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The Effects of Group vs. Individual Behavioral Skills Training on Instructor Implementation of Stimulus Preference Assessments

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Abstract

Stimulus Preference Assessment (SPA) procedures are supported by research as a valid method of identifying preferred stimuli that can act as reinforcers in behavior change programs. However, some research indicates that such procedures are underused in practice and that many practitioners are not sufficiently trained in these procedures. Lack of time to train and implement these procedures may contribute to this problem. The current study examined the use of Behavioral Skills Training to train brief stimulus preference assessments, specifically the Free Operant (FO) and Multiple Stimulus Without Replacement (MSWO) procedures. Additionally, the current study compared the results of group and individual training of these procedures across the dimensions of effectiveness (staff mastery of skills) and efficiency (time to implement training). Results indicated that group training was as effective as individual training and required less time to completion.

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Chapter I: Introduction and Review of Literature

Reinforcement procedures are a crucial component of behavior analytic programming for individuals with developmental disabilities. However, stimuli that act as reinforcers will vary for and within each individual. As a result, much research has been conducted on stimulus preference assessments (SPAs) to determine effective procedures for identifying stimuli that act as reinforcers (Graff & Karsten, 2012; Karsten, Carr, & Lepper, 2011). SPAs include a variety of procedures that determine the stimuli a person prefers as well as the preference values of those stimuli in relation to each other (Cooper, Heron, & Heward, 2006). Pace, Ivancic, Edwards, Iwata, and Page (1985) developed the first formal SPA method, the single stimulus preference assessment. Prior to this study, stimuli were selected arbitrarily and were not tested for their reinforcing efficacy (Piazza, Roane, & Karsten, 2011). Since that time, behavior analytic literature has developed to include a variety of SPA procedures. Additionally, reinforcer assessments were also developed to test the efficiency of SPAs in identifying stimuli that act as reinforcers. Reinforcer assessments involve presenting stimuli identified in the SPA contingent on a target response to identify their effectiveness as reinforcers (Cooper et al., 2006). Researchers have used these methods to support the clinical value of many stimulus preference assessments (Piazza et al., 2011).

Despite the literature on the benefits of SPA procedures, some research has suggested that these procedures are not consistently used in practice (Graff & Karsten, 2012). The majority of behavior analysts who participated in a survey on the use of SPAs in agencies with individuals with developmental disabilities reported that they implemented formal SPA procedures less than once per month (Graff & Karsten, 2012). Additionally, 66.3% of board certified behavior

analysts (BCBAs) surveyed had received training in their coursework, while only 37.5% had received in-service training. These percentages were even lower for non-certified educators and practitioners. Graff and Karsten (2012) indicated several barriers to the implementation of SPAs in clinical practice. These barriers may include but are not limited to; determining the type of procedure to implement, duration of time to implement the procedure, and lack of knowledge and training for non-BCBA staff who implement procedures. These results suggest the need for efficiency and effectiveness in both the identification of SPA procedures as well as in service staff training on these procedures.

Types of Stimulus Preference Assessments

An important consideration for practitioners in clinical settings is the choice of preference assessment to conduct with their clients. Common preference assessments found in the literature include the Paired Stimulus (PS), Multiple Stimulus without Replacement (MSWO) and the Free Operant (FO) preference assessments (Cooper et al., 2006; Karsten et al., 2011; Piazza et al., 2011). Additional preference assessments include the Single Stimulus (SS), Multiple Stimulus (MS) and, more recently, the Response Restriction (RR) procedures (Karsten et al, 2011; Piazza et al., 2011; Verriden & Roscoe, 2016). Based on the breadth of literature on the topic, it may be difficult for practitioners to determine which procedure to use in practice (Karsten et al, 2011). Both the MSWO and FO procedures have been demonstrated to have clinical utility and may be suitable starting points for practitioners (Karsten et al, 2011). The benefits and limitations of each procedure are reviewed below. In addition, Table 1 (Appendix C) summarizes information on each preference assessment procedure.

MSWO procedure. The MSWO procedure is a trial-based preference assessment during which multiple stimuli are presented to the participant in an array; once one item is chosen it is not replaced as an option during the following trials (Cooper et al., 2006). The MSWO procedure was developed by combining features of the PS and MS preference assessments (DeLeon & Iwata, 1996). The PS procedure is a trial-based preference assessment that involves the presentation of two stimuli at a time for each trial and each stimulus is presented randomly with all other stimuli throughout the assessment (Cooper et al., 2006). The PS preference assessment has been identified as producing consistent results across sessions as well as identifying distinct rankings of items (Cooper et al., 1996; DeLeon & Iwata, 1996; Piazza et al., 2011). The MS preference assessment was developed as an extension of the PS procedure in order to decrease the amount of time involved in implementing the procedure (Cooper et al., 2006). The MS procedure involves the presentation of three or more stimuli (items, pictures of items, etc.) at a time. The initial MS procedure involved the replacement of items not chosen with new items. MS procedures were found to identify similar stimuli in less time, however, results over sessions were not as consistent as the PS procedure (DeLeon & Iwata, 1996).

DeLeon and Iwata (1996) considered the advantages and disadvantages of both the PS and MS methods in the development of the MSWO procedure. Two experiments were conducted with seven adults with developmental disabilities at a state residential facility. In an initial experiment, the PS preference assessment procedure was used as a comparison measure for the MS and MSWO procedures. In a second experiment, a reinforcer assessment was conducted to determine if the stimuli that were selected in the MSWO but not in the MS functioned as reinforcers. All procedures were conducted with each participant in varying

orders. Results of the first experiment showed that more items were selected in the MSWO and PS procedures than in the MS procedure. Additionally, there were moderate to high correlations for both the MSWO and PS procedures. Finally, the time to complete the procedures was measured and identified the PS procedure as the most time consuming (mean 53.3 minutes), followed by the MSWO (mean 21.8 minutes) and, finally, the MS (mean 16.5 minutes). These results highlight the utility of the MSWO, as the procedure worked to identify similar items as the PS procedure but in less time.

The second experiment involved the implementation of a reinforcer assessment to test items that were not selected in the MS but were selected in both the PS and MSWO (DeLeon & Iwata, 1996). Four participants from the first experiment were involved in the reinforcer assessment using an A-B-A reversal design. During the A condition (baseline), responding was not followed by access to the item; during the B condition, responding was followed by access to the preferred on a fixed ratio 1 (FR1) schedule of reinforcement. Results of the second experiment found that items not selected in the MS procedure did produce increases in responding. These results suggest that MSWO and PS procedures may have identified some items that functioned as reinforcers that the MS procedure did not identify. The authors recognized that the MS procedure was effective in identifying one highly preferred item in a short amount of time. However, the MSWO procedure identified more preferred stimuli that acted as reinforcers maintaining behavior and did so in less time than the PS preference assessment. This information is valuable for a practitioner's decision-making surrounding the choice of SPA to use in a clinical setting.

Carr, Nicolson, and Higbee (2000) replicated DeLeon and Iwata's (1996) study in which they further tested the effectiveness of the MSWO procedure using a fewer number of trials. Carr et al. (2000) conducted the procedure in a shorter time (three trials instead of five) with a different profile of participant (three children with autism). Additionally, ongoing reinforcer assessments were conducted for a period of four to five weeks to determine if the items identified in the SPA acted as reinforcers maintaining behavior over time. Finally, correspondence between the items identified on the first trial and the items identified on the following two trials was calculated by using the Spearman rank correlation between items across all sessions. Results of this study indicate that the correlations between the results of the initial assessment and all three assessments were high for all participants. Additionally, stimuli selected as preferences acted as reinforcers for all participants and the results of reinforcer assessments remained stable for two of the participants over the five weeks. These results support the use of a brief MSWO preference assessment in clinical practice and suggest that an even shorter procedure may also be effective. Practitioners may be more likely to use a brief and effective SPA in practice.

The MSWO procedure has been demonstrated to have effective clinical utility. Benefits of this procedure include: efficiency of time to implementation in comparison to longer procedures such as the PS, determination of a rank order of preferences equivalent to that of the PS, and identification of items that act as reinforcers maintaining behavior (Carr et al., 2000; DeLeon & Iwata, 1996; Karsten et al., 2011). Despite these benefits, there are also some limitations associated with the MSWO preference assessment. These include the inability to include certain types of items in an array (i.e., larger items), possible positional bias for the individual choosing the items, and, sometimes, problem behaviors associated with the

implementation of this procedure (Karsten et al., 2011; Verriden & Roscoe, 2008) probably due to the removal of preferred items during the assessment. In these cases, additional assessments may need to be considered.

