

A COMPARISON OF TWO TRAINING PACKAGES ON TEACHING
STAFF TO INCREASE MANDING OPPORTUNITIES FOR
CHILDREN WITH AUTISM SPECTRUM DISORDER

A Thesis Presented to the Faculty
of
California State University, Stanislaus

In Partial Fulfillment
of the Requirements for the Degree
of Master of Science in Psychology

By
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April 2020

CERTIFICATION OF APPROVAL

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DEDICATION

I dedicate this thesis to my mom and dad. I'm so very blessed to have amazing parents like the both of you who never gave up on me. I can't thank you both enough for the constant love, encouragement, and never ending support you gave me during this process. Thank you for always lifting me up. I am forever grateful and love you both beyond words! I'm also thankful for my brother for constantly reminding me of what I am capable of and putting things into perspective. Lastly, I'm thankful for the abundance of love and support my other half, Tarek, has given me during the completion of my thesis. Thank you for reminding me to believe in myself and holding my hand through the final stretch. I love you!

ACKNOWLEDGMENTS

I would like to thank my thesis committee chair Dr. Bruce Hesse and thesis committee members Dr. Kurt Baker and Dr. Jessica Lambert for their support and feedback throughout this process. I would also like to thank my co-workers and supervisors for constantly supporting and encouraging me along the way. I truly appreciate and feel lucky to work with such an amazing group of people!

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ABSTRACT

Behavior skills training (BST) has shown to improve staff performance and accuracy, but is often costly and long in duration. Creating a quality yet efficient training package is desired. A comparison of a 2-step training package consisting of a self-directed handout and modeling and a 4-step training package consisting of an instructional presentation, modeling, role-playing and feedback was evaluated with four behavior therapists who work for a non-public agency and provide behavior services to children with autism spectrum disorder in special day classrooms that are autism specific. The results indicated that the more efficient 2-step training package produced similar effects as the longer 4-step training package in staff performance. The results suggest that a longer multi-step training package may not be necessary for staff training to increase performance. Limitations such as duration of data that was collected and times of trainings may have impacted participant's performance. Further research should investigate which components of behavior skills training are the most effective.

INTRODUCTION

Research has shown that the use of in-vivo staff training may be more effective in meeting mastery criteria than with other types of trainings. There are numerous ways to train staff members including the following: handouts, self-directed instructions, workbooks, feedback, modeling, video modeling, role-playing, and in-vivo workshops. Determining an efficient and effective way to train staff members without jeopardizing quality will save time and money. Proficient ways to train those who work with children with autism to increase prompts for appropriate requests (i.e., mands) will be investigated in this study.

Background on Autism Spectrum Disorder

Autism spectrum disorder (ASD) is a pervasive developmental disorder that is increasingly being diagnosed in children nationally and around the world. Children on the autism spectrum display deficits in communication skills (i.e., exhibited either verbally or nonverbally) and social skills that show a lack of reciprocity. Children with autism spectrum disorder may also engage in repetitive behaviors or stereotypy that may also include rigidity (American Psychiatric Association, 2013). Repetitive behaviors or stereotypy may interfere with a child's development of social and communication skills. These behaviors are highly reinforcing and could displace other less reinforcing behaviors. It is reported that 50% of children on the autism spectrum may remain non-verbal (Banda, et al., 2010).

As a result, children on the autism spectrum may develop a strong learning history of getting their needs and/or wants met (i.e., primary and/or secondary reinforcers) with minimal use of communication skills. This is often unknowingly facilitated by people in the environment who provide these reinforcers. These contingencies can contribute to delays in language development and verbal responding. Therefore, the development of verbal responding and language acquisition in children with autism spectrum disorder has been an important target to address.

Prevalence and Intervention for Communication Skills

The direct cause of autism is still a mystery as researchers continue to investigate the missing links. What's alarming is that the number of children receiving a diagnosis is increasing every year. Currently, autism spectrum disorder is being diagnosed in one of 59 children in the United States (Centers for Disease Control and Prevention, 2019). We also know that males are four times more likely to be diagnosed than females (American Psychiatric Association, 2013). At this time, there is no known cure for autism, so the focus is intervention and proper treatment to reduce the long term, negative effects. Howard, Sparkman, Cohen, Green, and Stanislaw (2005) write, "Early intervention targets differences between the skills of children who have or are at risk for developmental delays and the skills of their typically developing peers" (p. 360). Early intervention is crucial to providing the most promising developmental trajectory in closing the gap between a typically developing child and a child with autism spectrum disorder. In their research of

different intervention treatments for children with autism spectrum disorder, Howard et al. (2005) found that intensive behavior analytic treatment (IBT) showed considerably higher scores and more gains for children compared to children who received eclectic interventions. Ultimately, their research produced findings that suggest "...only IBT had that effect, producing above-normal mean learning rates in the non-verbal, receptive language, expressive language, overall communication, and social skill domains" (Howard et al., 2005, p. 377).

Early intervention targets many domains for children with autism and are individualized to their needs and current level of functioning. These domains may include: attending, imitation, verbal imitation, receptive language, expressive language, communication, play and social skills, behavior management, and adaptive skills. Each domain is broken down into target goals and objectives for each child. A primary treatment target in communication is making successful requests. In the behavior analysis view of language, requests are referred to technically as mands. Skinner (1957) explained that a mand, derived from similar words such as command or demand, is a verbal response whose form is controlled by receiving the specific item or action being requested. Appropriate manding is an important area of focus for children with autism spectrum disorder. Charlop and Trasowech (1991) point out that, "The value of appropriate spontaneous speech is evident in that it naturalizes the children's speech, permits social interactions, and is a way for the children to obtain information, objects, food, and attention" (p.748). The development of language is critical and it affects multiple areas of a child's development. Being able to

communicate your needs is a skill set that is important not only for survival, but is a foundation for functioning in your own environment. Plavnick and Ferreri (2012) emphasized learning and developing the skills to appropriately communicate requests manding will help children on the autism spectrum get their needs met, it can also decrease maladaptive problem behavior (e.g., aggression, inappropriate vocal responses, elopement, etc.). Often, children may engage in problem behavior because it functions as escape from something aversive, to gain attention, to try to obtain something tangible, and/or is self-stimulatory. In addition, children with ASD may incidentally learn non-targeted social behaviors (e.g., eye contact) as they acquire manding. Teaching children a functional equivalent replacement behavior (e.g., to appropriately request something) instead of engaging in problem behavior will make them more successful in their environment. It is important to consider a child's future and how they can gain the skills required for independence.

