The Journal of Multidisciplinary Graduate Research
2017, Volume 3, Article 2, pp. 18-32.

An Evaluation of Teachers' Acquisition of and Preference for Stimulus Preference Assessments

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Stimulus preference assessments (SPAs) are objective methods of identifying items or activities that might serve as reinforcers for students. In this study, three teachers were individually taught to conduct four SPAs using behavioral skills training to evaluate whether differential rates of mastery resulted. All teachers learned to implement each SPA correctly and maintained the skills during post-training. Following acquisition, we formally assessed the teachers' preferences for the SPAs to identify whether the teachers preferred one assessment to the others and why. Results showed that the teachers demonstrated clear individual preferences for at least one of the SPAs.

Keywords: applied behavior analysis, concurrent-chains arrangement, stimulus preference assessments, teacher training

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Successful behavior change interventions frequently incorporate positive reinforcement in the form of tangible rewards (Bramlett, Cates, Savina, & Lauinger, 2010). Often times, teachers can ask their students what items they would like to work for. However, some students may not be able to accurately name their preferences for items or activities due to limited communication, social, and/or emotional skills; in these instances, formal stimulus preference assessments (SPAs) are necessary (Roane, Vollmer, Ringdahl, & Marcus, 1998). An SPA is a set of procedures used to identify high preferred items and involves systematically presenting items or activities while measuring whether the student approaches, manipulates, or consumes them (Miltenberger, 2008). Incorporating preferences into students' lives has several advantages including increased task engagement (Cole & Levinson, 2002) and decreased problem behavior (Vaughn & Horner, 1997). Additionally, research has shown that items identified as high preferred may serve as reinforcers (Pence, St. Peter, & Tetreault, 2012), and these reinforcers can be used by teachers to increase academic and social skills frequently targeted in the classroom. As a result, it is important to ensure that teachers are well trained to conduct SPAs.

There are several variations of SPAs that teachers can utilize when identifying students' preferences (Cooper, Heron, & Heward, 2007). Four common variations include the single stimulus preference assessment (SSPA), paired-choice preference assessment (PCPA), multiple stimulus

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This research was completed in partial fulfillment of the lead author's Master's degree in Special Education.

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without replacement preference assessment (MSWO), and free operant preference assessment (FOPA). Each of these SPAs has the same goal of identifying items most liked by students, but vary in their procedural formats. All SPAs begin with the teacher identifying a pool of potentially preferred items through observations, caregiver input, or student nomination. The teacher then systematically presents the items to the student in a one-on-one format and selections or approaches are awarded with brief access.

During the SSPA, the teacher places one item in front of the student for approximately 5-10 seconds. Contingent on approach responses, the teacher provides limited access to the item (Pace, Ivancic, Edwards, Iwata, & Page, 1985). Trials continue until the teacher presents all items individually at least once. Items approached more frequently than others are considered to be more highly preferred. During the PCPA the teacher presents two items simultaneously to the student, and contingent on an approach response toward one item, the teacher provides limited access to that item (Fisher et al., 1992). Trials continue until each item has been paired with every other item. Similar to the SSPA, items that are selected more frequently are considered high preferred.

During the MSWO, the teacher presents an array of all items to the student, and he or she is instructed to select one of the items by saying "Pick one" (DeLeon & Iwata, 1996). Contingent on selection of an item, the teacher provides limited access to the item and removes the remaining items from the array. Once the time expires, the teacher presents the next trial with only the non-selected items. Trials continue until each item has been selected, or until the student no longer selects an item. Items selected during early trials are considered higher preferred than items chosen in later trials. Finally, the FOPA is a SPA that varies from other assessments in that items are not presented via trials. Rather, the teacher distributes a variety of items that are freely accessible in a designated area for a certain period of time (e.g. 5 min), and the teacher tells the student that he or she can play with the items. Items are never removed or replaced, and the student can engage with as many items as he or she chooses at any given time. The teacher then records the duration spent engaging with each item (Roane et al., 1998). Items with longer engagement duration are identified as higher preferred than items with low engagement duration.