Free operant (FO) procedure. The Free Operant (FO) procedure is an alternative choice when practitioners would like to maintain efficiency in terms of time but also avoid the possible occurrence of problem behaviors associated with the MSWO procedure (Karsten et al., 2011). The FO procedure was initially developed and implemented with 20 participants with severe developmental disabilities, through extension of the work on MS procedures (Roane, Vollmer, Rigndahl, & Marcus, 1998). The FO procedure involved a presentation of multiple stimuli that were freely accessible by the participant while experimenters measured the rates of engagement across the stimuli. The FO assessment was evaluated on its ability to identify preferred stimuli that functioned as reinforcers. Additionally, the FO assessment was compared to the PS preference assessment in the areas of outcome, duration of implementation, and occurrence of problem behavior associated with each assessment. Researchers demonstrated that the FO preference assessment took only five minutes to implement while the PS took an average length of 21.67 minutes. Additionally, the FO preference assessment was associated with less problem behavior than the PS preference assessment. Finally, the preferences were similar across both assessments for 8 of 17 participants. The authors suggested multiple clinical advantages to the use of the FO procedure as well as some limitations. Advantages include limiting problem behavior during assessments and reduced time of the practitioner, allowing for other tasks to be completed. Additionally, the format of the FO procedure allows for larger items and activities to be included in the array (Karsten et al., 2011). A limitation of the FO procedure includes the

identification of limited items in comparison to procedures in which the item is removed contingent on choice (MSWO, PS) (Roane et al, 1998). Additionally, the continuous exposure to the items during the FO procedure may lead to possible satiation as a result of the assessment causing the item to be less effective as a reinforcer in maintaining behavior.

The evidence supporting the FO procedure as a tool for identifying client's preferred items in the absence of problem behavior has been highlighted in the literature. A replication of the Roane et al. (1998) study was conducted with two boys with autism to compare rates of each individual's problem behaviors during PS, MSWO and FO procedures (Kang et al., 2010). Additionally, a functional analysis (FA) was conducted for each individual to determine function of problem behavior. The researchers found that the FO preference assessment was associated with lower rates of problem behaviors than the PS and MSWO for both individuals. Additionally, the FA demonstrated that both individual's problem behaviors were maintained by social positive reinforcement in the form of access to tangible items. The hypothesis that the FO procedure resulted in less problem behavior that was maintained by access by not removing preferred items during the assessment (Roane et al., 1998) was supported by the results of the FA (Kang et al., 2010). Based on these results it may be beneficial for practitioners to consider FO preference assessments for learners whose behavior is maintained by access to tangible as well as for initial preference assessments with learners in order to decrease the likelihood of problem behavior during assessments.

Choosing a Stimulus Preference Assessment

The effectiveness of both the MSWO and FO procedures was further demonstrated in the work of Karsten et al. (2011). The authors recognized a need to develop a model for

practitioners to choose the appropriate SPA for their specific clients. Researchers conducted a review of the literature on SPA's and highlighted the assets and barriers of the MSWO, PS, SS, and FO procedures. In their review, the authors suggested that there are many practical components to consider when choosing the SPA procedure. These included possible positional biases, the size of the items in the array, the variety of items to be identified, and the occurrence of problem behavior during the assessment. Based on these considerations, a practitioner model for choosing a preference assessment was developed and applied to 20 children with autism to determine its utility in clinical practice. The decision-making model identified the MSWO as the initial preferred method of assessment as it allows for multiple items to be identified in an efficient amount of time . The secondary assessment in the model included the FO assessment, particularly for instances when the MSWO led to occurrences of problem behavior and, as a result, preferred items could not be identified. The implementation of the practitioner model began with the implementation of a three session MSWO preference assessment adopted from Carr et al. (2000). If this did not result in the identification of preferred items due to barriers, the FO assessment adopted from Roane et al. (1998) was conducted (Karsten et al., 2011). Finally, the results of the assessments were verified in a reinforcer assessment.

The MSWO assessment was completed and items were identified for 70% of the participants (Karsten et al., 2011). The additional subjects who presented with problem behaviors during the MSWO assessment, moved onto the FO assessment as per the decision-making model. The FO assessment was completed and preferred items were identified for 4 of the 5 remaining participants. A reinforcer assessment in the form of a concurrent operant procedure was conducted for all participants who completed one of the two preference

assessments. Results of this assessment were conclusive for all but 3 of the participants, demonstrating that items identified in the preference assessment did act as reinforcers maintaining behavior. The authors suggested that this model alongside the clinician's own decision making should be considered when determining preference assessments to use in clinical practice.

Staff Training of SPAs

Another significant finding on the lack of implementation of SPAs in clinical practice included the limited in-service training on these procedures (Graff & Karsten, 2012). Additionally, lack of time was identified as a common reason for infrequent implementation in practice. This highlights the need for both brief preference procedures as well as time-efficient staff training measures. Additional literature on staff training has suggested that it should include three key elements; it should be *effective, efficient, and acceptable* (Sturmey, 2008). *Efficient* refers to training that requires minimal resources and time, *effective* training produces increases in client's learning, and *acceptable* training requires minimal effort and does not interfere with other priorities. In consideration of these elements, Behavioral Skills Training (BST) has been identified as inclusive of these components when training individuals to implement a variety of procedures.

Behavioral skills training (BST). Literature on the training of SPAs has identified BST or components of this method as effective in training staff to implement these procedures (Sturmey, 2008). BST is a treatment package including verbal and written instructions of the target skill, modelling the skill, role play, and descriptive feedback (Parsons, Rollyson, & Reid, 2012). These steps are repeated until mastery of the skill has been achieved. Additionally, BST

can involve opportunities to use the skill in natural settings. The use of the BST package or its components for training staff on stimulus preference assessments has been demonstrated in behavior analytic literature (Parsons et al., 2013; Sturmey, 2008). Similar to other behavior analytic procedures, BST for staff training involves a three-part contingency. Antecedents can include instructions, models, and prompts; behaviors include the staff's implementation; and consequences include trainer feedback and student performance. These components have been addressed in the literature on staff training of stimulus preference assessments. While some interventions focused on implementation of all components, others addressed only antecedent or consequent variables (Roscoe & Verriden, 2006; Weldy, Rapp, & Capocasa, 2016).

Staff training using BST methods has focused on a variety of SPAs including PS, MSWO and FO. Lavie and Sturmey (2002) used BST with three assistant teachers to conduct PS preference assessments with eight children with autism. A multiple baseline across participants design was used to demonstrate experimental control. The baseline condition involved minimal instructions and staff members were provided with paper, pencil, and the stimuli to be assessed. During training, an eight-part task analysis based on the paired stimulus preference assessment developed by Fisher et al. (1992) was used. Steps for training included a brief description of the procedure, written and verbal step-by-step instructions, a video demonstration, practice with the child, and feedback. Model, practice, and feedback were repeated until staff completed the procedure at 85% correct or higher for two consecutive session. Results indicated that the BST procedure was effective. Staff demonstrated increased percentages of correct responding in intervention over baseline. However, the authors noted that the instructions given in baseline were quite vague and may account for the low scores in that condition. The duration of time to

train each staff totaled approximately 80 minutes. Future researchers were directed to identify other skills that could be taught in brief sessions of time.

Additional work has addressed the deconstruction of the components of the BST package when training staff in stimulus preference assessments. Roscoe, Fisher, Glover, and Volkert, (2006) compared the reinforcement component, namely descriptive feedback versus access to preferred tangible (money) with four individuals with minimal to no experience conducting stimulus preference assessments. The purpose of the study was to compare the feedback condition to the contingent money condition; the former maximized the discriminative properties of feedback while the latter maximized the reinforcing properties. A multielement design was implemented to train staff to conduct MSWO or PS preference assessments. Four conditions were included: baseline, PS or MSWO written instructions, feedback versus contingent money and feedback plus money. These conditions were divided this way in order to highlight the consequence variables controlling staff behavior. Baseline conditions were conducted by providing the staff with the name of the preference assessment to conduct and materials including pen, paper, stopwatch, and items. During the written instruction condition, staff members were given a brief summary of the preference assessment for 30 minutes prior to the session but did not have access to the written instructions during the assessment. The feedback condition involved delivering descriptive feedback on the previously recorded session immediately prior to conducting the next session. Additionally, all feedback was descriptive but did not include descriptive praise so as to minimize the possibility of social positive reinforcement as a variable. During the contingent money condition, trainees were provided money contingent on their performance in the previous session (i.e., if they completed 50% of

the responses correctly they were given 5 dollars, if they completed 100% they were given 10 dollars, etc.). Finally, in the contingent money plus feedback condition the consequence of each condition as described were applied. All conditions were conducted in simulated environments during which a trainer acted as the child. Additionally, an in situ probe was conducted with actual clients for each condition.