Manding and Techniques for Prompting Manding Opportunities

Nigro-Bruzzi and Sturmey (2010) explain, "...an effective form of treatment involves withholding the maintaining reinforcer for problem behavior and delivering it contingent on an appropriate communication response, often referred to as a mand" (p.757). A child's environment can be modified or manipulated to require a response, which could be displayed in multiple forms. A child could mand for many different things: tangible items, activities, attention, information, escaping something aversive by requesting a break, etc. Depending on a child's age, level of disability, and verbal skills, manding or requesting could be accomplished verbally, with pictures, or

gestures. An example of a child verbally communicating or manding could be saying, “Can you move, please” if the doorway was blocked by someone. A child could use a visual icon/picture of something they want (e.g., edible, toy, activity, etc.) and give it to someone to get the desired item or action. A child could use a gesture, like pointing, to the restroom door to mand they need to use it as they walk past instead of someone just taking them there initially. By requiring someone to assist with gaining access to a particular item, staff can prompt for manding opportunities from children with ASD. Another technique staff could use to prompt for mands would be playing with a preferred item to entice a child to request a turn. This is referred to as enticing play and is done in close proximity to the child, but they don’t have access to it. If a child doesn’t mand a desired item, staff can further prompt by asking, “What do you want?” All these techniques are prompts for manding and can be used to promote language development and acquisition. These prompts for manding will be the focus of the current study.

Previous Research on Staff Training

An important element to remember when treating a child with autism is that time is very crucial. These children are already significantly behind their typically developing peers in overall development, so time efficient interventions are preferred. Ultimately, that means we must prepare and train staff in the most effective way. According to Banda, Copple, Koul, Sancibrian, and Bogshutz (2010), Bandura’s social learning theory suggests that people learn by observing, so watching someone model a target behavior may be a better predictor of accuracy in performance. When

in-vivo training is used for staff, the desired behavior increases or shows more accuracy. Therefore, when staff is efficiently trained without compromising quality, time and money can be managed more effectively and numerous supplemental trainings may not be necessary to increase staff performance and accuracy to implement proper interventions. As a result, proficiently trained staff members can model appropriate ways to intervene with other staff that may not have access to the same trainings. Overall, this could make the learning environment more functional and successful for the students and staff by reducing maladaptive behavior and children can receive higher quality services.

Regarding staff training, Arnal, Fazzio, Keilback, Martin, Starke, and Yu (2007) conducted experiments to teach students how to implement discrete trial training accurately to a confederate that simulated a child with autism. There was a total of seven participants; four in the first experiment and three in the second experiment. In experiment one, the training package consisted of a self-instructed manual only. In experiment two, the training package consisted of a self-instructed manual, a video model, and feedback on scoring accuracy. The results showed that students who implemented discrete trial training after a self-instructed manual alone were not able to meet mastery criteria. The students who implemented discrete trial training after a self-instructed manual, viewing a video model, and receiving feedback did meet mastery criteria (Arnal, et al., 2007). This study suggests that a self-instructed handout alone is not sufficient to produce accuracy, but a training package that includes multiple elements will produce desired outcomes. Participants also

completed a survey after the experiment that asked them to score the effectiveness of the training they experienced. The participants from experiment two rated the training more effective than the participants from experiment one.

Since a self-directed handout alone did not produce a desirable outcome in increasing staff performance, further research is needed to examine how to improve this form of training. Graff and Karsten (2012) used a variety of written self-instructions to train staff members to conduct two different preference assessments. A multiple-baseline design was used in this study. To prevent potential order effects, the order of the preference assessments trainings was varied. The participants in this study included 11 teachers who worked with children on the autism spectrum or with a similar developmental disorder. The teachers were given a pre-test about preference assessments and a score of 50% or lower was required for them to participate. There were also three clinicians that teachers would conduct preference assessments on who served as simulated consumers. They were provided a script to follow to control for unwanted responses (e.g., choosing more than one stimulus at a time). The clinicians had up to 20 years' experience with preference assessments. This study had two training sequences. One group of six teachers received the following training sequence: written instructions alone and enhanced instructions. The other group of five teachers received the following training sequence: written instructions alone, written instructions plus a data sheet, and enhanced written instructions. The study found that staff members had a low accuracy rate of conducting preference assessments with written instructions alone. At a minimum, written instructions

supplemented with a data sheet slightly improved staff's accuracy. Trainings with enhanced instructions, which included reduced jargon in written instructions and supplemented with visuals, diagrams, and step-by-step examples, were the most effective in increasing accuracy in conducting preference assessments. This study provides further evidence that written instructions alone do not provide enough quality training to produce accuracy in conducting preference assessments and written instructions need to be enhanced with visuals or supplemented with other trainings.

Nigro-Bruzzi and Sturmey (2010) conducted a study that evaluated a behavioral skills training (BST) package which included instructions, modeling, rehearsal, and feedback to train staff on implementing mand training with children diagnosed on the autism spectrum. This study also used a multiple-baseline design. The participants included three special education teachers and three speech therapists who had not received any prior mand training. Other participants included six children from two to six years old, who were diagnosed with autism spectrum disorder. This study found that staff performance met mastery criteria (i.e., 90% accuracy) within three 30-60 minute training sessions. They also found that the training package increased independent mands from the children. Additionally, mands generalized to another setting for half of the participants. As with the previously described research, this study demonstrated that a quality training package was successful in increasing staff performance and independent mands for children with autism spectrum disorder.

Behavior skills training (BST) has shown to be an effective method to train staff members in increasing staff performance and accuracy (Nigro-Bruzzi & Sturmey, 2010), but it has been noted that these types of trainings take a considerable amount of time which is neither desirable nor cost effective. In a more recent study, Madzharova, Sturmey, and Jones (2012) evaluated two case studies that combined a multi-component training package for staff members for behavioral skills intervention for children with autism. In each case, there were two students diagnosed with autism spectrum disorder. Their ages ranged from five years old to 13 years of age. There was also one teacher's assistant. One training package consisted of modeling and feedback only, and the other training package consisted of instructions, modeling, rehearsal, and feedback. The study showed that both training packages were effective in increasing staff's implementation of teaching procedures that increased manding between peers. A critical point from this study was that the training package with fewer steps seemed to be just as effective as the training package with more steps. This is helpful in creating and programming for a more efficient way to train staff members without sacrificing the quality of training. This was evident not only with staff reaching mastery criteria more rapidly, but with the children from this study maintaining their learned skills overtime.