SPAs are valuable tools for teachers because they provide objective data regarding preferences as opposed to reliance on teacher or caregiver opinions or perceptions. Green et al. (1988) found inconsistencies in the results from a SPA conducted with individuals with moderate to severe disabilities and a ranking scale given to caregivers. Similarly Cote, Thompson, Hanley, and McKerchar (2007) found poor correspondence between teacher rankings of preferred items and results from a SPA (i.e., PCPA). Despite the advantages of SPAs for teachers and students, Graff and Karsten (2012) found that staff training and knowledge in the area of SPAs were low within the school setting. In fact, even though teachers attend numerous mandatory staff trainings annually, they rarely discuss SPAs and their benefits when working with students with behavioral needs (Lerman, Tetreault, Hovanetz, & Garro, 2008). Therefore, "training on procedures to conduct preference assessments would benefit teachers and other professionals who develop and implement behavioral interventions" (Pence et al., 2012, p. 346). Hence, to increase the number of professionals that are skilled in implementing SPAs, a maximally effective and efficient training procedure should be used (Pence et al., 2012).

Behavioral skills training (BST) is one common procedure used to teach new, complex skills to teachers (Miltenberger, 2012). BST is a competency-based training procedure that incorporates four components: instructions, modeling, rehearsal, and feedback. During each training session, the trainer provides the teacher written and oral instructions, a correct demonstration of the skill, an opportunity to practice the skill to mastery, and praise and corrective feedback regarding performance. Numerous

research studies have demonstrated the effectiveness of BST to train professionals to implement assessments and behavior-change procedures (including some SPAs) with children (Hogan, Knez, & Kahng, 2015, Lavie & Sturmey, 2002; Roscoe & Fisher, 2008; Sarokoff & Sturmey, 2004).

Training teachers to conduct SPAs is desirable; however, training alone may not result in use of the procedures in the classroom. That is, if the consumer (teacher) finds the assessment to be low preferred (or aversive) due to the time, effort, or materials required, it is unlikely that he or she will emit that behavior (conducting SPAs with students). SPAs that are more preferred to the teacher may be implemented with greater fidelity and more frequently, increasing the use of preferred items delivered contingent upon appropriate student behavior (Lerman et al., 2008; Roscoe & Fisher 2008; Weldy & Rapp, 2014). Therefore, it is important to not only train teachers in the correct implementation of SPAs, but to evaluate their preference for the SPA variations.

One method of assessing teacher preference is to ask the teacher to simply name his or her favorite SPA. However self-reports may not yield accurate results due to reactivity, bias, or perceived pressure from others (e.g., administrators). Therefore, a formal and objective way to assess preference is to use a concurrent-chains arrangement (Hanley, 2010; Hanley, Piazza, Fisher, Contrucci, & Maglieri, 1997; Hanley et al., 2005), during which teachers make selections to initial links (e.g., color cards or SPA names) that result in access to terminal links (e.g., conducting different SPAs). Hanley (2010) discussed the importance of including the recipients (e.g., teachers and students) of behavior change procedures in the social validation process and emphasized how behavior change procedures needed to be socially acceptable in addition to effective.

It is evident from previous literature that teachers have a variety of SPAs from which to select. However, more research is warranted to identify effective training procedures and factors that may affect classroom use. The purpose of this study was two-fold. First, we examined the effectiveness of BST on teachers' mastery of four commonly used SPAs. Second, we assessed the social validity of the procedures through a formal assessment (i.e., concurrent-chains arrangement) and questionnaire.

