants’ performances was taken according to the respective Skill Task Analysis (see Appendices B, C, and D) and using the corresponding Skill Data Sheet (see Appendices E, F, and G). A confederate peer was used as the individual receiving the training on the skill. Regardless of correct and incorrect performance, feedback (positive or corrective) was withheld. If a participant scored 50% or greater during the BSL phase for one or more of the three skills, they did not meet the inclusionary criteria and were excluded from participating in the remainder of the study. Baseline was taken until stability in the data was demonstrated for at least five consecutive sessions.

Training

During training, each participant was trained in one target skill (i.e., forward chaining to teach handwashing, shaping to increase the vocal response of “bubble”, or tacting with a stimulus card through DTT) at a time, as outlined in the corresponding Skill Task Analysis. The training modality (i.e., BST, written directions, or video modeling) was based on the training condition that participants were randomly assigned to. These specific skills (i.e., handwashing, saying "bubble," and tacting with a stimulus card) were selected since, based on assessment and observation, they were missing from the repertoires of students that participants currently work with. Each training session lasted one hour. Additional time was available if the participant needed it, however none of the participants required additional time.

Behavior Skills Training. For participants assigned to the Behavior Skills Training (BST) condition, a written description of the target skill (see Appendices L, M, N) along with a more detailed verbal explanation of each step of the skill was first provided. Following, the target skill was modeled according to the corresponding Skill Task Analysis. Thereafter, participants were provided with an opportunity to rehearse the target skill with the researcher. Finally, positive and constructive feedback was provided on each participants' performances. Any questions asked by participants were answered by the researcher. Additionally, participants were encouraged to ask questions at the end of each step of BST. Once all questions were answered, or the participants did not have any questions, the next component of BST was begun. After the final component of BST (i.e., feedback), an opportunity for participants to ask questions was given. Once all questions were answered, or the participants did not have any further questions, BST was concluded.

Written Directions. Participants who were assigned to the written directions condition were provided with a vocal explanation and written description of the target skill; any questions presented by participants were answered. Sessions lasted one hour. However, additional opportunities were available if the participant required or requested it. Participants were not permitted to keep the written directions or reference them at any point outside of the training phase. Throughout the training phase, the participant was permitted to ask questions, which were answered by the researcher. After reading the written directions, the participant was provided with another opportunity to ask questions. Once all questions were answered, or the participant did not have any further questions, the training was concluded.

Video Modeling. Finally, video modeling was used to train participants assigned to this condition. Videos depicted the researcher and a colleague modeling the correct implementation of each target skill (i.e., forward chaining, shaping, DTT). Participants watched the video and had an opportunity to ask any questions. These videos were accessed by the participant on the researcher's work-computer in the training area. The researcher was present while the participant watched the video. The participant was allowed to manipulate the video (i.e., pause, rewind, fast forward) without limitations. Moreover, the participant was allowed to watch the video as many times as they wished. Throughout the training, the participant was permitted to ask questions and the researcher answered them. Once the participant finished watching the video, they were allowed to ask any additional questions. Once all questions were answered, or the participant did not have any further questions, the training was concluded.

Post-Training

Following training, each participant was asked to perform the target skills via a role play with a confederate. Post-training procedures generally mirrored those of BSL, meaning the S^D of "Show me (forward chaining / shaping / DTT)" was delivered and data on participants' performance was taken according to the corresponding Skill Task Analysis and using the corresponding Skill Data Sheet. Feedback (positive or corrective). Moreover, feedback was withheld, regardless of correct or incorrect performance. Mastery criteria for each target skill was 80% accurate implementation across three consecutive sessions. If a participant did not meet this criterion within ten sessions, they completed the corresponding training and post-training conditions again.

Generalization

After meeting mastery criteria during post-training, the participant completed a generalization probe (i.e., one session) with a confederate.

Maintenance

One week after the generalization probe, each participant performed the target skill to assess the persistence of their performance over time with a confederate. Procedures for the maintenance probe (i.e., one session) generally mirrored BSL and post-training procedures (i.e., delivery of S^D, assessment of performance based on the corresponding skill data sheet, withholding of feedback).

Interobserver Agreement

With the assistance of a second independent observer, interobserver agreement (IOA) was calculated for at least 33% of conditions across participants using the trial-by-trial IOA formula. Trial-by-trial IOA was calculated by dividing the number of exact agreements by the total number of intervals and multiplying that number by 100 (Cooper et al., 2020).

Treatment Integrity

Finally, with the assistance of a second and independent observer, treatment integrity was assessed using the Treatment Integrity Checklist (see Appendix O) to determine whether the experimental procedures are being conducted as designed. Treatment integrity was calculated by dividing the number of completed steps by the total number of possible steps and multiplying it by 100.

CHAPTER 3

RESULTS

Participant Demographics

A total of three individuals who work at a therapeutic day school for students and adults with autism served as participants for the current study. Participant one was a 35-year-old white male who holds a bachelor's degree and identifies as Lithuanian, Italian, Irish, German, and French in terms of his ethnic background. Participant two was a 19-year-old white female who holds her high school diploma and identifies as Polish in terms of her ethnic background. Finally, participant three was a 28-year-old Black male who has attended some college classes and identifies as African American and Cuban in terms of his ethnic background. None of the participants had received formal training in any of the three skills of this research study. See Table 1 for participant demographics information.

Forward Chaining

Baseline

To teach the skill of forward chaining, written directions were delivered to participant one, video modeling was used for participant two, and BST was used for participant three (see Figure 2). During baseline, participant one performed forward chaining an average of 28.67% correct (range: 30%-33.33%). Participants two and three did not perform forward chaining correctly (i.e., scored 0% across all baseline sessions).

Post-Training

During post-training (i.e., after being exposed to written directions about the implementation of forward chaining), participant one correctly performed the skill an average of 77.56% (range: 63.63%-88.89%), which suggests an increased average of 48.9% from baseline to post-training. After being exposed to video modeling demonstrating the implementation of forward chaining, participant two correctly performed the skill an average of 77.46% (range: 70%-88.89%), which suggests an increased average of 77.46% from baseline to post-training. Finally, after being exposed to BST to teach forward chaining, participant three correctly performed the skill an average of 89.11% (range: 88.89%-90%.), which suggests an increased average of 89.11% from baseline to post-training.

Generalization

After meeting mastery criteria of 80% accurate implementation across three consecutive sessions in post-training, participants completed a generalization probe with a novel role player (i.e., colleague who did not participate in the study). Participants one and two correctly performed forward chaining with 66.67% accuracy. Participant three scored a bit higher and correctly performed forward chaining with 77.78% accuracy.

Maintenance

One week following the generalization probe, participants completed a maintenance probe. During this condition, participant one correctly performed forward chaining with 72.73% accuracy, participant two correctly performed forward chaining with 70% accuracy, and correctly performed forward chaining with 80% accuracy.