Current Study

The purpose of the current study was to determine if a training package with fewer components could produce similar or greater effects than a training package with more components in increasing the frequency of prompts of manding

opportunities provided by staff for children on the autism spectrum. The present study took components of previous studies that often compare the effectiveness of one-element trainings with multi-element training packages. The previous study by Madzharova, Sturmey, and Jones (2012) found that a modified version of a behavior skills training (BST) package that consisted of only modeling and feedback was just as effective as the regular 4-step behavior skills training (i.e. instructions, modeling, rehearsal, and feedback) in increasing staff performance. The current study explored a different modified BST package, replacing the feedback training component with a self-directed handout, to test if training time could be further reduced for even better efficiency. Thus, the present study compared a 2-step training package including modeling with a self-directed handout with a 4-step training package that included an instructional presentation, modeling, role playing, and feedback to help train staff members who provide behavior support to children on the autism spectrum in a special day class (i.e., specifically for children with autism spectrum disorder). It was hypothesized that the training package with fewer steps would be equal to or better at increasing manding opportunities for children with autism spectrum disorder than a training package with more components. It is expected that for staff training supplementing a self-directed handout with modeling will produce a desired outcome without the need of a time-consuming multi-step training. As a result, training times can be shortened while maintaining high quality leaving more time for other training topics.

METHOD

Participants and Setting

The participants consisted of four behavior therapists who were a minimum of 18 years of age. Participant 1 was a 22-year old male who has provided behavior therapy or related services for 3.5 years. Participant 2 was a 36-year-old male who has provided behavior therapy or related services for 15 years. Participant 3 was a 26-year-old female who has provided behavior therapy or related services for 4 years. Participant 4 was a 29-year-old male who has provided behavior therapy or related services for 8 years. These participants either completed their bachelor's degree or were in the process of completing their degree in psychology, child development, or a related field. The participants are employed by a non-public agency that provides behavior support in special day classrooms (SDC) for children who are diagnosed with or meet eligibility under autism spectrum disorder. The participants were recruited through a posting on the agency's staff's website. Participants completed a basic refresher training about applied behavior analysis (ABA) principles about nine months prior, but nothing specifically about mand-training.

The present study took place in two special day classrooms that are autism specific (SDC-AUT) at an elementary school that each consists of one teacher, 12 students, two behavior therapists, and two instructional assistants. One SDC-AUT classroom consisted of students who were in grades 2 through 4 and the other SDC-AUT classroom consisted of students who were in grades 4 through 5.

Research Design

The design of this study was a single-subject design with multiple baselines across pairs of participants and interventions were counter balanced as different trainings were introduced. Participants 1 and 2 received the 2-step training package first after baseline and then they received the 4-step training package. Participants 3 and 4 received the 4-step training package after baseline and then the 2-step training package. Baseline data consisted of 3 or 4 sessions and after each new treatment was introduced, 6 sessions of data were collected. When participants 1 and 3 were on their 3rd baseline session, participants 2 and 4 began their baseline data sessions. Data collection occurred 3-4 times a day over a span of 6 days. Participants received their training packages during weekly allotted time for trainings and meetings. Trainings occurred after school either the same day baseline data or treatment data was complete and prior to the following day of when new sessions of data were recorded.

Independent Variable

The independent variable included a 2-step and a 4-step training package. The 2-step training package consisted of a short 5 minute training session in an empty classroom where participants were instructed to go to right after students were dismissed or placed on the bus at the end of the school day. The researcher modeled techniques to participants on how to set up and prompt manding opportunities in their environment from the list specified on the self-directed handout (Appendix B; i.e, keep reinforcers out of reach, keep materials in a locked cabinet, stand in front of things to block access to it, place desired items in a clear container that they can't

easily open, use enticing play, and ask, “What do you want?”). Then the participants were thanked for their time and told to review self-directed handout (Appendix B) that was given to them as they were dismissed before the start of the following school day. The self-directed handout explained what manding is, why it is important, what things can be manded, how can a student mand, what items should be used for manding, techniques for manding, and a list of different examples they could use to prompt for mands.

The 4-step training package consisted of a 15 to 20 minute training session in an empty classroom where participants were instructed to go to right after students were dismissed or placed on the bus at the end of the school day that included the following: the researcher presented instructions from the self-directed handout (Appendix B) to maintain fidelity to the participants, then the researcher modeled techniques on how to set up and prompt manding opportunities in their environment from the list specified on the self-directed handout (Appendix B; i.e., keep reinforcers out of reach, keep materials in a locked cabinet, stand in front of things to block access to it, place desired items in a clear container that they can’t easily open, use enticing play, and ask, “What do you want?”), then participants took turns role playing with the researcher’s assistant (who was thoroughly trained on manding opportunities prior and is another supervisor with the non-public agency) being the behavior therapist who prompted manding opportunities and the student who manded, and finally the researcher provided feedback to the participants (e.g., what the participants did well or what they could improve on).

Dependent Variable

The dependent variable was the frequency of manding opportunities staff prompted to children with autism spectrum disorder. Manding opportunities were defined as a staff member doing any of the following but not limited to: keeping reinforcers out of reach and/or in a locked cabinet, standing in front of preferred items to block access to them, placing desired items in a clear container that a student can't easily open, using enticing play, or asking a question (e.g., "What do you want," "What do you need," "What is it that you're looking for," etc.).

Procedure

The researcher observed in SDC-AUT classrooms at an elementary school where their presence was typical as they would routinely observe throughout the week. The SDC-AUT classrooms consist of a six and a half hour school day. The school day is broken down into subjects and students rotate in small-group rotations for 3-4 rotations, per subject. Students then had free time for five minutes after each subject (3-4 free times a day, on average), which is when data were collected on the frequency of prompted manding opportunities (i.e., 1 free time = 1 session).