Results of Roscoe et al. (2006) demonstrated an increase in responding in the written instruction over the baseline condition for three of the four participants. All four participants demonstrated rates of responding between 80-100% in the feedback condition. However, contingent money alone did not increase responding significantly for any of the trainees. Finally, in the feedback plus contingent money condition all staff demonstrated responding at 100%. These results provided some significant information regarding the consequence component of the BST model. In particular, the discriminative properties of the feedback component were demonstrated to be more effective in increasing staff's responding than the reinforcing properties alone. The authors suggested that the money condition was ineffective as the staff did not have the information to change their behavior, while the feedback condition may have also had additional social reinforcing properties because staff members were being provided feedback on their own behavior. The results also indicated that the staff members were already motivated to respond correctly and subsequently, feedback alone may be effective for training trainees that are already highly motivated. This work expands the literature on staff training of SPA's by demonstrating the importance of the role of feedback in maintaining staff behavior. Although the methods were successful in teaching skills, the training time involved multiple training sessions suggesting the need for briefer training methods.

Developing brief training methods. Consistent in the literature on staff training of stimulus preference assessments is the need for brief training procedures (Lavie & Sturmey, 2002; Roscoe & Fisher, 2008; Weldy et al., 2014). Training that minimizes time required would be consistent with the recommendation that staff training be efficient and acceptable. In an extension of the Roscoe et al. (2006) study, the descriptive feedback component was further examined in a brief training procedure of the MSWO and PS preference assessments (Roscoe & Fisher, 2008). A multielement design was conducted with 8 trainees who had no formal training with preference assessments to determine if staff could be trained in fewer training sessions than the previous study. Each staff member conducted one baseline session for each procedure followed by consecutive individualized training sessions in each procedure; group one participants were trained in the MSWO followed by the PS procedure and group two participants were trained in PS followed by the MSWO procedure. Only one training session was conducted for each participant in each procedure; however, the alternate procedure was tested in a simulated session for each condition, which demonstrated experimental control. During the baseline condition, trainees were provided with written instructions and materials to complete the procedure. During training, trainees watched video of their baseline session and were given descriptive feedback on their performance as well as an opportunity to role-play with additional feedback. Intervention resulted in 14 of 16 trainees reaching mastery level (90% or higher) in correct responding; the previous two trainees demonstrated 80% in correct responding. Limitations included the lack of in situ probes as well as the fact that all training was individualized rather than in a group setting. However, the results indicated that staff could be

trained in SPA procedures in relatively brief sessions when video, feedback and roleplay were implemented.

Additional brief training methods for SPAs has been conducted for both the MSWO and FO procedures (Weldy et al., 2014). Nine staff members at a behavioral clinic for children and youth with autism were trained in two groups using only antecedent measures. Standard BST video modelling plus instructions were delivered in training sessions and staff performance was assessed during in situ probes. In a non-concurrent multiple probe design across preference assessments, group one was trained first on the MSWO followed by the FO procedure, while group two was trained first on the FO followed by the MSWO procedure. Baseline conditions involved providing the staff member with the name of the preference assessment and corresponding materials and data collection sheets. The MSWO condition used procedures from Roscoe and Fisher (2008), while the FO condition used procedures from Roane et al. (1998). Video training was approximately 30 minutes long and staff were required to complete the procedure at 90% over two in situ sessions after training. All but two participants met mastery after the first video training and the additional participants only required one additional viewing prior to demonstrating mastery in situ. Results support the goal of finding efficient and effective staff training methods. Participants were able to demonstrate implementation of preference assessments after group training sessions that involved only antecedent measures. Limitations of the study were that staff already had a minimum of a year of behavior analytic intervention experience. However, the authors did demonstrate how antecedent components of BST (video modelling and instructions) were effective for training staff in groups.

Conclusions

Given the extensive research on stimulus preference assessments it seems that such methods would be implemented consistently in clinical practice. However, possible barriers to conducting such assessments frequently have been identified; including choosing the appropriate method as well as time to train and implement such methods (Karsten & Graff, 2012). Researchers have identified ways to increase the efficiency of assessments, how to choose assessments and more efficient staff training for these assessments. BST training has been demonstrated as an efficient method and components have been isolated and examined for effectiveness. Future research should continue to examine ways to increase efficiency of staff training procedures for SPA's as well as ways to increase their daily use in clinical practice.

Although it has been demonstrated that some antecedent measures can be trained in group settings (Weldy et al., 2014) with experienced practitioners, it is not clear that group training would be as efficient for training less experienced staff that may require all components of the BST procedure. Researchers demonstrated that newly hired staff members were successfully trained in one session for both MSWO and PS procedures (Roscoe & Fisher, 2008). However, trainees in this study were trained individually. Research has not yet examined the efficiency and effectiveness of group versus individual BST training with staff with varying degrees of experience.

Statement of Purpose

The purpose of this study was to extend the current literature on training FO and MSWO stimulus preference assessments by comparing BST procedures conducted in a group versus

BST procedures conducted with individuals in the areas of effectiveness (mastery of skills) and efficiency (time to mastery).

Chapter II: Method

Participants

The participants included eight staff members at a centre/school for learners with autism and other developmental disabilities. The participants had various levels of staff training and experience, however, no staff members had formal training in stimulus preference assessments. Some staff had an educational background in behavior analysis. All staff were working as behavior technicians at the time of the study with a range of two months to two and a half years of experience (see Appendix C, Table 2 for profiles of all participants). All staff members completed informed consent prior to the study and were informed that performance would not affect their employment status. Additionally, four children diagnosed with autism participated in the study. These children included two boys age 4, one boy age 7 ,and one girl age 4. All children had been attending the centre for behaviour therapy for a minimum of 5 months at the time of the study.

Setting and Materials

The training was implemented in a centre for children with autism and other behavioral needs. Training was conducted in the staff training room and simulated and in situ sessions were conducted in the therapy rooms.

The staff training room was approximately 10 by 15 feet and included an adult sized and child sized table and chairs as well as a bin of toys, a computer and a chart board. The therapy room was approximately 9 by 11 feet and included the following; a child-sized and adult-sized chair, a child-sized desk, a toy shelf, and a small carpet area.

Baseline materials included a list of possible preferred items (8-10) for client based on parent and staff reports, a data sheet, a pencil, and timer(s). No instructions were given to staff during the baseline condition. The written instructions condition included the same materials as baseline as well as a brief description of the procedure (provided approximately 30 minutes before session). Training materials included step-by-step instructions, a video model (prepared by the experimenter prior to training), timer, table, chairs, and data sheets for trainees and trainers. Finally, post-training sessions included the same materials as the written instruction condition.

Data Recording Procedures

Data were collected to measure both effectiveness and efficiency of training.

Effectiveness measurement. Staff members were randomly assigned to two groups with four members in each group. Staff members were observed during baseline, written instruction, and post-training sessions. The itemized task analysis for each preference assessment found in Appendices A and B were used as data sheets. Data were collected for each step. Percentage correct was calculated by dividing the number of correct responses by the total number of possible responses and multiplying by 100. Training was considered effective based on each staff reaching mastery criterion. Mastery was 90% for one session in both the simulated and in situ sessions. If staff did not meet mastery in either condition they completed a booster training session.

MSWO procedure response definitions. Three trials were conducted per session (in baseline, training and in situ). Staff behavior was measured using a 14-step task analysis adapted from Carr et al. (2000) and each response was scored as correct or incorrect. Correct responses

were as follows: (1) selects five items to assess; (2) individually presents each item to the client one at a time (30 seconds each); (3) places items in a line or arc on the table in from of the client equal distance apart; (4) instructs the client to "pick one;" (5) only repeats the instruction once if the client does not respond; (6) if the client picks an item, staff provides the item for 10 seconds and records the response; (7) after 10 seconds of access, the staff removes the item from the array; (8) after removal of the item, staff repositions remaining items; (9) if the client attempts to take more than one item, the staff blocks and repeats the instruction "pick one;" (10) if the client does not choose an item after 30 seconds, the staff ends the session; (11) after session completion, staff calculates the percentage correct for each item within each session; (12) Staff correctly averages the percentages across sessions; (13) Staff creates a ranked order based on the percentage average; (14) conducts three presentation sessions. Refer to Appendix A for the task analysis data sheet for the MSWO procedure.