Shaping

Baseline

To teach the skill of shaping, written directions were delivered to participant one, video modeling was used for participant two, and BST was used for participant three (see Figure 2). During baseline, participant one correctly performed the skill in 10% of opportunities. Participants two and three did not perform shaping correctly (i.e., scored 0% across all baseline sessions).

Post-Training

After participant one received training through written directions, they correctly performed shaping an average 74.44% correct (range: 66.67%-100%), which suggests an increased average of 64.44% correct from baseline to post-training. After participant two received training through video model, they correctly performed shaping an average 78.25% correct (range: 66.67%-88.89%), which suggests an increased average of 78.25% correct from baseline to post-training. After participant three received training through BST, they correctly performed shaping an average of 84.44% correct (range: 77.78%-88.89%), which suggests an increased average of 84.44% correct from baseline to post-training.

Generalization

After meeting mastery criteria of 80% accurate implementation across three consecutive sessions in post-training, participants completed a generalization probe with a novel role player (i.e., colleague who did not participate in the study). Participants one and three correctly performed shaping with 66.67% accuracy. Participant two correctly performed shaping with 55.56% accuracy.

Maintenance

One week following the generalization probe, participants completed a maintenance probe. During this condition, participants one and two correctly performed shaping with 66.67% accuracy, and participant three correctly performed shaping with 80% accuracy.

Discrete Trial Training (DTT)

Baseline

To teach the skill of DTT, written directions were delivered to participant one, video modeling was used for participant two, and BST was used for participant three (see Figure 2).

During baseline, participant one correctly performed the skill in 30% of opportunities. Participants two and three did not perform DTT correctly (i.e., scored 0% across all baseline sessions).

Post-Training

After participant one received training through written directions, they correctly performed the skill of DTT on average 66.80% of opportunities, with a range of between 50% and 88.89%. This illustrates an increase in correct skill implementation on average of 36.80% for the skill of DTT. After participant two received training through video model, they correctly performed the skill of DTT on average 78.48% of opportunities, with a range of between 70% and 88.89%. This illustrates an increase in correct skill implementation of on average 78.48% for the skill of DTT. After participant three received training through BST, they correctly performed the skill of DTT on average 89.78% of opportunities, with a range of between 80% and 100%. This illustrates an increase in correct skill implementation of on average 89.78%.

Generalization

After meeting mastery criteria of 80% accurate implementation across three consecutive sessions in post-training, participants completed a generalization probe with a novel role player (i.e., colleague who did not participate in the study). Participant one correctly performed DTT with 50% accuracy. Participants two and three correctly performed DTT with 70% accuracy.

Maintenance

One week following the generalization probe, participants completed a maintenance probe. During this condition, participants one and two correctly performed DTT with 60% accuracy, and participant three correctly performed DTT with 63.64% accuracy.

Social Validity Survey

Figure 4 displays the results of the Social Validity Survey that participants completed at the conclusion of the current study. All questions were posed using a Likert-type scale, where participants rated their agreement on a scale from one (very poor) to five (very well). Question one asked participants how they rated the training they received at the day school prior to the study. Participant one selected option four (somewhat well), whereas participants two and three selected option five (very well). Question two asked participants how they rated the training they received during this research study. All three participants chose option five (very well).

Question three asked participants how they rated the effectiveness of the skills they learned during this research study. Participants one and three both selected option five (very well), while participant two selected option four (somewhat well). Question four asked participants how likely they are to use the skills they learned during this research study with their students. All three participants chose option four (somewhat well). Finally, question five asked participants how they rated their own understanding of the skills they learned during this research study. Participants one and two both selected option four (somewhat well), whereas participant three selected option five (very well).

Interobserver Agreement

Interobserver agreement was assessed for 63% of all forward chaining sessions, 75% of all shaping sessions, and 50% of all DTT sessions. Agreement was calculated by dividing the total number of agreements by the total number of agreements plus disagreements and multiplying the product by 100. Agreement was 90% (range: 80%-100%) for forward chaining sessions, 95% (range: 90%-100%) for shaping, and 95% (range: 90%-100%) for

DTT.

Treatment Integrity

Treatment integrity was only collected during the training condition (i.e., it was not collected for baseline, post-training, generalization, and maintenance) for forward chaining, shaping, and DTT. Treatment integrity was calculated by dividing the number of completed steps by the total number of possible steps and multiplying the product by 100. Treatment integrity was calculated to be 100% across all treatment sessions of the three target skills (i.e., forward chaining, shaping, DTT).

CHAPTER 4

DISCUSSION

The purpose of this study was to determine which training modality (i.e., BST, written directions, or video modeling) is most effective at increasing staff members' correct implementation of forward chaining, shaping, and DTT. The results suggest that of the three training methods (i.e., BST, written directions, video modeling), BST resulted in the highest percentages of correct implementation, which supports the findings of Sarokoff and Sturmey (2004) and Johnson et al. (2005). However, written directions and video modeling resulted in comparable increases in percentage of correct implementation Although these studies did not compare the effectiveness of all three training methods, they still demonstrated that BST is effective in training staff members to implement a new skill. Further, there was a decrease in correct implementation during generalization and maintenance across all three skills for all three training methods. In terms of generalization, the decrease may have been due to a lack of generality among stimuli or role players. In terms of maintenance, the decrease may have been due to stimuli also not evoking correct responding over time.

According to the data (see Figure 2), all three training modalities (i.e., written directions, video modeling, BST) were effective at increasing staff members' correct implementation of each of the three skills (i.e., forward chaining, shaping, DTT). Although the percentages decreased for both generalization and maintenance, they remained higher when compared to baseline. With refinement of the training modalities and additional opportunities to practice, it is may be that participants' correct implementation of the skills can continue to increase and reach more stability over time.

The written directions modality of training lead to similar levels of correct skill implementation when compared to video modeling; however, the data are more variable and unstable (see Figure 2). To account for this, additional trainings (i.e., booster sessions) could have been included in the methods. Moreover, the participant could have been provided with the opportunity to refer to the written directions before or during skill implementation. The video modeling training method led to similar results as written directions; however, the data were more stable over time. To maintain this stability over time and increase the percentage of correct skill implementation, the participant could be provided with additional opportunities to watch the video, or their performance with the confederate could have been recorded for them to review later.

The BST modality led to the highest percentage of staff correct implementation for each of the three skills. Additionally, the data is the least variable and most stable over time, compared to the other training modalities (see Figure 2). The data for DTT has the most variability over time for BST; however, an upward trend is seen and responding reached 100% correct implementation. This modality's success could be due to the components included in BST (i.e., instructions, modeling, role playing, and feedback). To further increase the effectiveness of BST, as the other training modalities, additional opportunities to practice could have been included.