The researcher used the manding frequency data sheet (Appendix A) during all sessions to record the frequency of manding opportunities provided to children with autism spectrum disorder by the participants. The researcher marked whether baseline data was being collected or which intervention was introduced prior to each session and frequencies were tallied on the target behavior for a five minute session. The manding frequency data sheet was broken down into thirty-second intervals for a

total of five minutes. Data were collected for a total of six days with 3-4 sessions per day.

The researcher began to collect baseline data for the participant on the frequency of manding opportunities provided to children on the autism spectrum in an SDC-AUT classroom once free-time began (i.e., teacher told students it was free-time) for a total of five minutes. The researcher immediately set a timer for five minutes and tallied the frequency of manding opportunities on the manding frequency data sheet (Appendix A). After 3 or 4 sessions of stable baseline data, participants received either a 2-step training package (i.e., modeling and a self-directed handout) or the 4-step training package (i.e., instructional presentation, modeling, role playing, and feedback). Then 6 sessions of data were collected over the next two days and then training packages were switched. After the participant received their second training package, another 6 sessions of target data were collected for another two days.

Interobserver Agreement

Interobserver agreement (IOA) data were collected from a second observer (the researcher's assistant and other supervisor with the non-public agency, so their presence was also routine) for 50% of total sessions using the same manding frequency data sheet (Appendix A) that the researcher used. Total agreement IOA was calculated by dividing the number of agreements by the total number of trials and multiplying that by 100. The IOA total 100% across sessions.

RESULTS

In this study, participants received two training packages and the frequency of manding opportunities provided to children with autism spectrum disorder was measured. The results from the current study are reported below.

Participant 1

During baseline (sessions 1-3), Participant 1 displayed a low level of frequencies of prompted manding opportunities. Throughout the 2-step package, Participant 1 showed an increased level, but no trend. There was a clear increase from the last baseline session (session 3) to the first session in the 2-step package intervention (session 4) from a 1 to a 4 of prompted manding opportunities. Participant 1 maintained 5 prompted manding opportunities over the next 3 sessions (sessions 5-7). Overall, there was low variability during the 2-step package. During the second intervention, the 4-step package, Participant 1 displayed an initial increased level, but a decrease in trend thereafter starting with session 12. There was a clear increase from the last session of the 2-step training package (session 9) to the first session of the 4-step training package (session 10) from a 5 to an 8 of prompted manding opportunities. Overall, there were clear level changes between baseline and each treatment phase and a downward trend from an increased level change (See Figure 1).

Participant 2

During baseline (marked as sessions 3-6 on the graph, Figure 1), Participant 2 maintained a low level of prompted manding opportunities and low variability.

Throughout the 2-step training package, Participant 2 displayed an increase in level and moderate variability. There was a clear increase from the last baseline session (marked as session 6 on the graph) to the first session in the 2-step training package (marked as session 7 on the graph) from a 2 to a 5 of prompted manding opportunities. During the 2-step training package, Participant 2 displayed an increasing trend for the first three sessions (marked as sessions 6-9 on the graph) and then displayed a downward trend (marked as sessions 10-12). During the second intervention, the 4-step training package, Participant 2 displayed a slight increase from the last session of the 2-step training package (marked as session 12 on the graph) to the first session of the 4-step training package (marked as session 13 on the graph) from 5 to 7 prompted manding opportunities. Participant 2 displayed no level change from the 2-step training package to the 4-step package, and displayed low variability in both. Overall, there was a clear level change between baseline and the first treatment phase, the 2-step training package, but the levels were similar from the 2-step training package to the second treatment phase, the 4-step training package (See Figure 1).

