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An Evaluation of an In Vivo Training Package on Therapist Implementation of the Teaching Interaction Procedure

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Abstract

Individuals diagnosed with autism display deficits in reciprocal social behavior (Constantino et al., 2003). These deficits create direct and indirect social consequences (White, 2007). A procedure that has been evaluated to teach these children social skills is the teaching interaction procedure (TIP) (e.g., Leaf et al., 2009; Kassardjian et al., 2013); which is a procedure falling under the ABA umbrella. Despite the increasing number of studies utilizing the TIP to teach children with autism social skills, there are no recent studies examining the effectiveness of a training procedure for its use as a social skills teaching tool. The current study examined the effectiveness of the TIP as a training procedure for staff implementation of the TIP for teaching social skills to children diagnosed with autism. Three therapists and three children diagnosed with autism from a center-based agency in California participated in the study. Results demonstrated all three staff reaching mastery criterion during training probes, and, after training ended, maintaining and generalizing the skill to a high degree of fidelity.

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Chapter I: Introduction and Review of Literature

Individuals diagnosed with autism display deficits in reciprocal social behavior (Constantino et al., 2003). These deficits create direct and indirect consequences (White, Koenig, & Scahill, 2007), including increased likelihood for victimization of bullying (Schroeder, Cappadocia, Bebko, Pepler, & Weiss, 2014), expressed feelings of loneliness more intensely and frequently than their typically developing peers (Bauminger & Kasari, 2000), and impacts the establishment of meaningful social relationships (Bellini, Peters, & Hopf, 2007). The teaching interaction procedure and behavioral skills training are two behavioral intervention strategies that utilize modeling and role-play that have been evaluated to be effective in teaching social skills to children with autism (e.g., Dotson, Leaf, Sheldon, & Sherman, 2010; Gunby, Carr, & Leblanc, 2010; Kassardjian et al., 2014; Kassardjian et al., 2013; Leaf, Dotson, Oppenheim-Leaf, Sheldon, & Sherman, 2010; Leaf et al., 2012; Leaf et al., 2009; Taras, Matson, & Leary, 1988).

For teaching strategies to be effective they must be carried out with high levels of treatment integrity. Dib and Sturmey (2007) found that shortcomings in staff performance may have negative consequences for the student's progress and may have strengthened inadequate student behaviors. In addition, strategies carried out with low levels of treatment integrity can reduce treatment efficacy (Stephenson & Hanley, 2010) and can lead to slow acquisition or no response (Carroll, Kodak, & Fisher, 2013). Therefore, effective staff training is critical in teaching social skills behaviors with children with autism.

One training strategy for staff working with children with autism that has shown to be effective in several studies is behavioral skills training (e.g., Crockett, Fleming, Doepke, & Stephens, 2007; Lerman, Hawkins, Hoffman, & Caccavale, 2013; Thiessen et al., 2009, Ward-

Horner & Sturmey, 2008). Behavioral skills training involves instruction, modelling, rehearsal, and feedback.

Using a multiple baseline design across teacher-student dyads, Dib and Sturmey (2007) demonstrated behavioral skills training as effective for training three teaching assistants to implement discrete trial teaching with children with autism. Each of the teaching assistants were nominated by classroom teachers because the teaching assistants engaged in low levels of appropriate discrete trial teaching that were associated with high levels of student stereotypy relative to other teaching assistants. During baseline, the teaching assistants conducted teaching as usual with their target student. Teaching assistants' engagement in correct discrete trials were measured, as well as students' engagement in stereotypy. After baseline, a staff trainer used behavioral skills training to teach the correct implementation of discrete trial teaching. First, the teaching assistants were given a checklist with steps of the discrete trial; second, the trainer provided descriptive and specific feedback on the teaching assistant's performance during baseline; third, the trainer described the steps involved in discrete trial teaching and modeled each step; fourth, the trainer role-played with the teaching assistant and provided specific feedback until there were no errors for two consecutive rounds. Post-training measurements were taken demonstrating significant improvements in teaching assistants' implementation of discrete trial teaching and lower student engagement in stereotypic behaviors. This study not only demonstrates behavioral skills training as an effective training tool, it also demonstrates the positive effects of high levels of treatment integrity on the quality of learner response during treatment.

Implementation of discrete trial teaching with children with autism has been taught in several other studies utilizing behavioral skills training (e.g., Crocket, Fleming, Doepke, & Stevens, 2007; Lerman, Hawkins, Hoffman, & Caccavale, 2013; Thiessen et al., 2009; Ward-Horner & Sturmey, 2008). Sarokoff and Sturmey (2004) taught three special education teachers to implement discrete trial teaching to a 3-year-old child with autism to match. Sarokoff and Sturmey (2004) used a multiple baseline design across participants to evaluate the effectiveness of behavioral skills training to teach the special education teachers to implement discrete trial teaching. After baseline, the experimenter trained the staff by first providing written instructions of discrete trial procedures and reviewed the components, then reviewed and gave feedback to the teachers based on their performance during baseline and the components in the instructions. Next, the experimenter role-played discrete trials with the teacher, and provided specific feedback and modeled those components with the child with autism. Rehearsal and feedback were repeated until 10 minutes elapsed. In post-training sessions, all three teachers demonstrated a large improvement in their implementation of discrete trial teaching with the child participant. Limitations in generality were present in this study, including teachers only being taught to work with one child and to implement only one task (matching). In a following study, Sarokoff and Sturmey (2008) extended the generality of the previous study, using a multiple baseline design across participants, and demonstrated behavioral skills training to be effective in teaching staff from a small school for children with autism to implement discrete trial teaching with five children from the school, teaching each boy three different tasks.

The effectiveness of behavioral skills training as a training tool for implementing ABA strategies with people with autism is not limited to discrete trial teaching. In one study,

behavioral skills training effectively taught oral care providers to use behavior analytic techniques with children with autism to reduce noncompliance during oral care examinations and cleanings (Graundins, Rehfeldt, DeMattei, Baker, & Scaglia, 2011). Three oral care providers from a dental hygiene program at Southern Illinois University Carbondale Campus had received two hours of basic information training on autism, and had no hands-on experience with children with autism prior to participating in the study. The intervention consisted of a behavioral skills training package which was intended to teach the oral care providers basic function-based behavior analytic techniques to increase compliance while conducting oral care procedures to patients with autism. The behavioral skills training components included instructions, modeling, rehearsal, and feedback. Participant performance was recorded before and after the training. After the training, all three oral hygiene students rapidly acquired the techniques and used them effectively during exams and cleanings. The oral hygiene students also generalized the skills to completion of an X-ray procedure with several children with autism. This study demonstrated that adults who are not involved in the field of autism can quickly and effectively be taught to implement behavioral techniques with children with autism.