Across all three training modalities, generalization and maintenance decreased in correct skill implementation, except for the forward chaining skill for written directions (see Figure 2). Although the greatest decrease was of 10% for DTT as taught through BST, these decreases are still concerning for the overall effectiveness of each training method. One possible reason for the decrease is the change in stimulus during the generalization phase, as the confederate that each participant role played with had changed. One way to remedy this could be to provide the participant with more opportunities to perform the skills with a wider variety of individuals. A potential reason for the decrease during the maintenance phase is that the one-week break led to a decrease in the participants' skills demonstration. As these were all new skills for participants, the one training opportunity may have not been effective in sustaining behavior change. To remedy this, additional opportunities to train and practice the skills could be included.

One notable difference between the current study and previous research is that it is the first, to the author's knowledge, to compare all three training modalities (i.e., BST, written directions, and video modeling). Despite BST leading to the highest amount of behavior change (i.e., was the most effective), written directions and video modeling still lead to increase in staff members' implementation of forward chaining, shaping, and DTT. When evaluating the efficiency of a training method, a series of important factors (e.g., cost, time, reusability) should be considered. Further improvement of the methods, along with supplemental training supports (e.g., more practice opportunities, availability of written directions for reference during skill implementation, training from a wider variety of staff), could lessen the difference between the effectiveness in increasing staff correct skill implementation for all three training methods. Since cost and required resources are important to most organizations, these differences could mean that written directions and video modeling are more cost efficient than BST.

Implications

Although the average percentages of correct implementation increased from baseline to post-training conditions when BST was the training modality, written directions and video modeling also lead to increases from baseline to post-training. This suggests that written directions and video modeling are both effective at causing an increase in staff correct skill implementation. From these data, written directions and video modeling are both effective training methods for staff at a therapeutic day school setting. Each participant was only exposed to their assigned training method across all skills; therefore, additional training opportunities with the training methods that each participant was not exposed to warrants consideration. Additionally, written directions and video modeling can be presented simultaneously to staff members as needed, which speaks about the feasibility of these training modalities.

Limitations and Directions for Future Research

Despite the results and implications of the present study, there are limitations to consider, as well as areas for future research. One limitation is that although the percentages of correct skill implementation were high (overall) during treatment, certain steps that could be considered vital to each skill were performed incorrectly by the participants. Although all the steps on the task analysis for each skill are important, some steps (e.g., data collection, error correction, prompting) could be considered more of an indicator to correct overall skill implementation than others (e.g., gathering materials, remaining within training time). Due to this limitation, the methods of the current study inform on the effectiveness among BST, written directions, and video modeling and not on the correct implementation of forward chaining, shaping, and DTT. To remedy this, future research may consider making each skill's specific intervention steps "critical steps" to perform, which can otherwise result in remedial training.

A second limitation relates to the lack of generalization probes with real students in the natural environment. Although the purpose of the study was to evaluate training modalities and not correct implementation, it is essential that the target skills be proficiently performed in naturalistic settings (i.e., with students at the therapeutic day school that participants support). This was not done, as the study investigated which training method was most effective at increasing correct skill implementation. The presence of "naturalistic" stimuli, such as the environment and clients, could have had an impact on the participants' abilities to correctly perform the skills. To remedy this, future researchers should consider including at least one probe where the participants perform the skills with a student in the school setting.

A third limitation of the current study is that participants are likely to have completed trainings related to speech language pathology, occupational therapy, social work, and other disciplines, which is common among professionals who work in a therapeutic day school setting. These additional trainings and their content could have had an impact on their response to the three training methods (i.e., increase or a decrease in correct skill implementation. Future research may conduct this study in different settings, such as clinics, public schools, and corporations, which will consist of different variables to consider. Moreover, inquiring about participants' histories with other professional areas' content and/or training methods could determine provide insight into the impacts these other trainings have on the effectiveness of common training methods of applied behavior analysis.

A fourth limitation of the current study is that it did not measure the resources required for each of the training modalities (i.e., time spent creating and preparing materials, time spent in training for both participants and trainer, and time spent in support roles by the confederate peers). These are important factors when deciding which training modality is most effective and efficient in each training situation. Although this information would have been difficult to accurately collect, it would have provided a clearer picture regarding the required resources. To remedy this, data could have been collected on the duration of resource development, training time for both participants and the trainer, and the duration of time for the confederate peers to help support during the trainings. Future research should include these factors when collecting data on the efficiency of a given training modality.

A fifth limitation of the current study is that each participant only experienced one of the training methods (i.e., BST, written directions, video modeling) throughout the study. Although this allowed for a multiple baseline across subjects design to be used, it limits the conclusions regarding the effectiveness of each training method. In other words, the current study can be modified to be a within subjects design. Therefore, future research should expose each participant to all training methods to evaluate the effectiveness of all methods for each participant. This data could then be compared across participants to better determine the efficacy of the conclusions.

In summary the current study sought to determine which training method was most effective among staff working in a therapeutic day school. Although results were like those of prior research, the average percentages of correct implementation across BST, written directions, and video modeling were similar. This finding suggests that while BST may be most effective, written directions and video modeling remain viable options when also considering the resources required for all three training methods.

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APPENDIX A

DEMOGRAPHICS QUESTIONNAIRE

1. What is your age? (in years)

2. What is your highest level of education completed?

3. How do you describe yourself in terms of race?

4. How do you describe yourself in terms of ethnic background?

5. How do you describe yourself in terms of gender?

6. How much formal training have you had on forward chaining? (in hours)

7. How much formal training have you had on shaping? (in hours)

8. How much formal training have you had on discrete trial training (DTT)? (in hours)

APPENDIX B

FORWARD CHAIN TASK ANALYSIS

Forward Chain: Handwashing Task Analysis		
Participant: Date:		
Task	Y	N
1. Gathers necessary materials prior to interacting with the student (data sheet, writing utensil, M&Ms, timer)		
2. Tells student, "Wash your hands"		
3. Starts with first step		
3a. If new step, immediately provides full physical prompt to teach step (physically guides the student's body movements through entire step)		
3b. If not new step, provides the student with 3 – 5 seconds to respond		
3b. Prompts according to the least to most hierarchy: -Starts with vocal statement ("turn on water," "dry hands" etc.) -Points towards next step (faucet, towel, etc.) -Shows student how to complete the step -Provides partial physical guidance to the student (guides the student's hand to the faucet) - Provides complete physical guidance to the student (places hands over the student's hand to open the faucet)		
4. Correctly provides a reward -5 M&Ms and vocal praise if the student completes the step independently -2 M&Ms and vocal praise if the student needs any prompting)		
5. Completes entire task		
6. Accurately records data		
7. Moves onto next step when the student independently completes the steps for 3 consecutive trials		