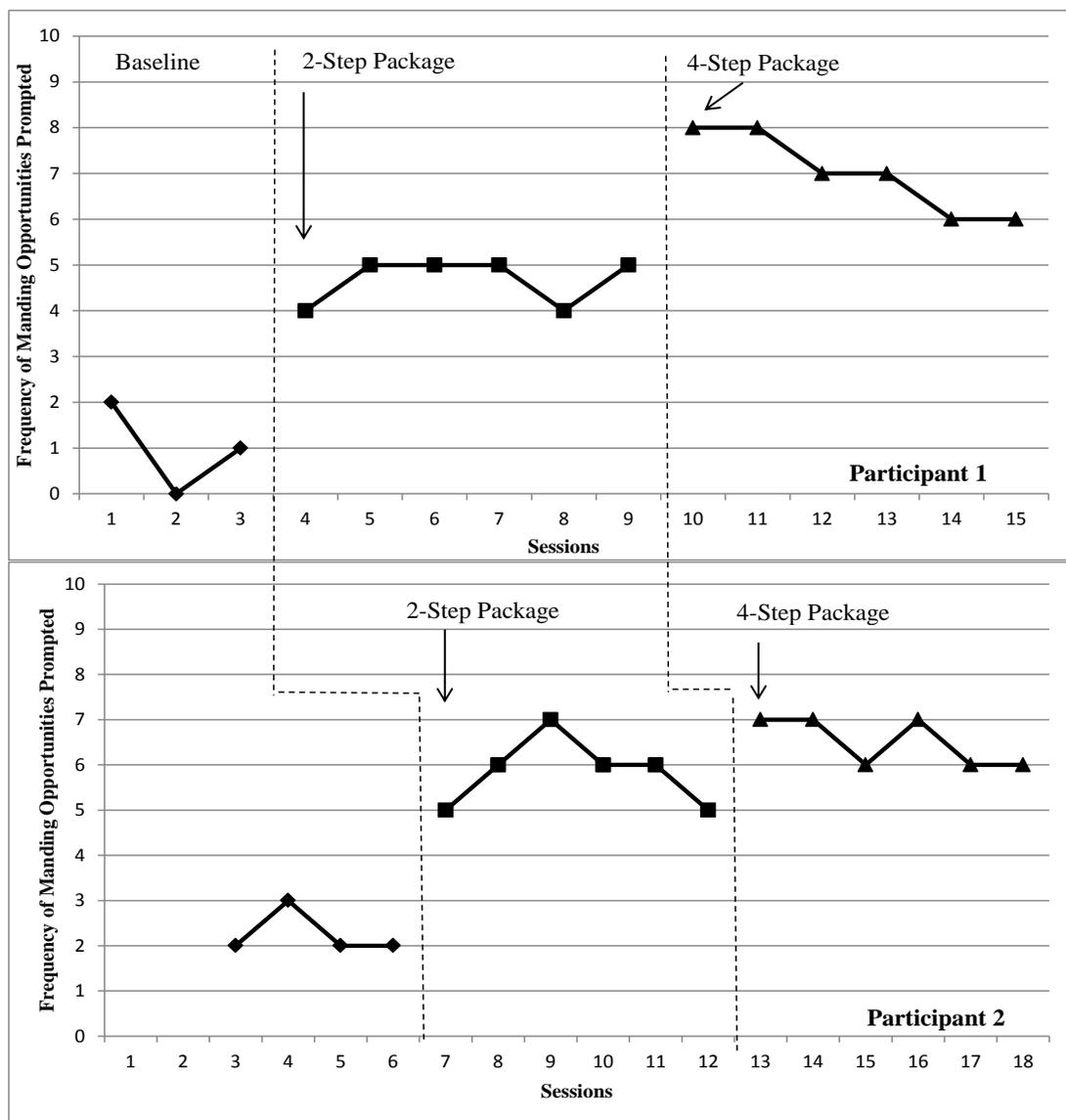


Figure 1. Frequency of Manding Opportunities Prompted for Participant 1 and 2 across baseline and two intervention conditions.

Participant 3

During baseline (sessions 1-3), Participant 3 displayed low variability and a low level of prompted manding opportunities by engaging in zero opportunities, twice. Participant 3 showed an increase in trend from the last baseline session (session 3) to the first session of the 4-step package (session 4) from 0 to 5 prompted manding opportunities. Participant 3 displayed only an increase from 5 to 6 prompted manding opportunities from the last session of the 4-step training package (session 9) to the first session of the 2-step training package (session 10). During both the 4-step training package and the 2-step training package, Participant 3 displayed no trends and maintained the same level. There was minimal variability from the start of each training package, but then data goes flat for the last few sessions during each training package (sessions 7-9 and 12-15). Overall, there was a clear level change between baseline and the first treatment phase, 4-step training package, but no clear level change from the 4-step training package to the 2-step training package (See Figure 2).

Participant 4

During baseline (marked as sessions 3-5 on the graph, Figure 2), Participant 4 displayed a low level of frequencies of prompted manding opportunities. Participant 4 showed an increase from the last session of baseline (marked as session 5 on the graph) to the first session of the 4-step training package (marked as session 6 on the graph) from 2 to 6 prompted manding opportunities. During the 4-step package, Participant 4 displayed a slight downward trend with the lowest point reached during the 4th session (marked as session 9 on the graph). Participant 4 displayed a slight

increase from the last session of the 4-step training package (marked as session 11 on the graph) to the first session of the 2-step training package (marked as session 12 on the graph) from 5 to 7 prompted manding opportunities. During the 2-step training package, Participant 4 displayed moderate variability, but a downward trend. Overall, there was a level change between baseline and the 4-step training package, with a slight increase in trend, but no clear level change between the 4-step training package and the 2-step training package (See Figure 2).

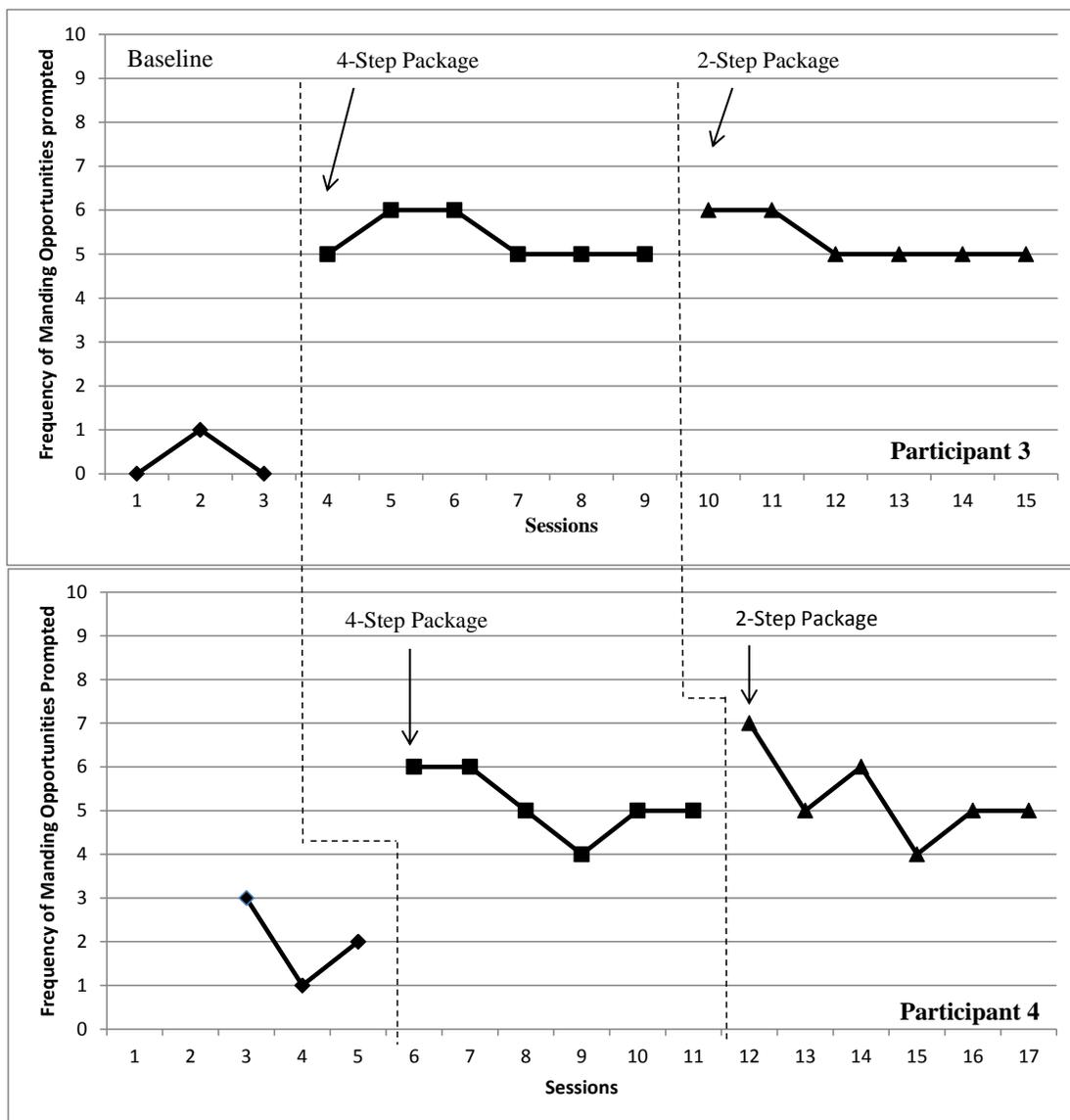


Figure 2. Frequency of Manding Opportunities Prompted for Participant 3 and 4 across baseline and two intervention conditions.