FO procedure response definitions. One five-minute trial was conducted per session. Staff's behavior was measured using a 13-step task analysis adapted from Roane et al. (1998). Each response was scored as correct or incorrect. Correct responses were as follows, staff: (1) selects eight items to assess from the list of caregiver/staff reports; (2) sets up items around the room; (3) leads the client around the room and ensures they contact each item by placing it in the client's hand to manipulate; (4) moves the client within approximately half a meter of the assessment area; (5) sets the timer for 10 seconds (runs session up to five minutes); (6) moves away from the assessment area; (7) instructs the client to "play" to initiate session; (8) During the assessment, recorded manipulation of objects for each interval using a 10-second partial interval recording procedure; (9) if the client engaged with the staff at any point, recorded this under

social attention on the data sheet; (10) if client engages with more than one item at a time, records both items; (11) stops session after 30 seconds of no engagement with an item or whenfive5 minutes is complete; (12) correctly calculates the percentage of intervals during which each item is manipulated; (13) ranks items based on the percentage of intervals manipulated. Refer to Appendix B for the task analysis data sheet for the FO procedure.

Inter-observer agreement. Both observers assisted in the development of training videos for staff. Additionally, the experimenter modeled both procedures with the observer and an additional staff to allow for the experimenter and observer to collect data and compare responses prior to observing during training sessions. Mastery criterion for training observers was 90% across three trials of the MSWO and one five-minute trial of the FO. A second observer was present for 46% of sessions in the MSWO conditions and 36% of sessions in the FO conditions. Inter-observer agreement was assessed by dividing the number of agreements on the task analysis by the number of agreements + disagreements and multiplying by 100. The mean IOA score for the MSWO assessments was 97% (range 85%-100%). The mean IOA score for the FO was 99.7% (range 93%-100%).

Efficiency measurement. The duration of time to complete training for each procedure was measured in both the individual and group conditions. Training time was measured in seconds and included the time to complete all BST components. The stop watch was started immediately before reading the instructions to staff and ended when feedback was completed. It did not include the time to conduct trials in the simulated or in situ environment as no feedback was delivered in those situations. If staff did not meet mastery after the first training session,

booster training sessions for that staff member were included in the total training time for that group.

Experimental Design and Procedures

A multielement design across preference assessment procedures was used. All staff completed both a baseline with no written instructions and a second baseline with written instructions for each procedure. Staff were then split into two random groups of 4 members with varying levels of experience. Each group was trained on the MSWO procedure first, followed by the FO procedure. Data were collected on each staff's implementation of each procedure in all four conditions: baseline, written instructions, MSWO training and FO training.

Group 1 participants were trained individually whereas Group 2 participants were trained in a group setting. In the group setting, the group was provided instructions and a video model. The staff role-played 1:1 with the trainer and received feedback while other group members observed. Feedback included positive and corrective statements. For example, " I like how you lined up the items, but remember to remove the item from the array at the end of the trial", etc. In the individual setting, the procedure remained the same except that all components of the BST procedure were conducted 1:1 with the experimenter.

After BST training was completed, post sessions began for each participant. Post sessions were first conducted in a simulated environment and then in-situ. Simulated sessions were conducted with only the experimenter, a staff playing the child and an individual participant (they sometimes included a second observer for IOA) . Simulated sessions in each condition were followed by an in-situ session. In-situ sessions were the same as simulated except that the participant completed the procedure with a child.

Baseline (no written instructions). During the first baseline, staff were told which procedure to complete and were provided with materials (timer, data sheet, etc.) to complete the procedure. Baseline sessions were conducted in a simulated environment with an additional staff member as the "child". The experimenter took data on three sessions (three trials each) for the MSWO and five minutes for the FO procedure. Staff were informed that no questions would be answered or feedback would be given during this session. Baseline was completed once for each staff member with each procedure provided (FO or MSWO). Additionally, one in situ baseline was conducted for each staff member for each procedure.

Baseline (written instructions). During this condition, staff were told which procedure to conduct and were provided with a brief procedure outline 30 minutes prior to the session. All other components of this session were identical to the first baseline.

Intervention. Behavioral Skills Training was used to teach the MSWO and FO procedures. BST included written and verbal instructions of the SPA procedure (MSWO or FO), a video model of the procedure, role play, and feedback.

Instructions. Written and verbal instructions consisted of the experimenter providing the staff member(s) with a copy of the written instructions of the procedure (MSWO or FO). The experimenter then read through the instructions step-by-step and answered any questions the participants had at this point.

Video model. The video model included the experimenter and a staff member role playing as the child. The video included multiple exemplars for each SPA. For the MSWO procedure, the video model included two sessions (three trials per session). In each session, the staff member role played multiple examples of responses the child may engage in. These

included a standard response (choosing the item and playing with it for the appropriate duration of time) as well as distractor responses (i.e., choosing two items at a time, etc.). See Appendix C, Table 3 for a list of standard and distractor responses for the MSWO procedure.

For the FO procedure, the video model included two sessions of the procedure; one included the entire 5-minute duration and the second was ended due to lack of responding for longer than 30 seconds. As in the MSWO model, a staff member role played multiple responses the child may engage in. The standard and distractor responses for the FO procedure can be found in Table 3. Additionally, videos of both the MSWO and FO procedures included a demonstration of data collection using an enlarged data sheet and a model of how to calculate averages and rank items for each procedure. The duration of the MSWO video model was 24 minutes inclusive of all components. The duration of the FO video model was 18 minutes and 36 seconds inclusive of all components. All staff members (in group or individual training) watched the video for each procedure once before moving on to the role play component for the given procedure.

Roleplay. Role play involved each staff member practicing three trials of the MSWO procedure and one session (up to five minutes) of the FO procedure during which the experimenter acted as the child. For each procedure, the experimenter engaged in standard responses as well as errors likely to occur in session (i.e., grabbing two items at once). The experimenters responses were randomly selected from the standard and distractor responses as outlined in Table 3.

Feedback. The experimenter used the task analysis data sheet to inform feedback. Feedback included both positive statements on steps completed correctly as well as corrective

statements on errors. For example: “I like how you set up the items around the room, remember to be sure to have the child engage with each item before beginning the assessment”.

Post session probes. Within one or up to three days after completion of the BST, simulated sessions were conducted. A third staff, trained to act as the child participated in this simulated session. The staff acting as the child was trained to engage in a variety of example situations (see Table 3) that were equivalent across training groups and preference assessments. The mastery criterion for these simulated sessions was 90% for one session. After mastery (within three to five days from training), an in situ probe session was conducted with each participant for each procedure.

Booster sessions. If a participant did not meet mastery in the simulated and in-situ probes, a booster session was conducted 1:1 with that participant regardless of which training group they were in. Booster sessions involved all components of the original BST procedure. However, the video model was shortened to focus on the specific area of error that the participant made. For example, if the participant made errors only on the data collection portion during the post session probes than they would only watch that portion of the video.

Chapter III: Results

Effectiveness

Figure 1 (Appendix C) depicts the graphed results for Group 1 (who were trained individually) and Figure 2 (Appendix C) depicts the graphed results of Group 2 (who were trained in a group). During the simulated baseline for the MSWO procedure, participants displayed low levels of correct performance in both Group 1 (*M*= 8%; range, 0%-19%) and Group 2 (*M*= 14%, range 2%-19%). The in-situ baseline for the MSWO procedure yielded similar results for Group 1 (M= 6.5%, range, 2%-12%) and Group 2 (M= 9.3%, range 0.3%-17%). During the simulated baseline for the FO procedure, participants displayed similarly low levels of correct performance, although slightly higher than baseline for the MSWO procedure; Group 1 (*M*=18.25%, range, 8%-25%), Group 2 (*M*=18%, range, 7%-42%). Finally, both Group 1 (M=29%, range, 21%-36%) and Group 2 (M=27.75%, range, 8%-67%) displayed moderately higher performance overall on the FO in situ baseline than the simulated FO baseline.