8. Performs steps in order		
9. Teaches for appropriate amount of time (5 trials or 10 minutes, whichever comes first)		

APPENDIX C

SHAPING TASK ANALYSIS

Shaping: “Bubble”		
Participant: Date:		
Task	Y	N
1. Gathers necessary materials prior to interacting with student (data sheet, writing utensil, bubbles, stuffed animal, timer)		
2. Blows bubbles for student to show that bubbles are available		
3. Waits for student to reach for bubbles or turn their body towards bubbles		
4. Tells student to say current approximation (i.e., "say (b / b-uh / b-uh-b/ b-uh-b-l)")		
5. Provides bubbles when the student responds appropriately		
5a. If student does not respond or responds with incorrect sound (i.e., any sound other than approximation) after 3 prompts, has student perform 1 simple motor imitation (i.e., clap hands, arms up, touch nose)		
6. Correctly provides a reward -3 full blows of bubbles and vocal praise if student responds with correct sound on first request -½ blow of bubbles and vocal praise if student responds with correct sound on second or third request -10 seconds of stuffed animal for no response or incorrect sound)		
7. Accurately records data		
8. Teaches next sound when student independently responds with correct sound after 3 consecutive trials		
9. Performs steps in order		
10. Teaches for appropriate amount of time (5 trials or 10 minutes, whichever comes first)		

APPENDIX D

DTT TASK ANALYSIS

DTT: Tacting		
Participant: Date:		
Task	Y	N
1. Gathers necessary materials prior to engaging with student (data sheet, writing utensil, picture cards, M&Ms, stuffed animal, timer)		
2. Asks the student to identify 3 picture cards that they are already familiar with		
3. Holds up one card that student will be learning and asks student, "What is this?" (i.e,. rabbit, elephant, bird, cat, dog)		
4. Waits 3 - 5 seconds for student to respond		
5. Completes the training procedure accurately • presents target card • Says entire name of card • Waits 3 to 5 seconds • Presents target card • Says first half of name of card • Waits 3 to 5 seconds • Presents 2 mastered cards • Holds up target card • Waits 3 – 5 seconds		
6. Correctly provides a reward -5 M&Ms and vocal praise for independently naming the card -2 M&Ms and vocal praise for correct name at end of training procedure -10 seconds of stuffed animal if needing motor imitation at end of training)		

7. Completes entire task		
8. Accurately records data		
9. Teaches next target card when student independently names current card for 3 consecutive trials		
10. Performs steps in order		
11. Teaches for appropriate amount of time (5 trials or 10 minutes, whichever comes first)		

APPENDIX E

FORWARD CHAIN DATA SHEET

tudent: Thesis
ata Sheet

Forward Chain

Scoring

rite appropriate symbol according to response

: student completes step independently (without prompting)

student does not complete step or needs help (indicate prompt)

T E A C H

Prompting Hierarchy

FP: Full physical (physically guide them through entire step)

PP: Partial physical (physically guide them through some of the step)

M: Model (show them the next step)

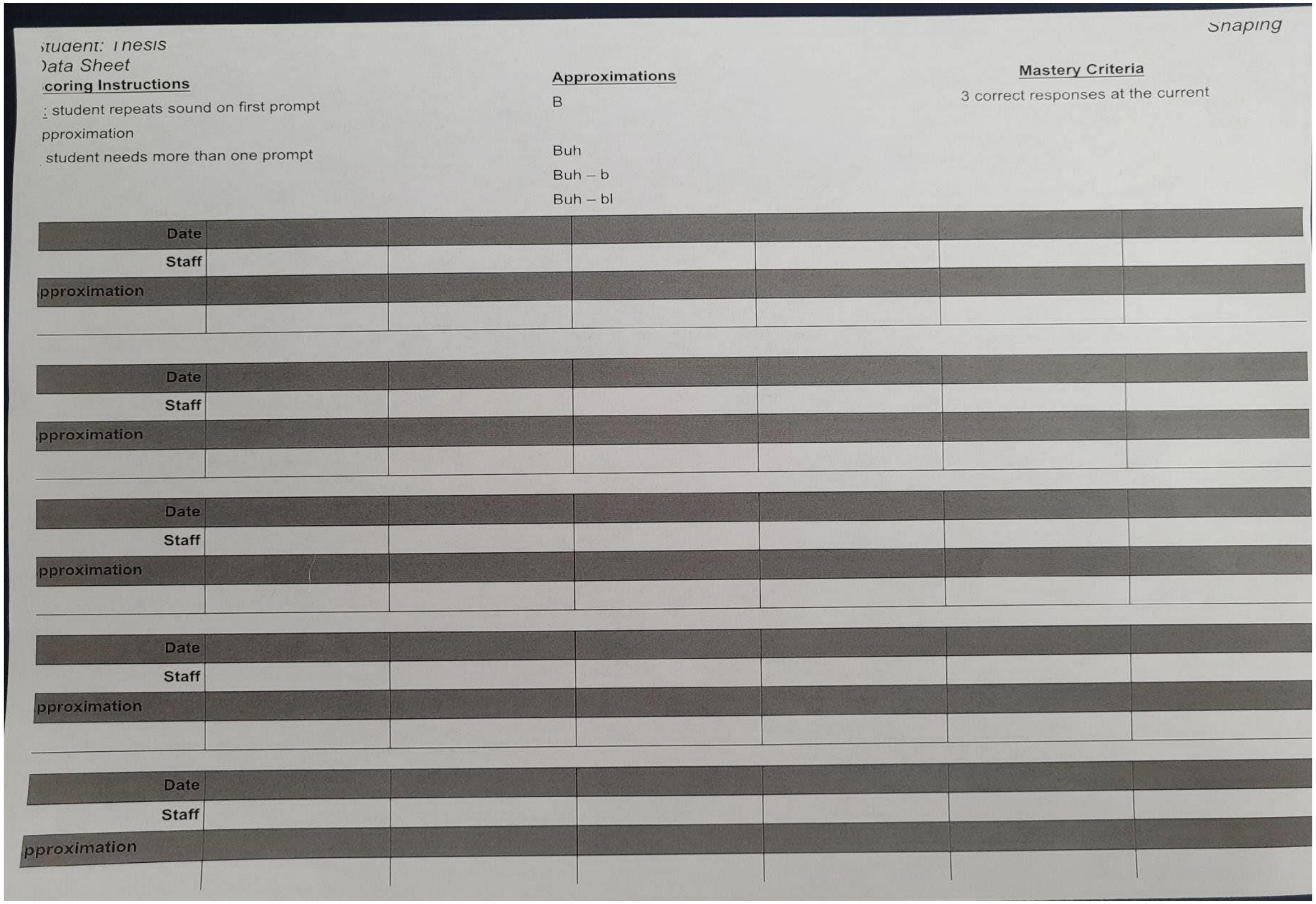
G: Gesture (point towards next step)

V: Verbal (say the next step)

Date						
Staff						
ask Step						
Stand in front of sink						
Turn on water						
Soap one hand						
ub palms together for 5 seconds						
ub back of hand for 5 seconds						
ub back of other hand for 5 seconds						
Rub palms together underwater for 5 seconds						
Rub back of hand under water for 5 seconds						
ub back of other hand under water for 5 seconds						
Turn off water						
Get towel						
Dry palms for 5 seconds						
ry back of hand for 5 seconds						
ry back of other hand						