DISCUSSION

The current study examined two different staff training packages and their effect on the frequency of manding opportunities provided to children with autism spectrum disorder. It was hypothesized that the 2-step training package (i.e., modeling and a self-directed handout) would produce similar or greater effects than a 4-step training package (i.e., instructional presentation, modeling, role playing, and feedback) on the number of prompts of manding opportunities provided to children with autism spectrum disorder.

The results of the current study support the prediction that the 2-step training package produced similar effects to the 4-step training package. While the 4-step training package consisted of more steps and was longer in duration than the 2-step training package, there was not a consistent difference of staff's performance on the number of opportunities of manding provided to children with autism spectrum disorder.

All participants showed a level change and an initial increasing trend in the frequency of manding opportunities provided to children with autism spectrum disorder from baseline to their first treatment (i.e., either the 2 or 4-step training package). Participant 1 is the only participant that showed a second level change from their first treatment to their second treatment, showing an increase after receiving the 4-step training package, but participant 1 later reported he misunderstood what was considered a mand. Participant 1 required further clarification between manding and other components of verbal behavior (i.e., intraverbals, tacts, echoics).

Participants 2, 3, and 4 did not show a second level change from their first treatment to their second treatment, but all participants increased the frequencies of prompted manding opportunities, yet there was not a significant difference in frequencies whether it was the 2-step training package or the 4-step training package. Participant 1 displayed the highest change in level during the beginning of the 4-step training package (i.e., second treatment) and Participant 3 displayed the lowest level during their baseline phase even though all participants showed a baseline that was lower than anticipated by the researcher.

These results indicate that a shorter and efficient training package with fewer steps can be just as effective as a longer and multi-step training package. This information is vital when employers create staff trainings as they are likely looking to be the most cost effective while still providing quality and meaningful trainings.

Current Findings and Previous Results

Multiple staff trainings were examined in the present study. The results from the studies by Keilback, Martin, Starke, and Yu (2007) and Graff and Kasten (2012) suggested that if written instructional manuals were used that visual enhancements or supplemental trainings were needed to improve staff performance to meet mastery criteria as would a multi-step training package. The present study replicated components of these two studies using a self-directed instructional handout and supplemented it with modeling, as proposed previously. The results of the current study suggested that the use of a self-instructional handout and modeling was

sufficient enough to increase staff's performance similarly to a multi-step training package by reducing the duration and resources required.

However, Graff and Karsten (2012) noted in their study that there has been little research on how to train inexperienced staff and technical terms should be limited. In the current study, Participant 1 was the only participant who showed a clear level change and increasing trend from the 2-step training package to the 4-step training package. During the 4-step training, participant 1 reported he was confused about what constitutes as a mand, which can be an unfamiliar term. Participant 1 reported he was a little familiar with manding, but wasn't clear on the differences between manding and intraverbals (i.e., a response that is controlled by other verbal behavior). Intraverbals appear to be in a form of a conversation where someone may ask a question and another person responds with a statement. A mand is directly requesting something in the environment that requires the mediation of another person. Participant 1's performance appeared to be impacted by his misunderstanding of what a mand is and his performance increased after there was clarification during his 4-step training. Whether a staff member has very little experience or numerous years under their belt, initial trainings may need to consist of more components. For that reason, after staff receives an initial multi-step training that may be longer in duration to help eliminate any potential confusion, follow up refresher trainings can possibly be modified to just consist of a self-instructional handout that is either enhanced with visuals or supplemented with an additional training component such as modeling.

The results from the current study did show an increase in participant's performance after a multi-step behavior skills training package was used such as the one Nigro-Bruzzi and Sturmey (2010) probed, but the results did not indicate a significant difference from one over the other, respectively. These findings suggest that a lengthy training with numerous components may not be necessary to increase staff's performance nor is it preferred. By establishing time efficient trainings, employers can be more effective and utilize resources in other areas of need. Many staff trainings appear to be lengthy and costly, so exploring what kind of staff training components is the most effective yet efficient is sought after. Further research is needed to investigate how to obtain a desired outcome of staff performance by also being resourceful and proficient.

In turn, the present study took components from these previous studies and focused on Madzharova's, Sturmey's, and Jones' (2012) study. The results of Madzharova's, Sturmey's, and Jones' (2012) study showed similar results to the current study as both training packages were effective in increasing participants' performance, but the results provide further support that a faster training package with fewer components can still yield a desired outcome of participants' performance. The current study produced similar results showing that the 2-step training package was just as effective in increasing participants' performance as the 4-step training package. Furthermore, a longer training package may not be necessary to effectively train participants.

Motivating Operations

The researcher's or both the researcher's and the assistant's presence could have functioned as a motivating operation (MO) and affected the participants' performance. Motivating operations are described as either increasing (establishing operation) or decreasing (abolishing operation) the effectiveness of environmental events as consequences as either a reinforcer or punisher (Laraway, et al., 2003). Either's presence or both could have functioned as an establishing operation (EO), initially, as evidenced by the initial increase displayed after each training package. In contrast, the presence of the researcher or both the researcher and the assistant could have also functioned as an abolishing operation (AO) as all participants displayed either a flat or downward trend from the middle to the end of their sessions in both training packages. The researcher and the researcher's assistant's existing relationship and prior rapport with the participants could have impacted the participant's performance by either increasing or decreasing the frequency of manding opportunities they provided to the children with autism spectrum disorder.