Palmen, Didden, and Korizilius's 2010 study focused on using behavioral skills training to improve the utilization and consistency of staff's implementation of reinforcement, error correction and initiation in a vocational training facility for high-functioning adolescent with autism. Behavioral skills training was implemented in a group format and demonstrated a statistically significant improvement of staff participants correct responses to students asking for help during job related tasks. Generalization measures were also evaluated, demonstrating no change in staff performance for reinforcement, error correction, and initiation of the adolescent's

untrained target behavior. In addition, the authors point out that the overall level of correct responding from staff members was relatively low for correctly applied reinforcement. The author also reported that staff felt the provision of positive reinforcement after students correctly asked for help seemed "artificial" and that providing the answer to their question served as reinforcement. Staff also provided answers when students incorrectly asked for help, inadvertently reinforcing incorrect questions. It is possible that the problem with staff's beliefs might be solved if meaningful rationales were provided to motivate their use of the correct behavior.

Another technique that has shown to be effective in staff training (Harchik, Sherman, Sheldon, & Strouse, 1992) and is similar to behavioral skills training is the teaching interaction procedure. It differs from behavioral skills training in two ways, modeling incorrect behaviors, and provides *meaningful rationales*. There are six steps in the teaching interaction procedure, including identifying and labelling the target behavior, providing a meaningful rationale, describing and demonstrating the target behavior, role play, feedback, and an external consequence (Leaf et al., 2009). The teaching interaction procedure was first described in 1974 by Phillips, Phillips, Fixsen, and Wolf as part of the Achievement Place Teaching Family Model. Subsequently, it has been described in several curriculum books (e.g., Dowd, Czyz, O'Kane, & Elofson, 1994; Hazel, Schumaker, Sherman, & Sheldon, 1995 has been evaluated as a procedure to improve behavior for typically developing humans (e.g., Maloney et al., 1976; Minkin et al., 1976), and has been empirically evaluated for teaching social behavior for individuals diagnosed with ASD (e.g., Dotson et al., 2010; Leaf et al., 2010; Leaf et al., 2012; Leaf et al., 2009; Kassardjian et al., 2014; Kassardjian et al., 2013).

The teaching interaction procedure has also been used to teach staff behavior analytic procedures. Harchik et al. (1992) demonstrated that the teaching interaction procedure was an effective training package for teaching nine staff members from a group home for developmentally disabled adults to better implement a token economy, increase engagement amongst group home members and staff in activities, and increase the number of teaching components of the teaching interaction procedure utilized throughout the day. Staff training was implemented one on one with each of the staff members, beginning with a "mini-workshop" that was based on the staff member's current performance. The "mini-workshop" consisted of the consultant *labeling and describing* the general target behaviors, providing *rationales* emphasizing the importance of engaging in the target behavior, describing specific components of behaviors for both the staff and the adult residents, *demonstrating* the target staff behaviors, and then had the staff *role-play*. Staff were provided with specific *feedback* regarding their performance in the role-play. After the workshop, staff returned to work with the adults and the consultant would provide feedback on the staff member's performance throughout the study. The results of the study indicated that the training package was effective in increasing staff engagement in accurate implementation of a token economy, staff engagement with adult residents, and the number of components of the teaching interaction procedure when working with adults.

Given the rising number of recent investigations showing the teaching interaction procedure to be an effective tool for teaching and generalizing social skills to children with autism (e.g., Dotson et al., 2010; Kassardjian et al., 2014,; Kassardjian et al., 2013; Leaf et al., 2010; Leaf et al., 2012; Leaf et al., 2009), the importance of high treatment integrity when

implementing ABA strategies (e.g., Carroll et al., 2013; Dib & Sturmey, 2007, Stephenson & Hanley, 2010), and the fact that there is no study which has evaluated the effectiveness of the teaching interaction as a training tool to teach behavior analysts how to implement the teaching interaction procedure, a study evaluating the teaching interaction procedure as a training tool is warranted. Thus, the objective of this study is to evaluate the effectiveness of the teaching interaction procedure for training staff to implement the teaching interaction procedure to teach social skills to children diagnosed with autism.

Chapter II: Method

Participants

The study included three newly hired staff members (i.e., hired between one and four weeks) who were working for a private center-based agency that provides early intensive behavioral intervention to individuals diagnosed with ASD. All staff members had obtained their Bachelor's degree prior to being employed, however, no staff member had any previous experience with the teaching interaction procedure. Each of the three staff members were paired with one child diagnosed with ASD throughout the course of the study. One additional individual diagnosed with ASD was recruited to serve as a participant for generalization probes.

The child participants were also from the center-based agency, and had all been diagnosed with autism spectrum disorder. Each child participant had a previous history with behavioral intervention (range, 1:04 to 2:03 years) and with the teaching interaction procedure. All child participants displayed social impairments and were in need of intervention targeting social behavior. Thus, the skills identified for teaching, in this study, were social behaviors which the child participants' supervisor recommended to be taught.

Dyad 1. The first dyad consisted of the therapist Hailey and the child participant Pam. Hailey was a 23-year-old female and college graduate with a BA in psychology and a minor BS in human development. Prior to her employment with the agency, Hailey had one year experience in an ABA lab as part of her college experience; however, Hailey had no hands-on experience implementing behavioral intervention for individuals diagnosed with ASD. Additionally, Hailey had no experience with the teaching interaction procedure. Hailey began her participation in this study three weeks into her employment with the agency. The child

participant, Pam, was a 4-year-old female diagnosed with autism spectrum disorder. Pam had a Wechsler Preschool and Primary Scale of Intelligence-Third Edition (WPPSI) full scale IQ score of 118, a Vineland Adaptive Behavior Scale (VABS) adaptive composite score of 80, and a Social Skills Improvement System (SSIS) standard score of 67, an Expressive One-Word Picture Vocabulary Test-4th edition (EWOT) standard score of 145, and a Peabody Picture Vocabulary Test (PPVT) standard score of 132.

Dyad 2. The second dyad consisted of the therapist, Izzy, and the child participant, Nick. Izzy was a 23-year-old female and college graduate with a BA in Communications. She had seven months hands-on experience providing behavioral intervention to individuals diagnosed with ASD prior to her current employment. Izzy had no previous history with implementing the teaching interaction procedure. Izzy began her participation in this study one week into her employment with the agency. The child participant, Nick was a 5-year-old male diagnosed with autism spectrum disorder. Nick had a WPPSI full scale IQ score of 109, a VABS adaptive composite score of 91, an EWOT standard score of 117, and a PPVT standard score of 120.

Dyad 3. The third dyad consisted of the therapist, Autumn, and the child participant, Jeremy. Autumn was a 23-year-old female and college graduate with a BA in Recreation. She had no experience or knowledge of ABA prior to her employment with the agency in this study; including the implementation of the teaching interaction procedure. Autumn began her participation in this study four weeks into her employment with the agency. The child participant, Jeremy, was a 3-year-old male diagnosed with autism spectrum disorder. Jeremy had a WPPSI full scale IQ score of 105, a VABS adaptive composite score of 79, a SSIS standard score of 85, an EWOT standard score of 86, and a PPVT standard score of 80.