The written instructions baseline condition yielded better results for both groups than the baseline with no written instructions. In the MSWO written instruction simulated baseline, participants in both groups displayed low to moderate levels of performance; Group 1 (*M*=40.5%, range, 16%-63%), Group 2 (*M*= 37%, range 31%-39%). In the MSWO in-situ written instruction baseline both Group 1 (*M*=45.25%, range 32%-75%) and Group 2 (*M*=47.75%, range, 14%-79%) had slightly higher results than in the simulated condition. During the FO written instruction simulated baseline, performance was moderate for both Group 1 (*M*=40.75%, range, 25%-58%) and Group 2 (*M*=44.25%, range, 31%-75%). As in the MSWO in-situ written instructions condition, the FO written instruction in-situ baseline yielded slightly

higher results than the simulated. In this condition, Group 1 had a mean of 54.25% (range, 31%-75%) and Group 2 had a mean of 58% (range, 38%-86%). Overall, all written instruction baseline results for both groups were higher than baseline without written instructions but did not meet mastery criteria (90% or higher).

Following training on the MSWO procedure, the mean performance of Group 1 (trained individually) increased to a mean of 100% (range, 100% for all individuals) in the simulated sessions and an initial mean of 96.75% (range, 87%-100%) in the in-situ sessions. One staff member (Kelsey) in this group did not meet mastery for the in-situ session (87%) and required booster training. Following this training her performance increased to 98% in the in-situ condition and the mean for Group 1 increased to 99.5%. Group 2 (trained in a group) also increased in correct performance following MSWO training. The mean performance for this group during the simulated sessions increased to 98.5% (range, 96%-100%). During the in-situ sessions, Group 2 maintained high performance with a mean of 99% (range 98%-100%). All members of this group met mastery without booster training. Additionally, post MWSO training, each group completed FO simulated written instruction probes. Both groups maintained similar results to the written instruction baseline results, although slightly higher overall; Group 1 (M=54%, range, 31%-71%), Group 2 (M=51.25%, range 36%-58%).

Following training of the FO procedure, the mean performance of group one (trained individually) increased to 96.5% (range, 93%-100%) in the post training simulated session. In the post training in-situ sessions the initial mean was 94.25% (range, 85%-100%). As in the MSWO procedure, Kelsey required booster training for the FO procedure in order to meet mastery in the in-situ condition. After booster training, her correct performance increased to

100% bringing the mean for Group 1 to 98% (range, 92%-100%). Correct performance for Group 2 (trained in a group) following FO training increased in both simulated (*M*=98%, range 92%-100%) and in-situ (M=100%) sessions. Once again, this group did not require any additional training to meet mastery in either post FO training condition. Finally, Group 1 maintained high levels of performance in the MSWO procedure following FO training (M=98.5%, range 94%-100%). For Group 2, three of four members also maintained high levels of performance in the MSWO procedure post FO training with a mean of 92.25% (range, 77%-100%). Overall, all participants in both groups demonstrated increased correct responding over baseline and written instructions conditions post BST training in both procedures.

Additionally, results of the staff's data collected in each in-situ condition are highlighted in Table 4 (see Appendix C) (MSWO procedure) and Table (see Appendix C) (FO procedure). These results depict whether a highest preferred item was identified and recorded by staff in each condition and what these items were. Additionally, the number of items ranked by staff members in each condition is also displayed. In the MSWO cold probe and written instructions baselines, highest preferred items were recorded by staff 25% and 63% of sessions, respectively. In the MSWO post training in-situ condition items were identified and recorded by staff in 100% of sessions. In the FO cold probe and written instructions baselines, highest preferred items were recorded by staff 75% and 88% of sessions, respectively. In the FO post training in-situ condition items were identified and recorded by staff in 100% of sessions.

Efficiency

Figure 3 (see Appendix C) depicts the time for Group 1 (trained individually) and Group 2 (trained in a group) to complete BST for the MSWO procedure. Individual training

time for Group 1 participants were as follows; Leanne: 55 minutes, Cheryl: 44 minutes, Sherry: 46 minutes and Kelsey: 46 minutes. Additionally, Kelsey required an additional 35-minute booster session in order to meet mastery in the in-situ condition. The total MSWO training time for Group 1 prior to booster training was 191 minutes with a mean of 47.75 minutes per individual. The total MSWO training time for Group 1 including booster training was 226 minutes with a mean of 56.5 minutes per individual. Figure 5 depicts the individual training times for Group 1. The total MSWO training time for Group 2 was 97 minutes. .

Figure 4 (see Appendix C) displays the results of the training time for each group to complete BST for the FO procedure. Individual training time for Group 1 participants were as follows; Leanne: 44 minutes, Cheryl: 43 minutes, Sherry: 45 minutes and Kelsey: 44 minutes. Booster training for Kelsey in this procedure took an additional 26 minutes. The total training time for the FO procedure for Group 1 was 176 minutes (M=44 minutes) and the total group training time including booster training was 202 minutes (M=50.5 minutes). Figure 6 (see Appendix C) depicts the individual training times for Group 1. The total FO training time for Group 2 was 83 minutes.

Chapter IV: Discussion and Future Research

The present study compared group and individual BST of brief FO and MSWO SPA's for eight staff members across two dimensions: effectiveness and efficiency. Results indicate that eight of nine participants met mastery of 90% or higher across both preference assessments in both simulated and in-situ sessions. The additional participant required only one booster session in order to meet mastery for each procedure. The staff member that required additional training was originally trained in a 1:1 setting. These results demonstrate that effectiveness was not compromised when participants were trained in a group setting. In post training for both MSWO and FO procedures, a probe was conducted in the alternate procedure to demonstrate experimental control. Eight of nine staff maintained mastery in the post FO training MSWO probes. The staff that did not maintain ended the session after 30 seconds of no response indicating some carry over from the FO training. However, all additional participants maintained both procedures post BST training. Additionally, results showed that it took significantly less time to train individuals in a group setting than it did to train them in a 1:1 setting. Staff members trained in a group were trained in less than half the time per individual as those trained in a 1:1 setting. Finally, results of the data collected in the in-situ probes indicate that staff were more likely to identify and record a highest preferred item with written instructions and were able to do this consistently after training in both procedures.

The results of this study add to the literature on staff training of stimulus preference assessments in a variety of ways. First, the outcomes of the study show that BST was effective for staff of varying levels of experience. Although staff experience ranged from two months to over two years of experience, all staff were able to meet mastery after BST regardless of group

or individual training. Additionally, the acquisition of skills was demonstrated in both simulated and in situ sessions for both procedures. These results suggest the benefit of all components of the BST procedure for training both novel and experienced staff in conducting SPA's in multiple environments.

The current study also extends the literature on brief training methods of SPA's. In their work, Roscoe and Fisher (2006) explored brief training methods of SPA's with individuals and suggest that future research examine brief methods for group training. In the current study, both group and individual results were measured in terms of efficiency as well as effectiveness. Using training time as a measure of efficiency, group training was demonstrated to be more efficient than individual training. Time as a resource has been identified as a common barrier when implementing staff training (Sturmey, 2008). In the current study, group training was as effective and took half of the amount of time. In terms of cost effectiveness, this would allow for two staff members to be trained in a group setting for the same cost as one in an individual setting. Also, despite costs, finding time in a clinical setting to conduct training can also be a barrier for supervisors (Sturmey, 2008). Group training allows for staff to be trained in a shorter duration of time than in 1:1.

Finally, the outcomes of this study further validate the importance of all components (instructions, model, rehearsal, and feedback) of the BST model. All staff were given a written instruction baseline and although correct responding did increase in this condition, no participant met mastery with written instructions alone. However, after all components were completed in both 1:1 and group training, staff demonstrated mastery of the skill. In previous literature, BST has been used to train individuals in SPA's in a 1:1 setting (Lavie & Sturmey, 2002; Roscoe &

Fisher, 2008). The current study demonstrated the use of all components of the BST model in group training. Previous work has isolated group training to antecedent measures, in particular a video model with no inclusion of the feedback and role-play components (Weldy et al., 2014). However, the authors also suggested that a video model alone may not be sufficient for all participants, particularly if they do not have the same level of experience as the participants in their study (Weldy et al., 2014). The current study extends on this limitation by conducting group training with staff of varying levels of experience using both the antecedent and consequence components of BST. Staff trained in this setting met mastery of skills for both preference assessments. These results suggest that group training could potentially be used to teach other more complex skills to staff that require all components of BST procedure.