With that being said, providing a clear reinforcer would be suggested to establish a stronger motivating operation for the participants. For example, it was unclear what the participant's reinforcer was as there was no communication or feedback given to the participants between training packages. Something to consider would be to provide immediate feedback to the participants about their performance and if there is something they could improve on. Participants might have been intrinsically motivated to increase their performance in the presence of the researcher

or both the researcher and assistant as they were both supervisors to the participants, yet this is just an assumption as this was unobservable. Participants might have also been reinforced if a student did actually mand for a preferred item after the participant setup the environment to promote this form of communication. It may be necessary to point out these successes to participants to keep them motivated. The likelihood of the participant setting up frequent manding opportunities in the environment could have also been contingent on whether the student required multiple prompts to follow through on the contingency.

Again, the participants' reinforcer was unclear and providing feedback after each data collection session, initially, should be something to focus on. For example, if initial feedback was provided to Participant 1 during the 2-step training package phase, Participant 1's performance could have presented much differently and there would be less confusion about providing manding opportunities accurately. The researcher could then fade back on the frequency of feedback to the participants and provide it intermittently to maintain the preferred level of performance as this is the strongest schedule of reinforcement to uphold a desired behavior.

Learning History and Prompting

Other than participant 1 displaying the highest initial level change and trend due to reported misunderstandings of what manding entailed and receiving clarification, Participant 2 and 4 displayed the slightest overall highest trend during both training packages. This could suggest that their longer learning history and years of experience providing applied behavior analysis (ABA) therapy could have

impacted their performance while the participants with fewer years' experience, Participant 1 and 3, displayed an overall slightly lower trend. While the participants' prior learning history could have impacted their performance, this is not enough to suggest that this was a strong contributing factor.

Additionally, something else to consider might be looking into the intensity and frequency of the participants' responding. The participants might or might not have had an extensive repertoire, but just needed or required a prompt to exhibit the target behavior. For example, some participants might just need more frequent prompts to set up opportunities for manding with the students they work with. These prompts could be in the form of more frequent refresher trainings, presence of supervisors, or immediate feedback. We'll explore these prompts further in the next section.

Setting Event

Both trainings were given during allotted training times after school was dismissed. After each participant received each training package, participants displayed an initial increase in frequency of prompted manding opportunities. Each training had an initial effect on the participants' performance and functioned as a setting event for the next school day, but something to consider is the time delay. If trainings were provided first thing in the morning before school started, this would decrease the latency between the time when trainings were given and when data collection sessions were taken.

Furthermore, if latency was decreased, the trainings could have served as a stronger setting event and participant's performance could have potentially displayed a higher increase in frequency of prompted manding opportunities. While the latency may be a crucial variable in the frequency of responding, the frequency of overall trainings may have affected participants' performance. Some participants may require more frequent trainings or quick reviews of previously taught material as the participants' performance increased after trainings. Future training times will further be discussed in the next section.

Future Research and Limitations

The current study had several limitations. Although, both trainings were 20 minutes or less in duration (i.e., 5 minutes for the 2-step, 15-20 for the 4-step), the timing of the trainings could have impacted participant's behaviors. Participants could have felt tired after a long day of work, especially if they had a challenging day dealing with students displaying aggressive or aberrant behavior, and their attending could have been low. Participants might not have learned or maintained the material during the training. Unfortunately, student's behaviors vary and can be unpredictable in an SDC-AUT classroom setting. On the other hand, the length of training may not have been sufficient enough. Participant 1 reported he misunderstood what is considered a mand and may have needed additional time to review manding and other components of verbal behavior in depth. The other participants may have had similar questions, but did not report anything to the researcher. Furthermore, the relationship between the researcher, the researcher's assistant, and the participants could have

affected participants' performance. While the presence of the researcher in the SDC-AUT classrooms was typical throughout the week, the relationship of the researcher as the participants' direct supervisor could have influenced participants' performance, respectively. It is possible that the participants' performance could have been different if the researcher and the researcher's assistant were not the participants' direct supervisors.

Finally, the duration of observations were only 5 minutes long and may have needed to be longer to gather more information. Data were also collected over a span of 6 days and participant's performance could have produced different results if the length of the study was extended over a longer period of time. Data was only collected during students' free times and the researcher could have expanded data collection during different times of the day (e.g., work times, recess, lunch, etc.). Follow-up data should also be considered to observe if participant's performance continues to decrease in trend and possibly return to baseline.

The current study provided evidence to support the hypothesis that a 2-step training package was able to increase staff's performance in manding opportunities provided to children with autism spectrum disorder similarly to a 4-step training package. Future research should test different combinations of 2-step training packages and evaluate the effectiveness of staff performance on increasing manding opportunities for children with autism spectrum disorder. Furthermore, researchers should investigate which specific components of behavior skills training (BST) is the most impactful in increasing staff performance. If the strongest components are

established, efficient staff trainings can be created based on these findings. While the 2-step training package was just as effective as the 4-step training package, the 2-step training package did not produce greater results than the 4-step training package and future research should investigate what kind of trainings are required to produce a greater outcome.

Additionally, future research should explore whether a more comprehensive training is initially needed and then requires a follow up of a shorter training to sufficiently train staff members. In general, more research is needed to investigate appropriate training modalities for mand training for staff who work with children on the autism spectrum. Novel and future challenging concepts may require a more extensive behavior skills training package (BST) to produce a desired outcome. Also, future research should investigate the frequency of staff training needed to maintain or increase staff's performance in providing manding opportunities for children with autism spectrum disorder.

Conclusion

Various staff training modalities and packages have been tried and tested to increase staff accuracy and performance. Behavior skills training (BST) packages are commonly used and typically consist of instructions, modeling, rehearsal, and feedback. Previous research has shown that behavior skills training is effective in increasing staff's performance, but the duration of the training may be too long for some settings and not cost effective. The present study explored two different staff training packages on staff's performance. The current study compared a 2-step

training package (i.e., modeling and a self-directed handout) and a 4-step training package (i.e., instructional presentation, modeling, role-playing, and feedback) on the frequency of manding opportunities provided to children with autism spectrum disorder by staff. The current study provided evidence to support the hypothesis that the 2-step training package was efficient enough to teach staff to increase manding opportunities for children with autism spectrum disorder (ASD) similarly to the 4-step training package. Further research should continue to investigate which training packages or combinations of specific components are more impactful in increasing staff's accuracy and performance when creating the most efficient and effective trainings.