Setting and Materials

As research sessions took place in various research rooms within the private agency. The rooms ranged from 6’ x 8’ to 6’ x 29.’ In each room was a table, at least two chairs, bookshelves and cabinets with books, desks with computers, toys, and/or other teaching materials.

Materials utilized during intervention and probe sessions included teaching materials (i.e., games such as Memory Game, Gooey Louie, Jenga, Pick Up Sticks, and Perfection), a paper with task analysis for the target social skill, a video camera to record all sessions, a laptop to view the PowerPoint during intervention sessions, a table and chairs for all sessions, a timer for teaching probes and intervention sessions, and pen and paper with the target skills checklists to measure skill acquisition.

Experimental Design

A multiple baseline design across participants (e.g., Baer, Wolf, & Risley, 1968) was utilized to measure the effects of the training procedure on the implementation of the TIP by the therapist. The multiple baseline design consisted of four phases. The first phase, *pre-baseline*, was used to determine how well the child participant displayed the target social behavior free from any teaching. The second phase, *baseline*, was used to determine how well the therapist displayed the steps of the teaching interaction procedure prior to any training and to see if the child participant showed any improvement with the therapist’s attempt to teach the skill. The third phase, *intervention* phase, was used to determine if the therapist improved her implementation of the teaching interaction procedure with training and to see if the child participant showed any improvement on the targeted social behavior. The fourth phase, *maintenance*, was used to determine if the therapist maintained correct implementation of the

teaching interaction procedure after mastery criterion was met and to continue to measure child participants' performance on the targeted social behavior.

Dependent Variable

The main dependent variable was the therapists' implementation of the teaching interaction procedure during teaching probes (described below) with the child participant. The teaching interaction procedure was broken into 11 steps (see Appendix A, Table 1). The researchers measured the therapists' implementation of each of the 11 steps during every teaching probe. Mastery criterion was set as the therapist displaying 100% of the steps across three consecutive teaching probes.

The second dependent variable was the therapists' correct implementation of the teaching interaction procedure during generalized teaching probes (described below) with a different child diagnosed with autism spectrum disorder. The therapist had to display the same 11 steps as she had to display in the teaching probe. The researchers measured the therapists' implementation of each of the 11 steps during every generalized teaching probe.

The third dependent variable was the child participants' demonstration of a singular social behavior as displayed in naturalistic probes (described below) with the researcher. All three participants were taught changing the game when a peer was bored; which consisted of six behavioral steps. The six steps for changing the game when a peer was bored were (1) face the person; (2) ask the person if he/she wants to play something else within 10 seconds of the bored cue; (3) ask the person what he/she wants to play instead; (4) respond "okay" or something equivalent; (5) get the game that the person selected; and, (6) play the game that the other person selected.

The fourth dependent variable was the total amount of training time it took each therapist to reach mastery criterion on the implementation of the teaching interaction procedure. The fifth dependent variable was social validity measures (Wolf, 1978). Each therapist was asked to fill out an anonymous social validity questionnaire at the end of the study. The social validity survey consisted of 6 questions about the staff's satisfaction with the training procedure and how useful the TIP was in their regular therapy sessions while teaching social skills. Each question used a 5-point Likert scale (see Appendix A, Table 2).

Probes

Teaching probes. Teaching probes occurred during the baseline, intervention, and maintenance conditions. During teaching probes, the researcher would bring in the child participant and the therapist simultaneously. The researcher would then provide the instruction to the therapist out of hearing range of the child participant. The instruction consisted of telling the participant that she was supposed to teach the child the targeted social behavior using the teaching interaction procedure and that all necessary materials were provided to her. The researcher concluded by saying that she had up to 15 minutes to implement the teaching interaction procedure but that she could stop whenever she felt she was done with teaching. She then instructed the therapist to begin. At the end of each teaching probe, the therapist and the child were thanked, and the teaching probe was concluded. The researcher provided no reinforcement, corrective feedback, prompting, priming, and did not answer any questions about the probe or the teaching interaction procedure during any teaching probe.

Generalized teaching probe. Generalized teaching probes were conducted during the baseline and maintenance condition. The generalized teaching probe was identical to the

teaching probe with two exceptions. First, a different child with autism was used within the teaching probe. Second, a different social behavior was targeted for all three generalization children (i.e., cheering up a friend).

Naturalistic probe. Naturalistic probes were conducted during the pre-baseline condition, the baseline condition, the intervention condition, and the maintenance condition. The targeted social behavior for all three child participants was changing the game when someone was bored. The naturalistic probe started with the researcher bringing the child participant into the research room. The researcher would engage in a behavior that set the occasion for the participant to display the targeted social behavior. Both the researcher and the child participant would play a game and, at some point, the researcher would look bored (e.g., sighing or looking away). The child participant then would have 10 seconds to engage in the targeted social behavior. The researcher scored each of the behavioral steps for the targeted skill as either correct, incorrect, or not occurring. The researcher did not provide any reinforcement, corrective feedback, prompting, or priming of the child participant during any naturalistic probe across all conditions within the study.

Procedure

Pre-baseline. Prior to baseline, the child participant performance of the targeted social behavior was measured. The purpose of this condition was to ensure the child did not display the targeted social behavior prior to any intervention on that behavior. Each participant had two sessions of the pre-baseline condition. During the pre-baseline condition, the researcher would take the child participant into one of the research rooms to run a singular naturalistic probe with the participant (see description above).

Baseline. The purpose of this condition was to assess both the therapists' implementation of the teaching interaction procedure prior to training and to assess if the child participants displayed the target social behavior without the therapist displaying all steps of the teaching interaction procedure. All but the last session of baseline started with the researcher taking the child participant into one of the research rooms and conducing a naturalistic probe (see above). At the conclusion, of the naturalistic probe the child participant received a short break. Following this short break, the researcher brought in the therapist and conducted a teaching probe with the therapist and the child participant. Once the teaching probe had concluded the child participant returned to his or her regular teaching session and the therapist continued to their clinical session. The last session of the baseline condition consisted of the researcher only conducting a generalized teaching probe with the therapist and another child diagnosed with ASD. The researcher simultaneously took the therapist and the child diagnosed with ASD into the research room and conducted a generalized teaching probe as described above.

Intervention. The purpose of the intervention condition was to teach the adult therapist how to correctly implement the teaching interaction procedure to individuals diagnosed with ASD. The very first session of the intervention condition consisted of only the researcher training the therapist (described below). All other sessions during the intervention condition started with the researcher implementing a naturalistic probe with the child participant (described above). This was followed by the researcher implementing a teaching probe with the therapist and the child participant (described above). Finally, the researcher implemented the training with just the therapist. When the therapist reached mastery criterion (e.g., displaying 100% of the

steps of the teaching interaction procedure correctly for three consecutive sessions), no training occurred following the teaching probe.