APPENDIX F

SHAPING DATA SHEET



Shaping

tudent: Thesis
)ata Sheet
coring Instructions
: student repeats sound on first prompt
pproximation
student needs more than one prompt

Approximations
B

Buh
Buh – b
Buh – bl

Mastery Criteria
3 correct responses at the current

Date						
Staff						
pproximation						

Date						
Staff						
pproximation						

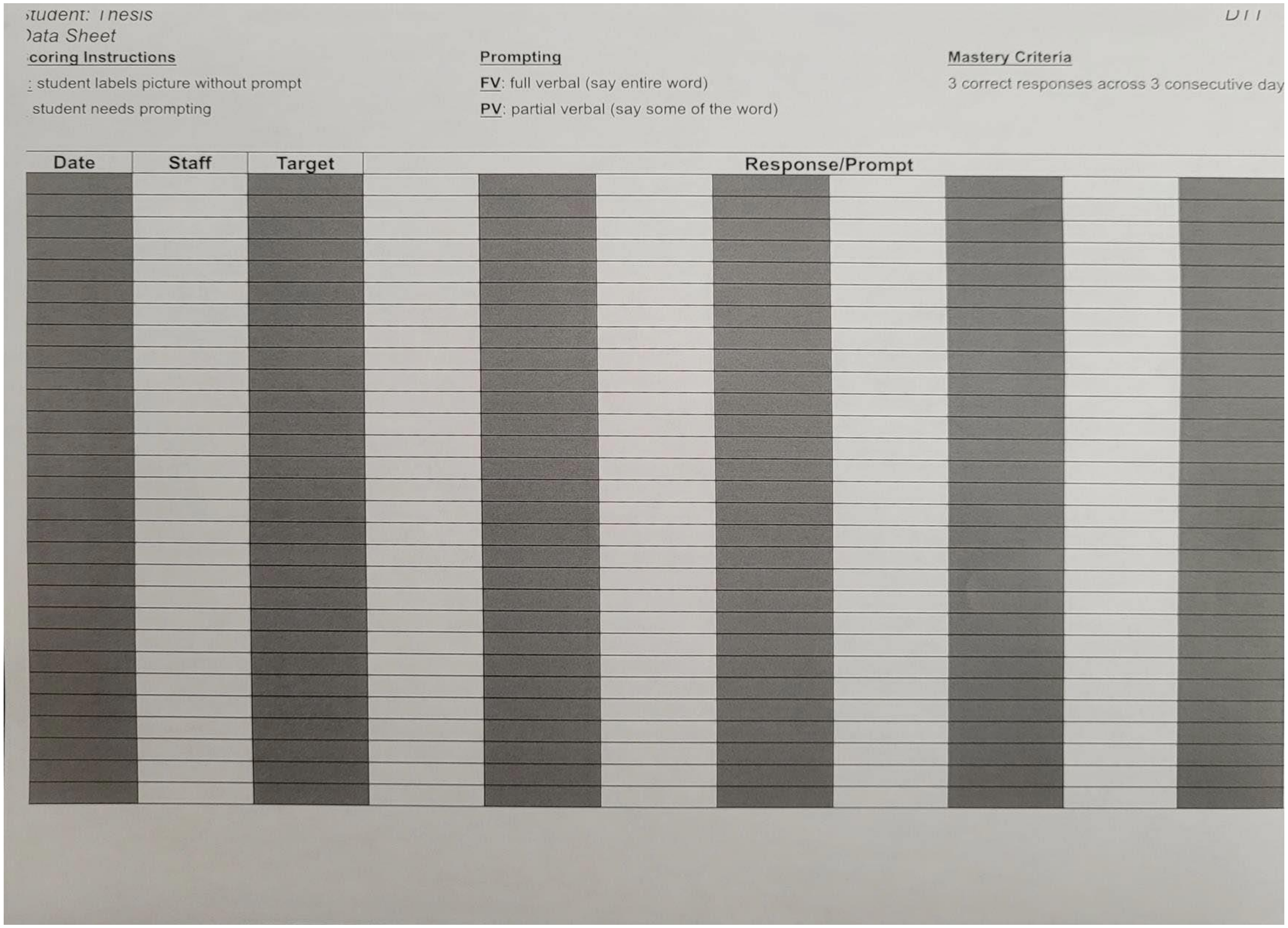
Date						
Staff						
pproximation						

Date						
Staff						
pproximation						

Date						
Staff						
pproximation						

APPENDIX G

DTT DATA SHEET



tudent: Thesis
ata Sheet

DTT

coring Instructions

: student labels picture without prompt

student needs prompting

Prompting

FV: full verbal (say entire word)

PV: partial verbal (say some of the word)

Mastery Criteria

3 correct responses across 3 consecutive day

Date	Staff	Target	Response/Prompt							

APPENDIX H

SOCIAL VALIDITY SURVEY

1. How would you rate the training you have received here at the day school?

Very poor Somewhat poor Neutral Somewhat well Very well

2. How would you rate the training you received while participating in this research study?

Very poor Somewhat poor Neutral Somewhat well Very well

3. How would you rate the effectiveness of the skills you learned in this research study to teach new skills?

Very poor Somewhat poor Neutral Somewhat well Very well

4. How likely are you to use the skills you learned in this research study with your students?

Very poor Somewhat poor Neutral Somewhat well Very well

5. How would you rate your understanding of the skills you learned in this research study?

Very poor Somewhat poor Neutral Somewhat well Very
well

APPENDIX I

FORWARD CHAIN VIDEO EXPLAINATION

This video depicts the instructor modeling how to use a forward chain to train handwashing. The learner is a volunteer that is not a participant of the study. The instructor begins with a brief explanation of what a forward chain is, when and how it is best utilized, and real-life examples where a forward chain was used to teach a skill. As the instructor goes through each step, they explain the step before and after modeling it.

https://youtu.be/Uprrw3PuIEU

APPENDIX J

SHAPING SKILL VIDEO EXPLANATION

This video depicts the instructor modeling how to use shaping to train a student to vocally emit the word "bubble." The learner is a volunteer that is not a participant in the study. The instructor begins with a brief explanation of what a shaping procedure is, when and how it is best utilized, and real-life examples where shaping was used to teach a skill. As the instructor goes through each step, they explain the step before and after modeling it.

https://youtu.be/CGzHGE9pvcI

APPENDIX K

DTT SKILL VIDEO EXPLANATION

This video depicts the instructor modeling how to use DTT to teach tacting via card identification. The learner is a volunteer that is not a participant in the study. The instructor begins with a brief explanation of what DTT is, when and how it is best utilized, and real-life examples of where DTT was used to teach a skill or response. As the instructor goes through each step, they explain the step before and after modeling it.