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APPENDICES

APPENDIX A

MANDING FREQUENCY DATA SHEET

Date:	Session Number:	Start Time:
Participant (circle one): 1 2 3 4	Observer:	End Time:
Intervention (circle one): Baseline 2-step package 4-step package		

Time	Frequency	Total
0:00-0:30		
0:30-1:00		
1:00-1:30		
1:30-2:00		
2:00-2:30		
2:30-3:00		
3:00-3:30		
3:30-4:00		
4:00-4:30		
4:30-5:00		

Total frequency: _____

Interobserver agreement (IOA)		Yes	No
Agreements =	Disagreements =	Total =	Percentage =

APPENDIX B
SELF-DIRECTED HANDOUT

What is a mand?

Definition:

A **mand**, derived from words like command and demand, is a verbal response that is controlled by aversive stimulation or deprivation (i.e., establishing operation) and is reinforced by a special consequence, Skinner (1957).

- Mands are verbal responding that require someone in the environment to mediate.
- The learner will mand/communicate to someone in the environment for something desired that they don't have immediate access to and that person will provide them access to it when it's appropriately communicated.

Why are mands important?

- It's a way that students can get their needs and/or wants met.
- Increases language acquisition
- If students have access to the things they desire, it is less likely they will request/communicate or use language (i.e., verbally or non-verbally) for their needs/wants
- Increases social interaction
- Can help reduce maladaptive behaviors that may be caused by lack of understanding or communication

What are things students can mand for?

- Edibles
- Tangible items (e.g., toys)
- Attention
- For help
- For breaks
- Information

- Activities
- Sensory stimulation (e.g., gentle squeezes, tickles, etc.)

What items or things should you use to prompt for mands?

- Known reinforcers (e.g., administer a preference assessment prior to establish reinforcers)
- Preferred items that you can easily block access to or withhold in their environment

How can a mand be communicated?

- Mands can be communicated verbally, with gestures, or with visuals.

Techniques to prompt manding opportunities:

*****Set up your environment!**

- Keep reinforcers out of reach
- Keep materials in a locked cabinet
- Stand in front of things to block access to it
- Place desired items in a clear container that they can't easily open
- Use enticing play
- Ask, "What do you want?"

Example Scenarios:

- Stand in front of the door if a student wants to play with something outside
- Keep toys in a locked cabinet
- Move familiar toys to a different place in the classroom (e.g., put toys in a different cabinet or on the other side of the classroom out of sight)
- Hide parts of a game (e.g., hide the "people" from Candyland and only keep the game board in the box)
- Put edibles on a top shelf that a student can't easily reach
- Leave out paper for arts and crafts, but keep other materials hidden or in a locked cabinet (e.g., withhold markers and crayons)
- Leave out a project that requires cutting and hide the scissors
- Leave out iPads that require a password to access that only the teachers know
- Put toys in a jar or box out on the table, but that has a tight lid or cover on it
- Sit in a preferred chair or spot where the students typically like to sit

- Hold a preferred book in your hand
- Play with preferred toys using enticing play to draw their attention in
- Read through a preferred book with a student where they might not know all of the words
- Give a student two-three different game/toy/activity options to choose from

APPENDIX C

INFORMED CONSENT

1. The main purpose of this research study will be to examine different staff training techniques for manding opportunities for children on the autism spectrum. Staff trainings are used to teach and increase accuracy and/or frequency for a specific topic and can be done in many ways (e.g. modeling, handouts). Manding is a form of communication where someone makes a request to someone in the environment for something desired that they don't have immediate access to and that person will provide them access to it when it's appropriately communicated. If you agree to participate, you will be asked to allow information to be collected during your work day in the classroom. An observer will enter the classroom, observe, and take data for five minute sessions, multiple times a day (e.g. up to five times), for a minimum of three days. During the study, you will be asked to participate in two training sessions that vary in time, but will last no longer than a combined total of 25 minutes. Trainings will be conducted during your regular work/meeting hours. From the trainings, we are hoping to see if certain staff trainings have more of an effect on manding opportunities.
2. You are free to discontinue your participation at any time without penalty.
3. Participation in this research study does not guarantee any benefits to you. However, possible benefits include the fact that you may learn something about how research studies are conducted and you may learn something about this area of research (i.e., factors that are related to staff training on manding opportunities for children with autism spectrum disorder).
4. You will be given additional information about the study after your participation is complete.
5. If you agree to participate in the study, it may take up to a combined total of 25 minutes that will be broken up into two training sessions, varying in time, but will be conducted during your regularly scheduled work/meeting hours.
6. All data from this study will be kept from inappropriate disclosure and will be accessible only to the researcher and their faculty advisor. Data collected in person will be kept in a locked file cabinet, separate from consent forms. Information collected during this study will not affect your employment with the agency. Data will not be shared with other consultants, managers, and/or directors.

7. The present research is designed to reduce the possibility of any negative experiences as a result of participation. Risks to participants are kept to a minimum. However, if your participation in this study causes you any concerns, anxiety, or distress, please contact Santa Clara County Behavioral Health Services, <https://namisantaclara.org/county-self-help-centers>, at 1-800-704-0900 to make an appointment to discuss your concerns.
8. This research study is being conducted by Amy Gergis, a graduate student in the Masters of Science Psychology program at California State University, Stanislaus. The faculty supervisor is Dr. Hesse, Professor of Psychology, Department of Psychology and Child Development, California State University, Stanislaus. If you have questions or concerns about your participation in this study, you may contact the researcher through Dr. Hesse at (209) 667-3255.
9. You may obtain information about the outcome of the study following the completion of the study by contacting Dr. Hesse.
10. If you have any questions about your rights as a research participant, you may contact the Chair of the Psychology Institutional Review Board of California State University Stanislaus, Dr. Cotter, at PsychologyIRB@csustan.edu.
11. You will be provided with a blank, unsigned copy of this consent form at the beginning of the study.
12. By signing below, you attest that you are 18 years old or older.
13. By signing below, you are indicating that you have freely consented to participate in this research study.

PARTICIPANT'S NAME (printed): _____

PARTICIPANT'S SIGNATURE: _____

DATE: _____