To train the therapist how to implement the teaching interaction procedure to individuals diagnosed with ASD the researcher implemented a teaching interaction procedure with the use of PowerPoints, videos, and role-playing. The PowerPoint consisted of a slide that *labeled* the teaching interaction procedure, a slide that gave a general description of the teaching interaction procedure, a slide that provided the benefits of implementing the teaching interaction procedure (*rationale*), a slide that described the pre-steps to implementing the teaching interaction procedure, slides that *described* each of the 11 steps of the teaching interaction procedure that included the six basic steps (label, rationale, description and demonstration, role play, feedback, and external consequence), and five sub steps (the teacher demonstrated both the correct and incorrect behaviors, after the demonstration the child should rate the demonstration and tell why they gave that rating, the teacher had the student role-play until the children displayed 100% of the skills correctly, and the teacher provided feedback throughout the entire teaching interaction procedure). There was also a slide that listed generalization variables. Throughout these slides, the researcher asked the therapist questions about the slides to ensure she could recall the information being taught, including having the therapist list the six steps of the teaching interaction procedure prior to the video *demonstrations*.

The researcher then utilized video examples embedded into the PowerPoint to show both the correct demonstration of how to implement the teaching interaction procedure and the incorrect demonstration of how to implement the teaching interaction procedure. Correct video demonstrations displayed all six steps of the teaching interaction procedure. Incorrect videos

displayed only a few of the six steps of the teaching interaction procedure. After the therapist viewed each of the video demonstrations, she was asked to rate whether the demonstration was correct or incorrect and why she made that determination.

After the video demonstration, the experimenter *role played* a TIP with the therapist. Before starting the role play, the therapist was provided with a task analysis of a social skill to practice utilizing the TIP. The therapist was told they would teach the experimenter the social skill ("losing graciously") utilizing the TIP as if they were a student with ASD, and that they had 15 minutes to do so. The therapist was given a task analysis of the skill (e.g., Losing Graciously) and materials (i.e., Memory or Pickup Sticks) necessary to demonstrate and role play the skill. Once the therapist indicated they were finished role playing teaching the skill or 15 minutes elapsed (whichever happened first), the researcher provided *feedback* to the therapist about the specific components of the teaching interaction procedure they did or did not perform. The therapist practiced role-playing the teaching interaction procedure until 100% of the 11 steps were demonstrated correctly. If the therapist did not perform 100% of the 11 steps during post-training probe sessions, then the steps the therapist missed were emphasized during the subsequent training session. Feedback to the post-training probe sessions was not provided.

The researcher returned to the PowerPoint after 100% accuracy was displayed and congratulated the therapist on her performance (*consequence*). Further instructions about the study were given at the end of the PowerPoint and the therapist was dismissed. Questions were answered throughout the training session, if asked.

Maintenance. The purpose of this condition was to measure the therapist's acquisition of the TIP after training sessions, as well as the child's acquisition of the targeted social skill. The

maintenance condition was identical to the baseline condition. For Dyad 1 maintenance was taken 7, 13, and 14 days after intervention had concluded. For Dyad 2 maintenance was taken 7, 12, and 13 days after intervention had concluded. For Dyad 3 maintenance was taken 7, 9, and 20 days after intervention had concluded.

Interobserver agreement and treatment fidelity. During every teaching probe, generalized teaching probe, and naturalistic probe a researcher scored the behavior of the therapist and/or the child participant. A second researcher scored the therapist and/or the child participant behavior to assess interobserver reliability (IOA). During teaching probes, IOA was taken during 36.2% of sessions. IOA for teaching probes was calculated by dividing the number of agreements from the teaching interaction procedure checklist by the number of agreements plus the number of disagreements from the checklist and multiplying that number by 100. During generalized teaching probes, IOA was taken during 100% of sessions. IOA for generalization probes was calculated by dividing the number of agreements from the teaching interaction procedure checklist by the number of agreements plus the number of disagreements from the checklist and multiplying that number by 100. During naturalistic probes, IOA was taken during 38.8% of sessions. IOA for naturalistic probes was calculated by dividing the number of agreements from the target skill checklist (e.g., changing the game when someone is bored) by the number of agreements plus the number of agreements from the target skill checklist and then multiplied that number by 100. Across all teaching probes, IOA was 99% (range 90.9% to 100% across participants). Across all generalized teaching probes, IOA was 95% (range 81.8% to 100%). Across all naturalistic probes, IOA was 98.2% (range 83.3 to 100%).

Treatment fidelity was scored on the researcher's implementation of the teaching interaction procedure to train therapists to implement the teaching interaction procedure with their target child participants. A second researcher watched 33.3% of the 21 videos of intervention sessions and scored the researcher's behavior to assess treatment fidelity. An average of 98.7% treatment fidelity was measured across the intervention sessions for all three therapists (range 95.5% to 100%).

Chapter III: Results

Figure 1 (Appendix B) displays the results of the therapists' performance during teaching probes and generalized teaching probes, and child participants' performance during naturalistic probes across all conditions of the study. Across the x-axis are sessions, and across the y-axis are the percentage of steps correct for both the therapists and child participants. Each panel represents a different adult and child dyad. Closed circles depict therapist performance of implementing the teaching interaction procedure during teaching probes. Open circles depict therapists' performance of implementing the teaching interaction procedure during generalized teaching probes. Open squares depict child participant demonstration of the targeted social behavior during naturalistic probes. Table 3 (Appendix A) provides a summary of all three therapists' results, and Table 4 (Appendix A) provides a summary of all three child participants' results.

The first dyad, Hailey and Pam, are represented in the first panel of Figure 1 (Appendix B). During baseline, Hailey did not display any steps of the teaching interaction procedure correctly across three consecutive teaching probes and for the singular generalized teaching probe. During the intervention condition, Hailey showed an immediate increase in the number of correct steps of the teaching interaction procedure implemented and reached mastery criterion within six sessions. Once Hailey reached mastery criterion, the study was moved into the maintenance condition. During the maintenance condition, Hailey displayed 100% of the steps correctly of the teaching interaction procedure across all three teaching probes and displayed 90.9% of the steps correctly during the generalized teaching probe.

The second dyad, Izzy and Nick are represented in the second panel of Figure 1 (Appendix B). During baseline, Izzy did not display any steps of the teaching interaction procedure correctly across five consecutive teaching probes and for the singular generalized teaching probe. During the intervention condition, Izzy showed an immediate increase in the number of correct steps of the teaching interaction procedure implemented and reached mastery criterion within nine sessions. Izzy's intervention required the most intervention sessions because during the sixth teaching probe, she incorrectly displayed one of the steps from the teaching interaction procedure checklist. She reached mastery criterion in the following three teaching probes. Once Izzy reached mastery criterion the study was moved into the maintenance condition. During the maintenance condition, Izzy displayed 100% of the steps correctly of the teaching interaction procedure across all three teaching probes and displayed 81.8% of the steps correctly during the generalized teaching probe.