There are some limitations of the current study. The first includes a lack of a social validity measure to determine the participants experience of and satisfaction with the training procedures. Although group training was found to be more efficient, there may be other advantages and disadvantages that cause staff members to prefer one type of training over another. Group training allowed for participants to observe other staff and listen to their questions and ideas. However, although the group training was shorter when measured in comparison to the total of the other groups time, it was longer for the individuals within the group than it was for those in the individual training. As such, the participants may prefer to be trained 1:1 as their training time would have been shorter. A disadvantage of being trained 1:1 would include not being exposed to the ideas and questions of other group members. However, some participants may prefer to ask questions in a 1:1 setting rather than in a group. In his work on BST, Sturmey (2008) identified that training should be effective, efficient, and acceptable.

The present study demonstrated that group training was as effective and more efficient that individual training. Additionally, group training was acceptable for the trainer as it requires less effort (in terms of time) and it did not interfere with as many other responsibilities (Sturmey, 2008). However, the acceptability of the treatment by the participants was not measured. Future work should include social validity measures in order to determine if group or individual training is more acceptable to participants.

Another limitation of the current study was the size of the group. As there were only eight participants, the group size was only four members. In order to complete this training with each member, all participants needed time to role play and listen to feedback. This training group was small enough that only one trainer was required. However, this may not be as manageable in a larger group. As such, the generalizability of the group training is a possible limitation of the current study. Future research could examine BST training in larger groups in order to compare effectiveness and efficiency. Additionally, efficiency could include a measure of both time as well as number of trainers required to complete training as the group size increases.

Another possible limitation of the study was the length of the video model. For both procedures, the video model took over half of the total mean training time in the 1:1MSWO condition (24 minutes with a mean of 47.75 minutes). In the FO 1:1 condition, the video model took just under half of the total mean training time (18 minutes with a mean of 44 minutes). The video included multiple exemplars for the procedure; however, it is unclear if a shorter video model would have been as effective in teaching the procedure. In particular, the group training may not have required as long of a video model as the role play for three participants provided

additional exemplars of the procedure to the other participant. Future research could examine the use of shorter video models to determine if training would be as effective and potentially more efficient.

Another limitation of the study was the order of training of SPA's. As all participants were trained in the MSWO procedure first, followed by the FO procedure there may have been a sequencing effect. Future research could counterbalance the procedures to further demonstrate experimental control. This sequencing effect may be evident in the results of the staff's data collection on client's highest preferred. Staff did not identify high preferred as often in the MSWO (trained first) baselines as they did in the FO baselines. Also, although staff were able to identify high preferred more consistently after training, the results of this data were not validated. Future research could conduct reinforcer assessments to determine whether items identified in post training sessions are more likely to act as reinforcers than those identified in baseline conditions.

Finally, the study provided limited generalization and maintenance data. Although all staff demonstrated generalization through the use of in situ probes, these probes were still limited as each staff completed probes with the same learner for all conditions. Future research could examine multiple in situ probes with a variety of learners. Additionally, maintenance of the MSWO procedure was tested in a post FO probe, in which all staff but one demonstrated maintenance of the skill. However, there were no follow-up data conducted to determine if the skills persisted over time. Future research could include follow up sessions to determine if participants maintained the skills and if there were varying degrees of maintenance and generalization dependent on the initial training setting (group versus individual). Overall, the

current study extended the literature on staff training of SPA's as well as provided avenues for future research in this area.

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Appendices

Appendix A: The Task Analysis/Data Sheet for the MSWO Procedure

MSWO PROCEDURE Observer___ Staff___ Learner____ Condition (circle): Baseline/training/in situ **Pre-assessment steps (only measure once)**	Correct	error	N/A
Staff selects 8 items to assess			
Individually presents each item to the client one at time (30 seconds each)			
Trial 1			
Staff places items in a line or arc in front of the client (equal distance apart)			
Staff instructs client to "pick one"			
If client does not respond, staff repeats instruction only once			
If client pics item staff provides access to item for 10 seconds and records data			
After 10 seconds access, the item is removed from the array			
After removing item, staff repositions remaining items in the array			
If the client attempts to select more than one item/ the staff blocks the attempt and repeats instruction.			
If the client does not choose an item for up to 30 seconds the staff member ends the session			
Trial 2			
Staff places items in a line or arc in front of the client (equal distance apart)			
Staff instructs client to "pick one"			
If client does not respond, staff repeats instruction only once			
If client pics item staff provides access to item for 10 seconds and records data			
After 10 seconds access, the item is removed from the array			
After removing item, staff repositions remaining items in the array			
If the client attempts to select more than one item/ the staff blocks the attempt and repeats instruction.			
If the client does not choose an item for up to 30 seconds the staff member ends the session			
Trial 3			
Staff places items in a line or arc in front of the client (equal distance apart)			
Staff instructs client to "pick one"			
If client does not respond, staff repeats instruction only once			
If client pics item staff provides access to item for 10 seconds and records data			
After 10 seconds access, the item is removed from the array			
After removing item, staff repositions remaining items in the array			
If the client attempts to select more than one item/ the staff blocks the attempt and repeats instruction.			
If the client does not choose an item for up to 30 seconds the staff member ends the session			
Post assessment			
Staff calculates percentage correct for each item within each session			
Staff correctly averages the percentages across sessions			
Staff creates a ranked order based on the percentage average			
Conducts 3 presentation sessions			
Percentage correct (correct steps/applicable steps X 100)	___/___= ___%		

Appendix B: Task Analysis/Data Sheet for the FO Procedure

FO PROCEDURE Observer___ Staff___ Learner____ Condition (circle): Baseline/training/in situ **Steps**	Correct	error	N/A
Staff selects 8 items to assess from a list of caregiver/staff reports			
Staff sets up items around the room			
Staff leads child around the room to ensure they come into contact with all items (manipulates each item and places it in child's hand)			
Staff moves the child within approximately half a meter of the assessment area			
Staff sets the timer for 10 seconds (runs up to 5 minutes)			
Staff moves away from the assessment area			
Staff instructs the client to "play" to initiate the session			
During the assessment the staff recorded manipulation of objects for each interval using a 10 second partial interval recording procedure			
If the learner engaged with the staff at any point, the staff recorded this under social attention on the data sheet			
If client engages with more than one item at a time, staff records both items			
If client does not engage with an item during the interval, staff records no response			
Staff stops session after 30 seconds of no engagement with an item or when 5 minutes is complete			
Post assessment			
Staff correctly calculates the percentage of intervals during which each item is manipulated			
Staff ranks items based on the percentage of intervals manipulated			
Percentage correct (correct steps/applicable steps X 100)	____/_____=____%		