https://youtu.be/dtlLoEf_waU

APPENDIX L

WRITTEN DIRECTIONS FOR FORWARD CHAINING

Directions for Forward Chaining

1. Gathers necessary materials prior to interacting with the student (data sheet, writing utensil, M&Ms, timer)
2. Tells student, "Wash your hands"
3. Starts with first step
    a. If new step, immediately provides full physical prompt to teach step (physically guides the student's body movements through entire step)
    b. If not new step, provides the student with 3 – 5 seconds to respond
        i. Prompts according to the least to most hierarchy:
            1. Starts with vocal statement ("turn on water," "dry hands" etc.)
            2. Points towards next step (faucet, towel, etc.)
            3. Shows student how to complete the step
            4. Provides partial physical guidance to the student (guides the student's hand to the faucet)
            5. Provides complete physical guidance to the student (places hands over the student's hand to open the faucet)
4. Correctly provides a reward
    a. M&Ms and vocal praise if the student completes the step independently
    b. 2 M&Ms and vocal praise if the student needs any prompting)
5. Completes entire task
6. Accurately records data
7. Moves onto next step when the student independently completes the steps for 3 consecutive trials
8. Performs steps in order
9. Teaches for appropriate amount of time (5 trials or 10 minutes, whichever comes first)

APPENDIX M

WRITTEN DIRECTIONS FOR SHAPING

Directions for Shaping

1. Gathers necessary materials prior to interacting with student (data sheet, writing utensil, bubbles, stuffed animal, timer)
2. Blows bubbles for student to show that bubbles are available
3. Waits for student to reach for bubbles or turn their body towards bubbles
4. Tells student to say current approximation (i.e., "say (b / b-uh / b-uh-b/ b-uh-b-l)")
5. Provides bubbles when the student responds appropriately
    a. If student does not respond or responds with incorrect sound (i.e., any sound other than approximation) after 3 prompts, has student perform 1 simple motor imitation (i.e., clap hands, arms up, touch nose)
6. Correctly provides a reward
    a. 3 full blows of bubbles and vocal praise if student responds with correct sound on first request
    b. ½ blow of bubbles and vocal praise if student responds with correct sound on second or third request
    c. 10 seconds of stuffed animal for no response or incorrect sound)
7. Accurately records data
8. Teaches next sound when student independently responds with correct sound after 3 consecutive trials
9. Performs steps in order
10. Teaches for appropriate amount of time (5 trials or 10 minutes, whichever comes first)

APPENDIX N

WRITTEN DIRECTIONS FOR DTT

Directions for Discrete Trial Training (DTT)

1. Gathers necessary materials prior to engaging with student (data sheet, writing utensil, picture cards, M&Ms, stuffed animal, timer)
2. Asks the student to identify 3 picture cards that they are already familiar with
3. Holds up one card that student will be learning and asks student, "What is this?" (i.e,. rabbit, elephant, bird, cat, dog)
4. Waits 3 - 5 seconds for student to respond
5. Completes the training procedure accurately
    a. Presents target card
    b. Says entire name of card
    c. Waits 3 to 5 seconds
    d. Presents target card
    e. Says first half of name of card
    f. Waits 3 to 5 seconds
    g. Presents 2 mastered cards
    h. Holds up target card
    i. Waits 3 – 5 seconds
6. Correctly provides a reward
    a. 5 M&Ms and vocal praise for independently naming the card
    b. 2 M&Ms and vocal praise for correct name at end of training procedure
    c. 10 seconds of stuffed animal if needing motor imitation at end of training)
7. Completes entire task
8. Accurately records data
9. Teaches next target card when student independently names current card for 3 consecutive trials
10. Performs steps in order
11. Teaches for appropriate amount of time (5 trials or 10 minutes, whichever comes first)

APPENDIX O

TREATMENT FIDELITY CHECKLIST

Task analysis used to determine treatment integrity during BST.

BST	
Step	
1	Provided written instructions
2	Provided vocal explanation of skill
3	Modeled the steps of the skill for the participant
4	Provided explanation for each of the skills
5	Had participant practice skill step-by-step with a peer or instructor
6	Instructor observed the participant and provided feedback

Task Analysis used to determine treatment integrity during written directions

Written Directions	
Step	
1	Provided written directions to participant
2	Provided time for the participant to read directions
3	Answered questions that the participant had

Task Analysis used to determine treatment integrity during video modeling

Video Model	
Step	
1	Played video for participants
2	Answered questions the participant had

APPENDIX P

EXHIBITS

TABLES

Table 1: *Demographics for Participants*

Demographic	**n**	**%**
Gender		
Male	2	66
Female	1	33
Age		
18-20	1	33
21-30	1	33
30+	1	33
Highest education level		
High school	2	66
Bachelor's degree	1	33
Race		
Black	1	33
White	2	66
Formal training		
Forward chaining	0	0
Shaping	0	0
Discrete trial training	0	0