The third dyad, Autumn and Jeremy are represented in the third panel of Figure 1 (Appendix B). During baseline, Autumn displayed an average of 15.5% (range 9.1% to 18.2%) of steps of the teaching interaction procedure correctly across nine consecutive teaching probes and for the singular generalized teaching probe. During the intervention condition, Autumn showed an immediate increase in the number of correct steps of the teaching interaction procedure implemented and reached mastery criterion within six sessions. During maintenance condition, Autumn displayed an average of 93.9% (range 90.9% to 100%) of the steps correctly of the teaching interaction procedure across all three teaching probes and displayed 100% of the steps correctly during the generalized teaching probe.

During pre-baseline, Pam (child participant) displayed 16.7% of the targeted behavior "changing the game when someone is bored" during naturalistic probes. Since Pam displayed stable responding, the researchers moved to the baseline condition. During the baseline condition, Pam continued to display a low percentage of steps correct of the targeted social behavior. Subsequently, Pam started to display the social behavior target of "changing the game when someone is bored" correctly during naturalistic probes; with displaying the targeted social behavior 100% correct on the final two intervention sessions. During the maintenance condition, Pam displayed 100% of the steps of "changing the game when someone is bored" correctly across all three naturalistic probes.

During pre-baseline, Nick (child participant) displayed 16.7% of the targeted social behavior "changing the game when someone is bored" during naturalistic probes. Since Nick displayed stable responding, the researchers moved to the baseline condition. During the baseline condition, Nick's performance of the targeted social behavior dropped from pre-baseline to 0% across all naturalistic probes. Subsequently, Nick started to display the social behavior target of "changing the game when someone is bored" correctly during naturalistic probes; with displaying the targeted social behavior 100% in the final six intervention sessions. During the maintenance condition, Nick displayed 100% of the steps of "changing the game when someone is bored" correctly across all three naturalistic probes.

During pre-baseline, Jeremy (child participant) displayed 16.7% of the targeted social behavior "changing the game when someone is bored" during naturalistic probes. Since Jeremy displayed stable responding, the researchers moved to the baseline condition. During the baseline condition, Jeremy continued to display a low percentage of steps of the correct targeted social

behavior. Subsequently, and unlike the other child participants, Jeremy continued to display a low percentage of the steps of the target social skill correctly during naturalistic probes through intervention and maintenance conditions.

The duration of training was also measured in this study. Hailey reached mastery criterion in 3 hours and 46 minutes of training. Izzy reached mastery criterion in 5 hours and 44 minutes of training. Autumn reached mastery criterion in 3 hours and 23 minutes of training. Thus, across all three participants it took a total of 12 hours and 53 minutes; with an average duration of 4 hours and 17 minutes of training.

The final measure of this study was social validity. Each therapist completed an anonymous questionnaire about their experience with the teaching interaction procedure. Table 5 (Appendix A) summarizes therapists' responses to the survey. Overall, the results indicate staff participants found the training beneficial in increasing their knowledge of the teaching interaction procedure and its implementation for teaching children with autism social skills. One staff participant indicated a neutral response for the implementation of the teaching interaction procedure in her regular therapy sessions. This neutral response may have a few implications, including the children she was working with did not have the pre-requisite skills necessary to learn from the teaching interaction procedure or those children's supervisors did not recommend the use of the teaching interaction procedure to teach them social skills. It may also imply that recommendations from case supervisors to implement the teaching interaction procedure were not provided, or if it was recommended, the same instructional format was not provided as in this study.

Chapter IV: Discussion

The purpose of this study was to evaluate the effectiveness of the teaching interaction procedure as a training tool for therapist's utilization of the teaching interaction procedure to teach social skills to children diagnosed with ASD. All three therapists made significant increases in performance after the training was implemented, and maintained and generalized the skill to a high degree following training. Additionally, two out of three of the child participants improved their performance of the targeted social behavior once the therapist started to implement the teaching interaction procedure correctly. Thus, this study demonstrated that the teaching interaction procedure training was an effective method to train inexperienced staff an effective procedure to increase social behavior for individuals diagnosed with autism.

These results are consistent with the findings from Harchik et al. (1992), where the utilization of the teaching interaction procedure as part of a training package contributed to the improved performance of staff utilization of token economies, engagement between staff and residents, and the implementation of the teaching interaction procedure. This study expanded Harchik et al.'s 1992 study by demonstrating the teaching interaction procedure was effective for teaching staff to utilize an empirically effective ABA procedure to children with autism. Therefore, expanding the teaching interaction procedure's use for training staff to a different population.

Similar to Harchik et al. (1992), this study demonstrated new staff's ability to learn to implement the teaching interaction procedure. The participants in this study had no more than four weeks training before starting the training, and not only acquired the ability to implement the teaching interaction procedure to teach their target students new social skills, they also

generalized the skill to teaching a new social skill to a different child with autism. This indicates adults with little to no expertise in behavioral techniques are capable of learning to implement a complicated, multi-step technique like the teaching interaction procedure.

The need for improving children with autism's social skills to improve their quality of life means it is important that effective teaching strategies continue to be implemented with high levels of fidelity (e.g., Carroll et al., 2013; Dib & Sturmey, 2007, Stephenson & Hanley, 2010). The effectiveness of the teaching interaction procedure as a training tool for staff and as an effective teaching tool for children with autism to learn complex social skills (e.g., Leaf et al., 2009), means the teaching interaction procedure can help produce high levels of treatment integrity for staff implementation. The teaching interaction procedure alone was responsible for the increase in all three therapists' performances, where staff demonstrated an average of 98% of steps from the teaching interaction procedure checklist during maintenance probes and 90.9% in generalization probes. In addition, two out of three of the child participants displayed 100% of the target skill steps during intervention and maintenance phases. Although the third child participant's behavior did not improve during naturalistic probes, he did display 100% of the target behavior during teaching probes with the therapist. It should also be noted that the therapists had no experience in implementing the teaching interaction procedure prior to the study and had little to no experience with other ABA procedures, and they were able to learn how to implement the teaching interaction procedure with high levels of treatment integrity.

The teaching interaction procedure was taught quickly and effectively to all three therapists. The average total duration of training was 4 hours and 18 minutes, with an average of 37 minutes per training session. Some studies implementing BST as a training procedure had

shorter training sessions (Sarokoff & Sturmey, 2004, 2008) than was demonstrated in this study. However, those studies focused on training staff to implement procedures, such as discrete trial teaching, that are faster to implement than the teaching interaction procedure and did not focus on teaching complex social skills that require a series of behaviors to be demonstrated correctly. In addition, it was simple to implement the PowerPoint presentation as a script. Future researchers should look to replicate these findings.