Appendix C: Figures and Tables

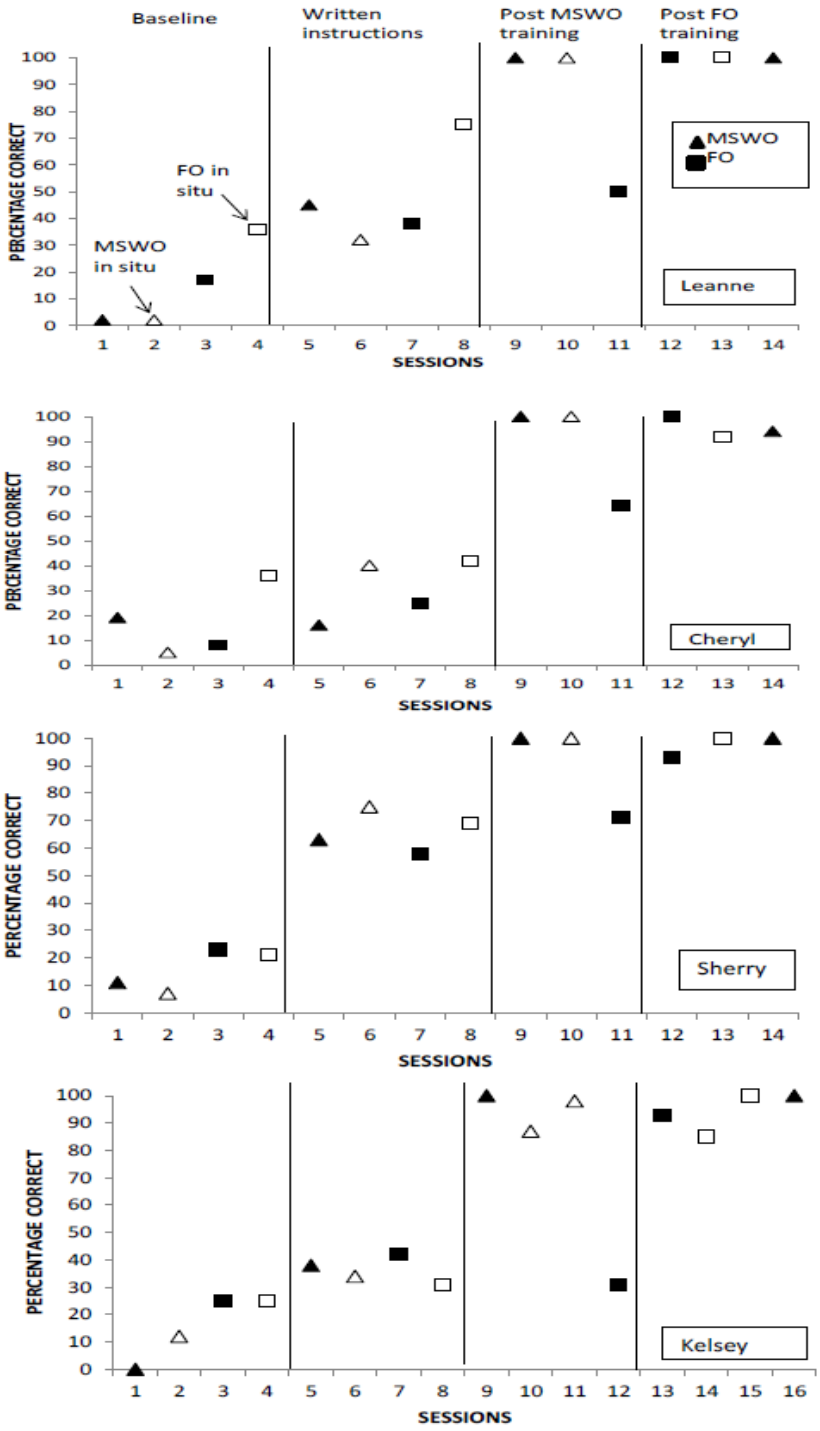

Figure 1. Group 1 (Trained Individually Results Across Four Conditions

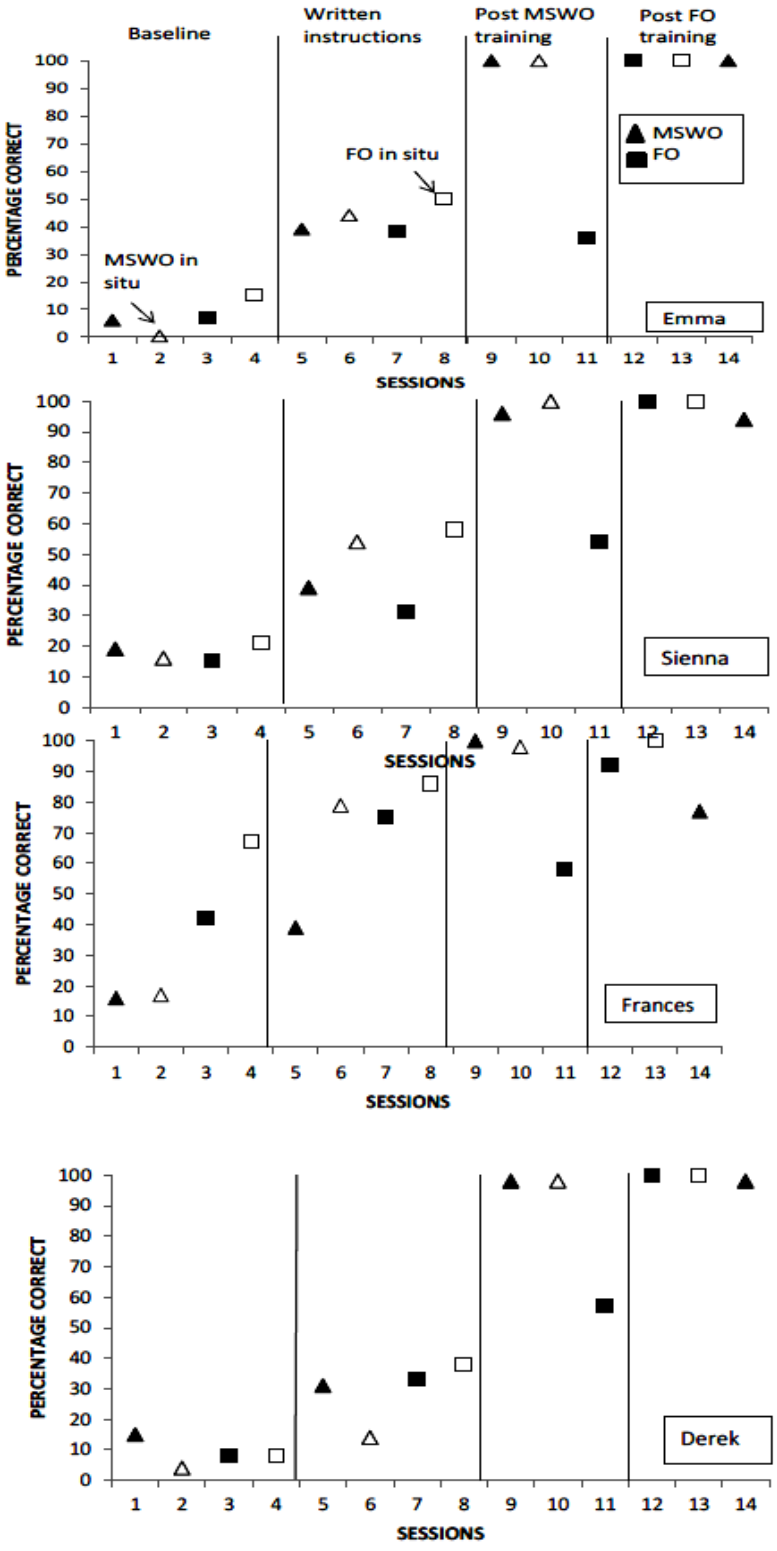

Figure 2. Group 2 (Trained in a Group) Results Across Four Conditions

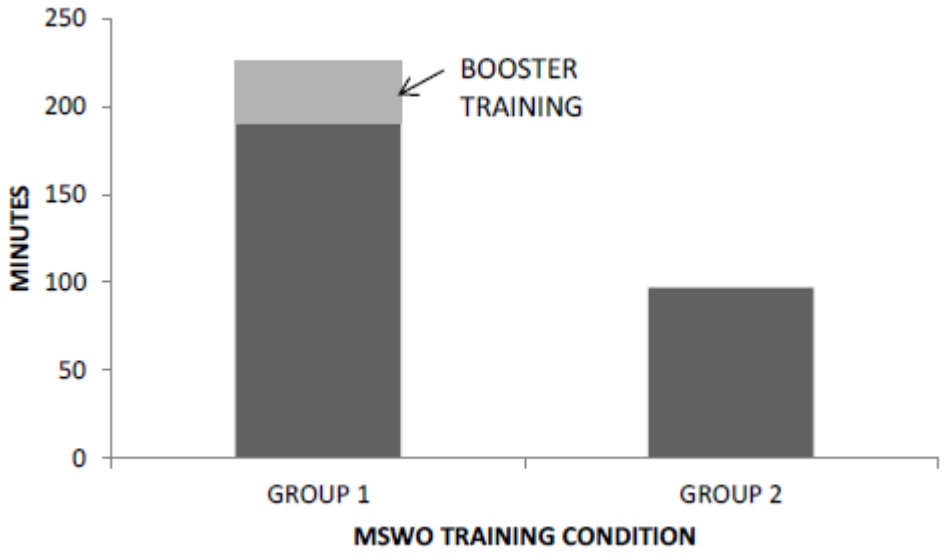

Figure 3. Training Times for the MSWO Procedure for Group 1 and Group 2

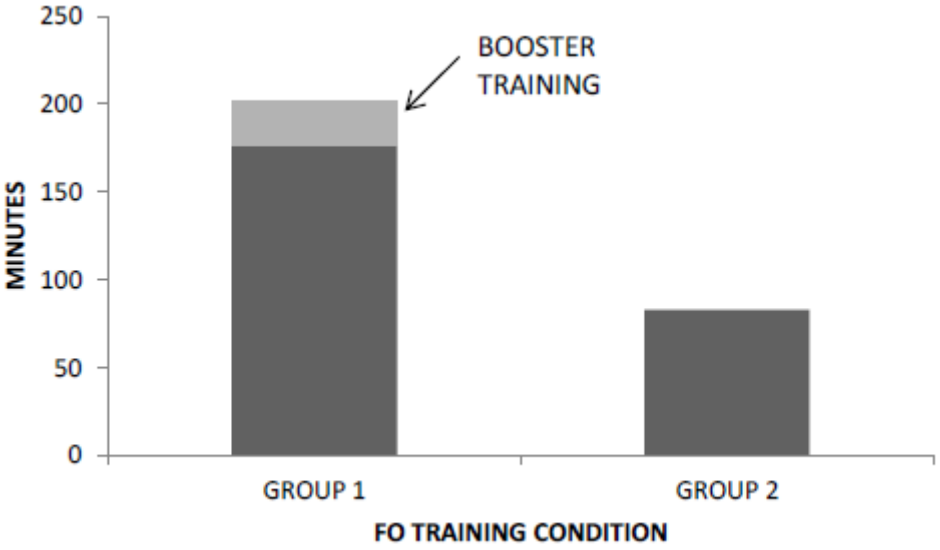

Figure 4. Training Time for the FO Procedure For Group 1 And Group 2

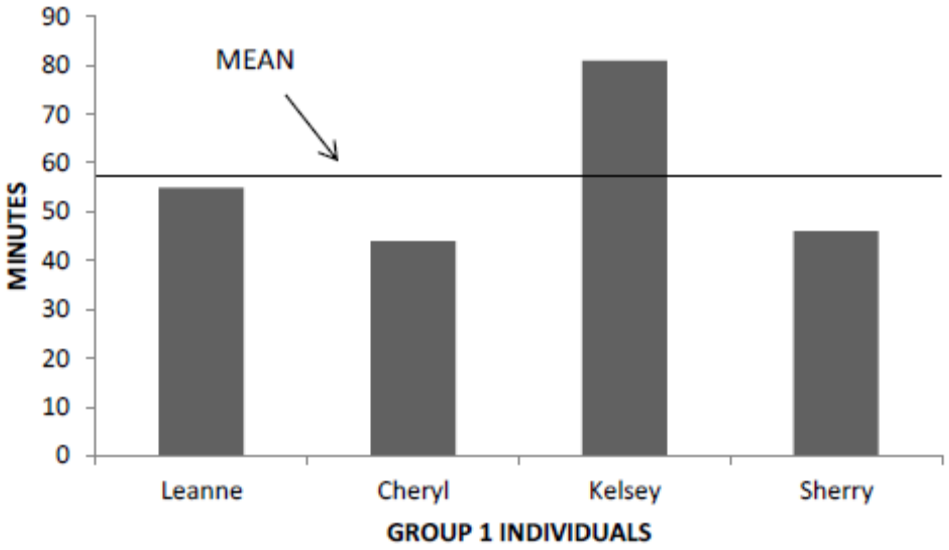

Figure 5. Individual Training Times for the MSWO Procedure

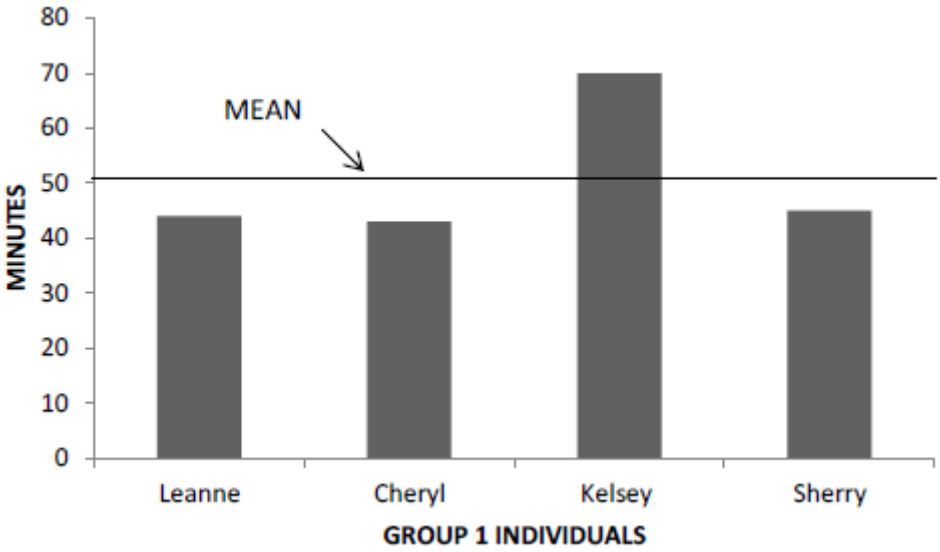

Figure 6. Individual Training Times for the FO Procedure

Table 1

Types of Stimulus Preference Assessments

SPA	Method
Single Stimulus (SS)	• A trial based method that involves presenting the individual with one stimulus at a time and scoring approach responses
Paired Stimulus (PS)	• A trial based method that involves presenting the individual with 2 stimuli simultaneously and recording which stimuli is approached • Each stimulus is matched randomly with all other in the set
Multiple Stimulus with Replacement (MS)	• A trial based method that involves presenting the individual with 3 or more stimuli simultaneously and recording which stimuli is approached • Chosen stimuli are continuously presented in the array
Multiple Stimulus without Replacement (MSWO)	• A trial based method that involves presenting the individual with 3 or more stimuli simultaneously and recording which stimuli is approached • Chosen stimuli are not replaced in the array once approached
Free Operant (FO)	• An observational method, during which the participant is provided continuous access to an array of stimuli during a set period of time • Partial interval recording procedures are used to determine the duration of time the participant engages with each stimulus during the assessment •
Response Restriction (RR)	• A combination of the FO and trial based assessment procedures • Participants are provided with an array of stimuli similar to the FO procedure • Access to stimuli is restricted based on the participant's level of engagement with the stimuli (i.e., set duration of time)

Table 2

Participant Profiles