FIGURES

Figure 1: *Process for procedures*

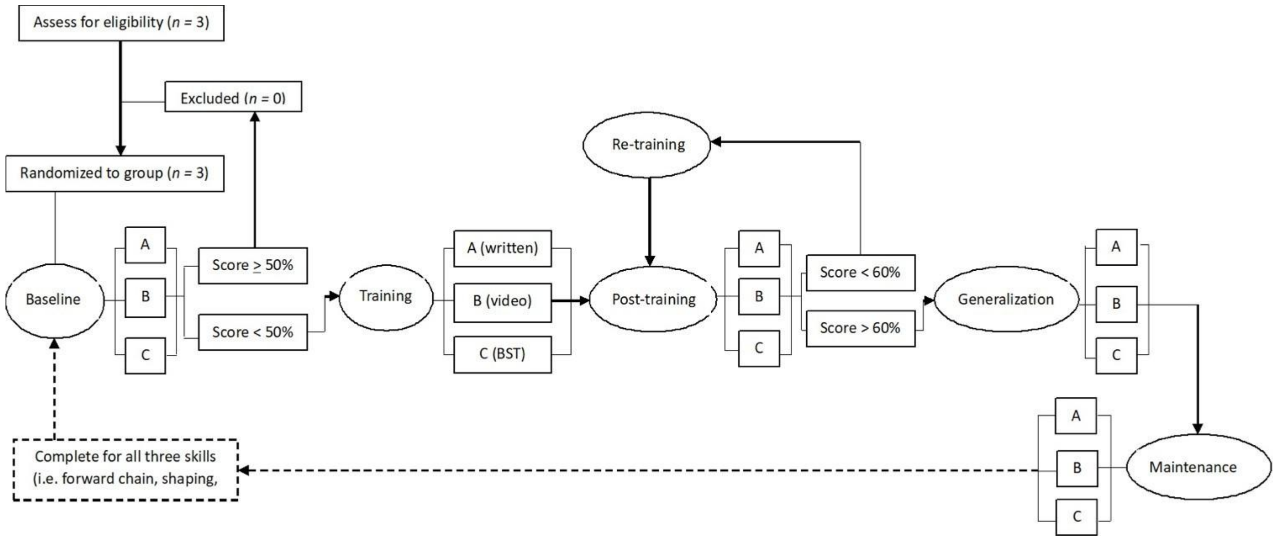
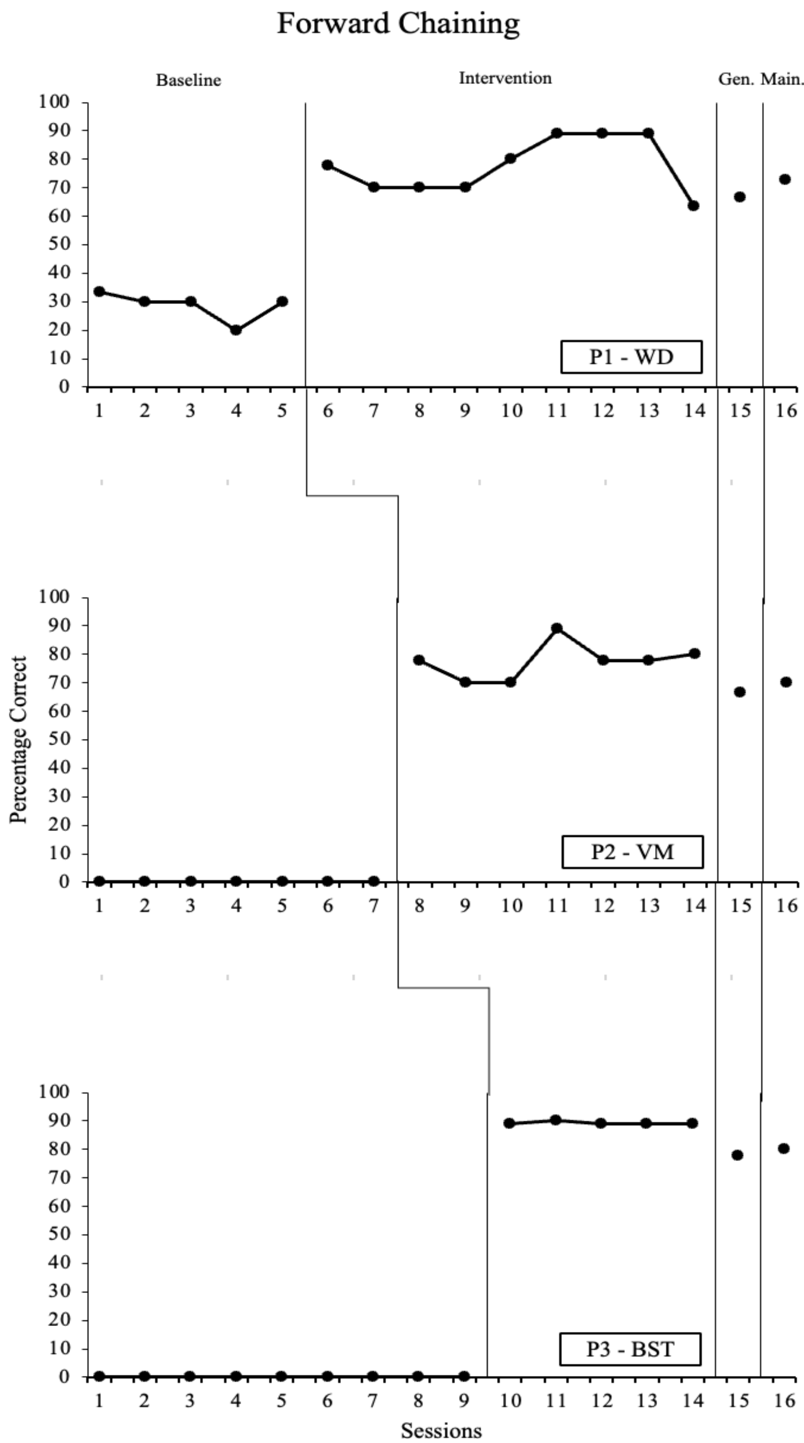
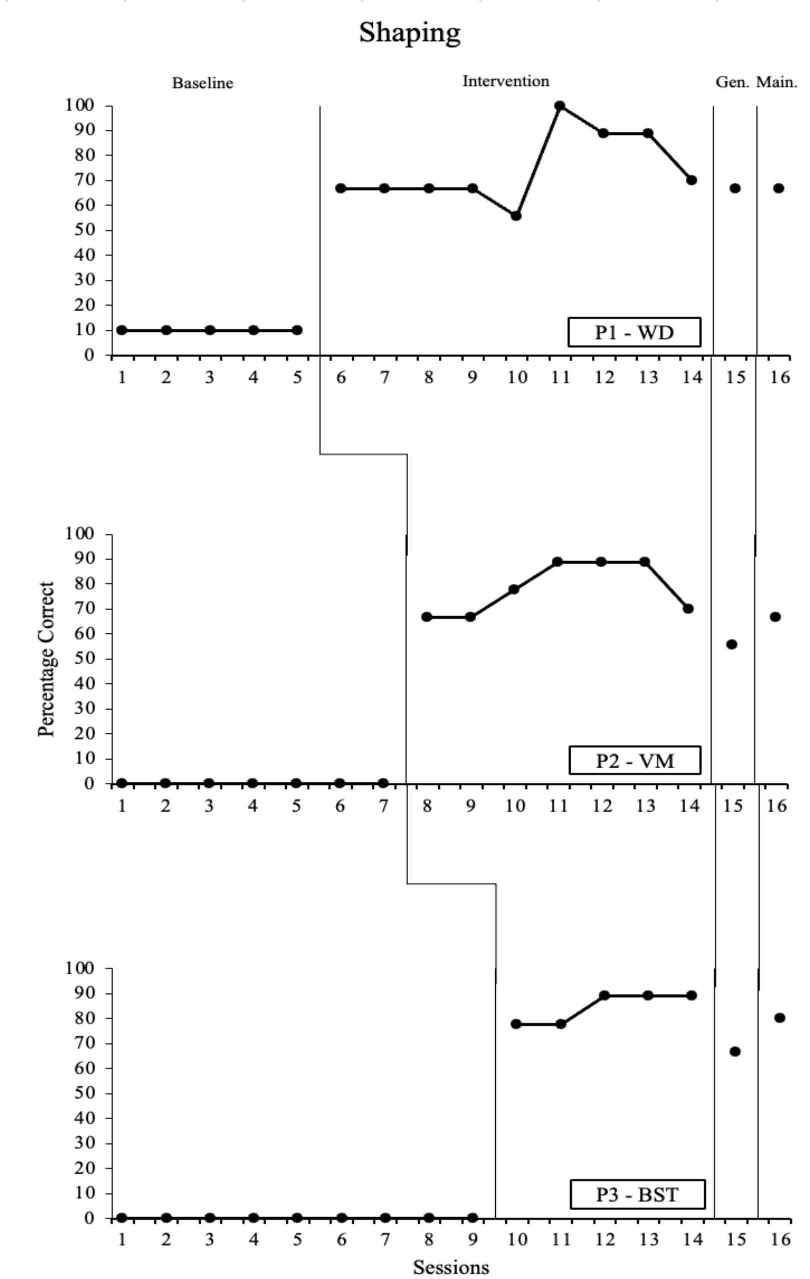