This study contributes to the literature by demonstrating another effective strategy for teaching staff to implement complex teaching skills to children with autism. Many training procedures in ABA literature are implemented using behavioral skills training (Fetherston & Sturmey, 2014; Rosales, Stone, & Rehfeldt, 2009; Seiverling, Pantelides, Ruiz, Sturmey, 2010; Seiverling, Williams, Sturmey, & Hart, 2012; Shayne & Miltenberger, 2013). Although, the teaching interaction procedure and behavioral skills training are similar (Leaf et al., 2015), they are procedurally different. It is possible that having a meaningful rationale in the teaching interaction procedure may improve staff motivation for carrying out empirically effective strategies with children with autism. Future research should compare the effectiveness of the teaching interaction procedure and behavioral skills training as training tools.

Social validity is an important part of applied behavior analysis (Baer et al., 1968). In the social validity questionnaire for this study, the participants overall scores indicated they found the training meaningful to their work with children with autism, both by improving their own skills and experiencing the effectiveness of the procedure. The Palmen et al. (2010) study, reported staff feeling uncomfortable implementing some of the procedures and that those feelings likely contributed to the low levels of procedural implementation. The approval from

staff in this study may be important for increasing the likelihood they will carry on implementing the procedure.

There were several limitations of this study. First, during training sessions subsequent to naturalistic probes where staff participants performed incorrect responses, they were only provided with feedback by emphasizing the correct response for incorrect steps performed in naturalistic probes. It is uncertain whether specific feedback would have improved staff performance more efficiently than indirect feedback. Future research should examine the efficiency of providing performance specific feedback to staff versus indirect feedback.

Second, since the teaching interaction procedure involves six components, it is not clear which component or combination of components are responsible for the change in behavior. Future research should examine each of the components or combination of components of the teaching interaction procedure to determine which contribute to behavior change. Third, although this study demonstrated high levels of treatment integrity during maintenance phases, it is not clear whether the implementation of the teaching interaction procedure generalized to therapists' regular treatment sessions. Future researchers should investigate whether the training expands to more naturalistic settings when therapists are not specifically directed to implement the procedure. Fourth, this study did not address the presence or absence of the *rationale*, nor did it examine its quality. Future research should implement a social validity measure that surveys other teaching professionals about the quality of the rationale and whether they believe it necessary or inefficient.

Fifth, Jeremy did not demonstrate an increase in his engagement in the target behavior. The reason is not clear as to why it did not work for him, but worked well for the other two.

Generalization training for the child skill targets was not addressed in this study, and may be the contributing factor in Jeremy's lack of skill growth. Future research should examine generalization training skills in addition to training on the basic steps of the teaching interaction procedure.

Sixth, this study did not address the pre-steps to implementing the teaching interaction procedure, which include identifying the skill to be taught and task analyzing the behavior. In this study, staff were provided with the specific skill target and a task analysis of the target skill. The ability to identify and task analyze the target skill are important for staff to independently implement the procedure, and to generalize to other behaviors. Future research should examine training procedures to extend the basic steps of the teaching interaction procedure to more naturalistic implementation in treatment sessions. Similarly, generalization training for children to display target skills in their natural environment is another important addition to the teaching interaction procedure. This study did not address the skills and only had staff teach children in a highly contrived setting. Future research should examine a training package for expanding on the basic steps of the teaching interaction procedure to independently implement generalization training.

Children with autism face higher risks for bullying, loneliness, and, in general, lower quality of life. Teaching social skills to children with autism is complex and multi-faceted, and treatment needs to be carried out with high levels of fidelity. This study has provided the field of ABA with a training procedure, other than behavioral skills training, that is effective in teaching staff to implement a complex teaching strategy, with high levels of fidelity, for complex social skills to children with autism. Practitioners in the field of ABA working with children with

autism have an ethical responsibility to improve their quality of life. Hopefully, this procedure will make it easier for practitioners to train staff to implement these skills.

References

Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 1,* 91-97.

Bauminger, N., & Kasari, C. (2000). Loneliness and friendship in high-functioning children with autism. *Child Development, 71,* 447-456.

Bellini, S., Peters, J. K., & Hopf, A. (2007). A meta-analysis of school-based social skills interventions for children with autism spectrum disorders. *Remedial and Special Education, 28,* 153-162.

Carroll, R. A., Kodak, T., & Fisher, W. W. (2013). An evaluation of programmed treatment integrity errors during discrete-trial instruction. *Journal of Applied Behavior Analysis, 46,* 379-394.

Constantino, J. N., Davis, S. A., Todd, R. D., Schindler, M. K., Gross, M. M., Brophy, S. L., Metzger, L. M., . . . Reich, W. (2003). Validation of a brief quantitative measure of autistic traits: Comparison of the social responsiveness scale with autism diagnostic interview-revised. *Journal of Autism and Developmental Disorders, 33,* 427-433.

Crockett, J. L., Fleming, R. K., Doepke, K. J., & Stevens, J. S. (2007). Parent training: Acquisition and generalization of discrete trials teaching skills with parents of children with autism. *Research in Developmental Disabilities, 28,* 23-36.

Dib, N., & Sturmey, P. (2007). Reducing student stereotypy by improving teachers' implementation of discrete-trial teaching. *Journal of Applied Behavior Analysis, 40,* 339-343.

Dotson, W. H., Leaf, J. B., Sheldon, J. B., & Sherman, J. A. (2010). Group teaching of conversational skills to adolescents on the autism spectrum. *Research in Autism Spectrum Disorders, 4,* 199-209.

Dowd, T., Czyz, J. D., O'Kane, S. E., & Elofson, A. (1994). *Effective skills for child-care workers: A training manual from Boys Town.* Boys Town, NE: Boys Town Press.

Fetherston, A. M., & Sturmey, P. (2014). The effects of behavioral skills training on instructor and learner behavior across responses and skill sets. *Research in Developmental Disabilities, 35,* 541-562.

Graundins, M. M., Rehfeldt, R. A., DeMattei, R., Baker, J. C., & Scaglia, F. (2012). Exploring the efficacy of behavioral skills training to teach basic behavior analytic techniques to oral care providers. *Research in Autism Spectrum Disorders, 6,* 978-987.

Gunby, K. V., Carr, J. E., & Leblanc, L. A. (2010). Teaching abduction-prevention skills to children with autism. *Journal of Applied Behavior Analysis, 43,* 107-112.

Harchik, A. E., Sherman, J. A., Sheldon, J. B., & Strouse, M. C. (1992). Ongoing consultation as a method of improving performance of staff members in a group home. *Journal of Applied Behavior Analysis, 25,* 599-610.

Hazel, J. S., Schumaker, J. B., Sherman, J. A., & Sheldon, J. (1995). *Asset: A social skills program for adolescents.* Champaign, IL: Research Press.