Name	Training Group	Age	Months of Experience	Previous Education in ABA
Leanne	1	28	16	Yes
Cheryl	1	22	10	Yes
Kelsey	1	28	6	No
Sherry	1	25	3	No
Derek	2	27	7	No
Frances	2	28	24	Yes
Sienna	2	25	4	No
Emma	2	26	27	No

Table 3

Responses for MSWO and FO Simulated Sessions

Responses	Standard Response	Distractor Responses
MSWO: scripted trial by trial (alternating between 2 standard: 1 distractor and 2 distractor: 1 standard)	• Select item and play the entire time	• Grab stimulus not in the array • Select 2 stimuli at once • Don't select in appropriate time • Select item and play for portion of time
FO: scripted with 3 responses per session (alternating between 2 standard: 1 distractor and 1 standard: 2 distractor)	• Play with one item at a time	• Select 2 stimuli at once • Play with more than 1 item at a time • Interact with the instructor • Do not engage for more than 30 seconds

Table 4

Staff Data Collection by Condition for the MSWO In-Situ Sessions

Client	Baseline		Written Instructions		Post Training	
	Highest Preferred	# of Items Ranked	Highest Preferred	# of Items Ranked	Highest Preferred	# 0f Items Ranked
Client #1 (Emma)	N/A	0	N/A	0	Binder/ Puzzle	5
Client #1 (Sherry)	Playdoh	2	Puzzle	5	Playdoh	5
Client #2 (Sienna)	N/A	0	Trains	5	Operation	5
Client #2 (Cheryl)	N/A	0	Blocks	5	Blocks	5
Client #3 (Leanne)	N/A	0	N/A	0	Wind-up toys	5
Client #3 (Derek)	N/A	0	N/A	0	Music toys	5
Client #4 (Kelsey)	Puzzle	5	Bubbles	5	Trains	5
Client #4 (Frances)	N/A	0	Trains	5	Trains	5

Note: N/A denotes that no item was recorded

Table 5

Staff Data Collection by Condition for the FO In-Situ Sessions

Client/Staff	Baseline		Written Instructions		Post Training	
	Highest Preferred	# of Items Ranked	Highest Preferred	# of Items Ranked	Highest Preferred	# of Items Ranked
Client #1 (Emma)	N/A	0	Optimus	8	Playdoh	1
Client #1 (Sherry)	Playdoh	8	Playdoh	8	Building straws	1
Client #2 (Sienna)	Playdoh	8	Playdoh	8	Bubbles	2
Client #2 (Cheryl)	Playdoh	8	Playdoh	2	Wind-up toys	1
Client #3 (Leanne)	Timer	8	Timer	8	Ring stacker	3
Client #3 (Derek)	N/A	0	N/A	0	Wind-up toys	1
Client #4 (Kelsey)	Playdoh	8	Trains/ Tractor	5	Wind-up toys	3
Client #4 (Frances)	Playdoh	1	Trains	8	Wind-up toys	2

Note: N/A denotes that no item was recorded