Figure 2: *Results for Teaching Forward Chaining*



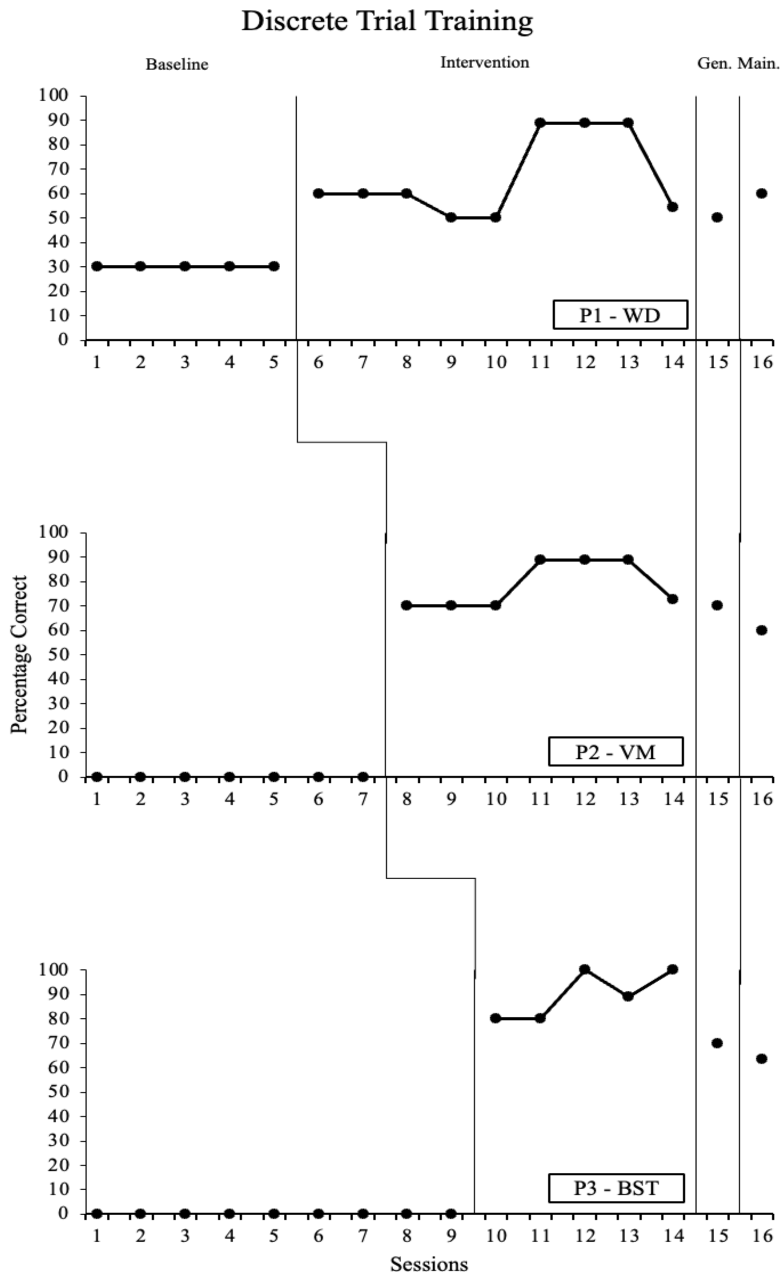
Note. P1 = Participant 1, WD = Written Directions, P2 = Participant 2, VM = Video Modeling, P3 = Participant 3, BST = Behavior Skills Training

Figure 3: *Results for Teaching Shaping*



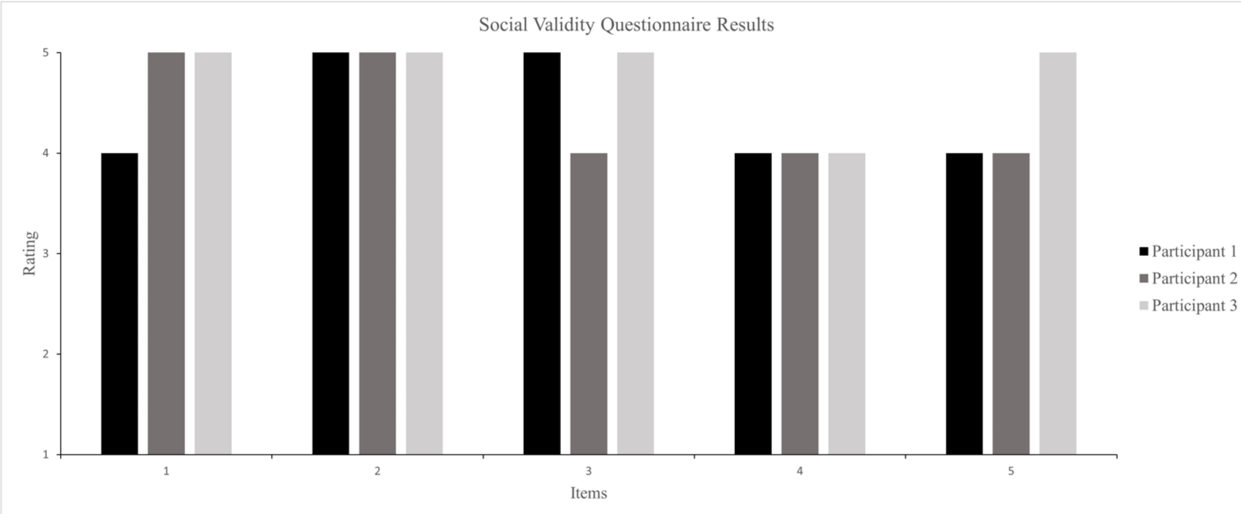
Note. P1 = Participant 1, WD = Written Directions, P2 = Participant 2, VM = Video Modeling, P3 = Participant 3, BST = Behavior Skills Training

Figure 4: *Results for Teaching Discrete Trial Training*



Note. P1 = Participant 1, WD = Written Directions, P2 = Participant 2, VM = Video Modeling, P3 = Participant 3, BST = Behavior Skills Training

Figure 5:*Results from the Social Validity Survey*



Note. Item 1 = "How would you rate the training you have received here at the day school?", Item 2 = "How would you rate the training you received while participating in this research study?", Item 3 = "How would you rate the effectiveness of the skills you learned in this research study to teach new skills?", Item 4 = "How likely are you to use the skills you learned in this research study with your students?", Item 5 = "How would you rate your understanding of the skills you learned in this research study?"

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Thesis Paper Title:
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Major Professor: Dr. Natalia Baires