Kassardjian, A., Leaf, J. B., Ravid, D., Leaf, J. A., Alcalay, A., Dale, S., Tsuji, K., . . . Oppenheim-Leaf, M. L. (2014). Comparing the teaching interaction procedure to social stories: A replication study. *Journal of Autism and Developmental Disorders, 44*(9),2329-2340.

Kassardjian, A., Taubman, M., Rudrud, E., Leaf, J. B., Edwards, A., McEachin, J., Leaf, R., & Schulze, K. (2013). Utilizing teaching interactions to facilitate social skills in the natural environment. *Education and Training in Autism and Developmental Disabilities, 48,* 245-257.

Leaf, J. B., Dotson, W. H., Oppenheim, M. L., Sheldon, J. B., & Sherman, J. A. (2010). The effectiveness of a group teaching interaction procedure for teaching social skills to young children with a pervasive developmental disorder. *Research in Autism Spectrum Disorders, 4,* 186-198.

Leaf, J. B., Oppenheim-Leaf, M. L., Call, N. A., Sheldon, J. B., Sherman, J. A., Taubman, M., McEachin, . . . & Leaf, R. (2012). Comparing the teaching interaction procedure to social stories for people with autism. *Journal of Applied Behavior Analysis, 45,* 281-298.

Leaf, J. B., Taubman, M., Bloomfield, S., Palos-Rafus, L., Leaf, R., McEachin, J., & Oppenheim, M. L. (2009). Increasing social skills and pro-social behavior for three children diagnosed with autism through the use of a teaching package. *Research in Autism Spectrum Disorders, 3,* 275-289.

Leaf, J. B., Townley-Cochran, D., Taubman, M., Cihon, J. H., Oppenheim-Leaf, M. L., Kassardjian, A., Leaf, R., . . . Pentz, T. G. (2015). The teaching interaction procedure and behavioral skills training for individuals diagnosed with autism spectrum disorder: A review and commentary. *Review Journal of Autism and Developmental Disorders, 2,* 402-413.

Lerman, D. C., Hawkins, L., Hoffman, R., & Caccavale, M. (2013). Training adults with an autism spectrum disorder to conduct discrete-trial training for young children with autism: A pilot study. *Journal of Applied Behavior Analysis, 46,* 465-478.

Maloney, D. M., Harper, T. M., Braukman, D. J., Fixsen, D. L., Phillips, E. L., & Wolf, M. M. (1976). Teaching conversation-related skills to pre-delinquent girls. *Journal of Applied Behavior Analysis, 9,* 371.

Minkin, N., Braukmann, C. J., Minkin, B. L., Timbers, G. D., Timbers, B. J., Fixsen, D. L., . . . Wolf, E. L. (1976). The social validation and training of conversational skills. *Journal of Applied* Behavior *Analysis, 9,* 127-139.

Palmen, A., Didden, R., & Korzilius, H. (2010). Effectiveness of behavioral skills training on staff performance in a job training setting for high-functioning adolescents with autism spectrum disorders. *Research in Autism Spectrum Disorders, 4,* 731-740.

Phillips, E. L., Phillips, E. A., Fixsen, D. L., & Wolf, M. M. (1971). *The teaching-family handbook* (2nd ed.). Lawrence. KS: University Press of Kansas.

Rosales, R., Stone, K., & Rehfeldt, R. A. (2009). The effects of behavioral skills training on implementation of the picture exchange communication system. *Journal of Applied Behavior Analysis, 42,* 541-549.

Sarokoff, R. A., & Sturmey, P. (2004). The effects of behavioral skills training on staff implementation of discrete-trial teaching. *Journal of Applied Behavior Analysis, 37,* 535-538.

Sarokoff, R. A. & Sturmey, P. (2008). The effects of instructions, rehearsal, modeling, and feedback on acquisition and generalization of staff use of discrete trial teaching and student correct responses. *Research in Autism Spectrum Disorders, 2,* 125-136.

Schroeder, J. H., Cappadocia, C. M., Bebko, J. M., Pepler, D. J., & Weiss, J. A. (2014). Shedding light on a pervasive problem: A review of research on bullying experiences among children with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 44,* 1520-1534.

Seiverling, L., Pantelides, M., Ruiz, H. H., & Sturmey, P. (2010). The effect of behavioral skills training with general-case training on staff chaining of child vocalizations within natural language paradigm. *Behavioral Interventions, 25,* p. 53-75.

Seiverling, L., Williams, K., Sturmey, P., & Hart, S. (2012). Effects of behavioral skills training on parental treatment of children's food selectivity. *Journal of Applied Behavior Analysis, 45,* p. 197-203.

Shayne, R., & Miltenberger, R. G. (2013). Evaluation of behavioral skills training for teaching functional assessment and treatment selection skills to parents. *Behavioral Interventions, 28,* 4-21.

Stephenson, K. M., & Hanley, G. P. (2010). Preschoolers' compliance with simple instructions: A descriptive and experimental evaluation. *Journal of Applied Behavior Analysis, 43,* p. 229-247.

Taras, M. E., Matson, J. L., & Leary, C. (1988). Training social interpersonal skills in two autistic children. *Journal of Behavioral Therapy and Experimental Psychiatry, 19,* 275-280.

Thiessen, C., Fazzio, D., Arnal, L., Martin, G. L., Yu, C. T., & Keilback, L. (2009). Evaluation of a self-instructional manual for conducting discrete-trials teaching with children with autism. *Behavior Modification, 33,* 360-373.

Ward-Horner, J., & Sturmey, P. (2008). The effects of general-case training and behavioral skills training on the generalization of parents' use of discrete-trial teaching, child correct responses, and maladaptive behavior. *Behavioral Intervention, 23,* 271-284.

White, S. W., Koenig, K., & Scahill, L. (2007). Social skills development in children with autism spectrum disorders: A review of the intervention research. *Journal of Autism and Developmental Disorders, 37,* 1858-1868.

Wolf, M. M. (1978). Social validity: The case for subjective measurement or how applied behavior analysis is finding its heart. *Journal of Applied Behavior Analysis, 11,* 203-214.

Appendix A: Tables

TABLES

Table 1

Teaching Interaction Procedure Task Analysis

Steps	Teacher Behavior to be Displayed	Was Step Displayed
1	Did the teacher provide the label of the targeted behavior?	Yes No N/A
2	Did the teacher provide a meaningful rationale of the behavior?	Yes No N/A
3	Did the teacher break the skill down into smaller behavioral components that has at least all of the steps on the datasheet?	Yes No N/A
4	Did the teacher provide at least one appropriate demonstration?	Yes No N/A
5	Did the teacher provide at least one inappropriate demonstration?	Yes No N/A
6	After each demonstration did the teacher have the learner rate the demonstration?	Yes No N/A
7	After each demonstration did the teacher have the learner provide reasons why the demonstration was appropriate or inappropriate?	Yes No N/A
8	Did the teacher provide an opportunity for the student to role-play the behavior?	Yes No N/A
9	Did the teacher have the student role-play until they displayed 100% of the skills correctly?	Yes No N/A
10	Did the teacher provide specific feedback after each role-play?	Yes No N/A
11	Did the teacher provide feedback throughout the entire teaching interaction procedure?	Yes No N/A

Table 2

Survey Questions

Question	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %
1. My knowledge of the TIP has increased after this training.	1	2	3	4	5
2. My skills in the application of the TIP to teach social skills to children with ASD increased after the training in this study.	1	2	3	4	5
3. If applicable, the children to whom I have used the TIP to teach a social skill have been able to learn the skill.	1	2	3	4	5
4. If applicable, I utilize the TIP when teaching children with ASD social skills in my regular therapy sessions.	1	2	3	4	5
5. I am satisfied with the training I received for implementing the TIP.	1	2	3	4	5
6. I would recommend other therapists receive this training.	1	2	3	4	5

Comments:

Table 3

Therapist Summary Data

Therapist	Baseline (Average Correct %)	Number of Intervention Sessions	Total Time Spent in Training	Maintenance (Average Correct %)	Generalization (% Correct Steps)
Hailey	0.00%	6	3:46	100.00%	90.90%
Izzy	0.00%	9	5:44	100.00%	81.80%
Autumn	15.50%	6	3:23	93.90%	100.00%

Table 4

Child Participant Summary Data

Child Participant	Pre-Baseline (Average Correct %)	Baseline (Average Correct %)	Intervention (Average Correct %)	Reached 100% Correct?	Maintenance
Pam	16.70%	4.20%	58.40%	YES	100.00%
Nick	16.70%	0.00%	89.60%	YES	100.00%
Jeremy	16.70%	14.80%	16.70%	NO	5.60%

Table 5

Percentage of Therapists' Positive and Negative Responses to Survey Questions

Question	*n*	Positive % [a]	Neutral %	Negative % [b]
1. My knowledge of the TIP has increased after this training.	3	100.0%	0.0%	0.0%
2. My skills in the application of the TIP to teach social skills to children with ASD increased after the training in this study.	3	100.0%	0.0%	0.0%
3. If applicable, the children to whom I have used the TIP to teach a social skill have been able to learn the skill.	1	100.0%	0.0%	0.0%
4. If applicable, I utilize the TIP when teaching children with ASD social skills in my regular therapy sessions.	3	66.7%	33.3%	0%%
5. I am satisfied with the training I received for implementing the TIP.	3	100.0%	0.0%	0.0%
6. I would recommend other therapists receive this training.	3	100.0%	0.0%	0.0%

[a] Therapists' responses were summarized as positive for "Agree" and "Strongly Agree."

[b] Therapists' responses were summarized as negative for "Disagree" and "Strongly Disagree."

Appendix B: Figure

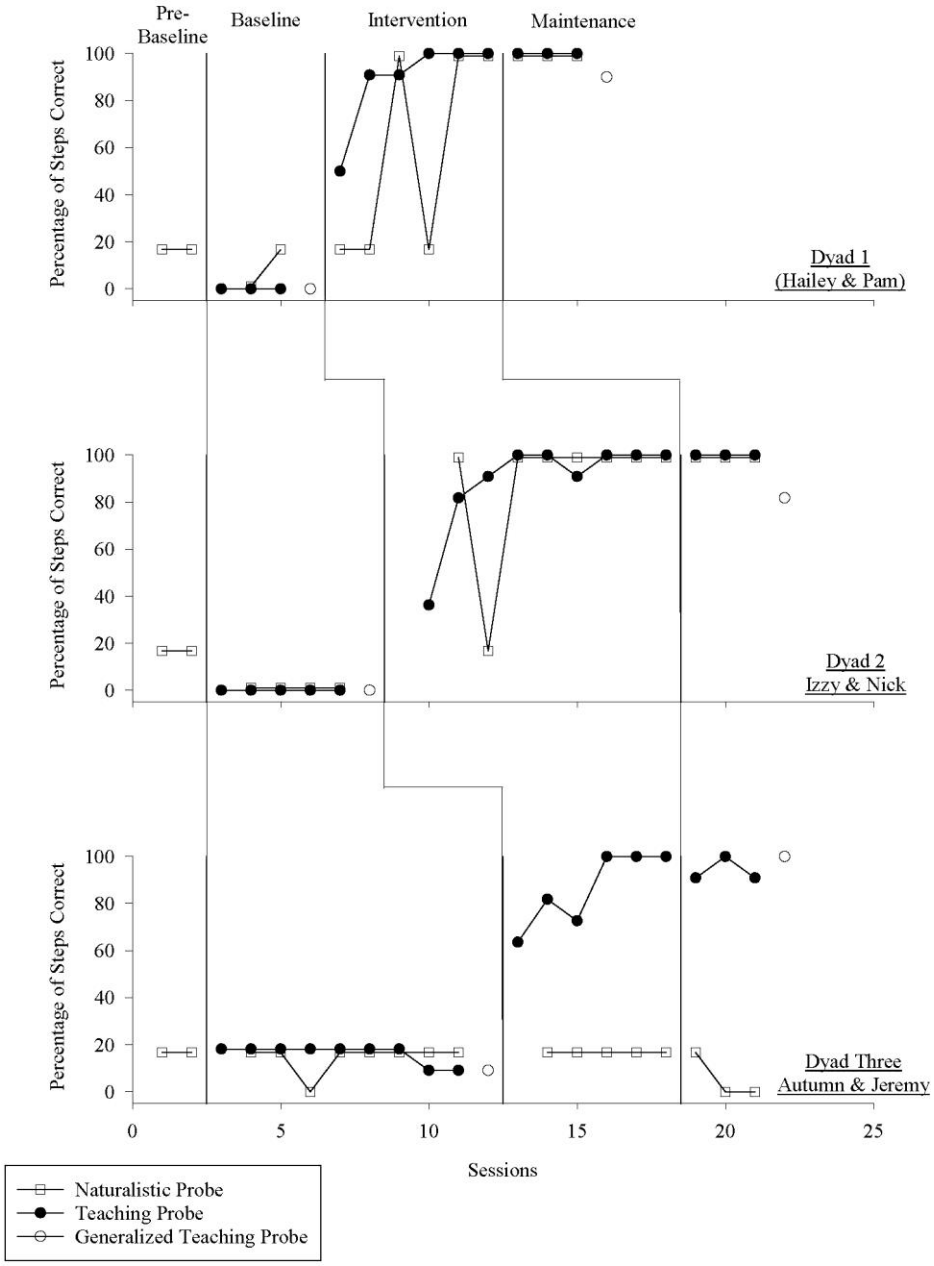

Figure 1. Percentage Score of Staff and Child Performance Checklists Across Pre-Baseline, Baseline, Intervention, and Maintenance Conditions