Method

Experimental Design

A multiple baseline design across participants (Baer, Wolf, & Risley, 1968) was used to determine the effectiveness of BST on participants' correct implementation of the four SPAs. We chose to use a single-subject research design because it is the most commonly used design in applied behavior analytic research (Cooper et al., 2007). Additionally, a single-subject research design allows for repeated measures of a participant's behavior over time, and it compares an individual participant's baseline (control) performance to intervention performance (Cooper et al., 2007). To demonstrate experimental control, the BST (training) phase was implemented sequentially across participants only once stability in baseline responding was observed. When intervention was implemented with one participant, the other participants remained in the baseline phase to confirm that changes in behavior occurred immediately and only as a direct result of the intervention. The intervention was then implemented with each participant as others progressed. The order of assessments taught during BST was SSPA, PCPA, MSWO, and FOPA due to the natural progression of steps associated with each assessment (modified from Lerman et al., 2008).

To assess participant preference of the SPAs, we used a concurrent-chains arrangement (Hanley, 2010). The concurrent-chains arrangement involved exposing the participants to initial links of a behavior chain (color cards) and, contingent on their selection of a color card, they conducted the

associated SPA (terminal link). To show stability of preferences over time, we initially presented all four SPAs during a trial of the concurrent-chains arrangement. Once the preference criterion was met of selecting one SPA for three consecutive trials, the experimenter removed the color card associated with that SPA and presented only the three remaining SPAs to identify the second most preferred assessment. These two phases were repeated to show replication of preferences within an ABAB reversal design.

Participants, Setting, and Materials

Prior to conducting this study, the University IRB committee reviewed and approved the research protocol and procedures. The lead author reviewed the study's procedures with each participant individually, and each participant provided written informed consent prior to participating in the research sessions. All participants were assigned a pseudonym to protect their identities.

Three teachers from local schools who teach general education or special education classes participated in this study. Participants were chosen because they were employed full time as public education teachers and had little to no experience with SPAs. Ms. Sparks taught in the elementary setting where her students ranged from kindergarten to fourth grade. She had four years of teaching experience, and she taught special education inclusion and resource classes in math and English. Mr. Schoon taught Prekindergarten and had four years of teaching experience in the public setting and four years of experience in the private setting. Ms. Paul taught at a high school campus in the 18 plus classroom. She had 18 years of experience teaching in a self-contained special education classroom for students with mild, moderate, and severe disabilities. Ms. Paul's students had met all of their graduation requirements and received school instruction school until the age of 22.

Sessions were conducted individually in the participant's home or a private office. Sessions were conducted one to three days per week with one to five sessions per day. During each session, the experimenter (lead author) and participant sat across from the each other at a table. The only materials available were the stimuli associated with each phase and assessment of the study (e.g., toys, data sheets, etc.). Written instructions for each SPA were adapted from Lerman et al. (2008), and a similar task analysis was created for the FOPA (see Table 1). Colored cards that were paired with each SPA measured 23 by 30 cm; an orange card was paired with the FOPA, a brown card was paired with the MSWO, a pink card was paired with the SSPA, and a multi-colored striped card was paired with the PCPA.

Data Collection, Inter-Observer Agreement (IOA), and Procedural Integrity

Throughout the study, the percentage of correct steps of each SPA was scored on a data sheet. Each data sheet depicted a written task analysis of each step for each SPA, and each step was scored as correct or incorrect. In order for a step to be scored correct, the participant had to respond correctly on every trial of that corresponding step in each session. Because some of the SPAs required the presentation of items across several trials, a step in the task analysis was scored as correct only if it was performed correctly on every trial. If even one trial was incorrect, the entire step was scored as incorrect. During the concurrent-chains arrangement, we recorded the cumulative number of times each color card associated was selected. Selections were defined as touching, stating, or naming the color card (or SPA associated with the color).

All sessions were videotaped to allow a second, independent observer to collect inter-observer agreement (IOA) data. IOA during the BST (training) phase was calculated by dividing the total

number of agreements by the total number of agreements plus disagreements and multiplying by 100. An agreement was defined as both observers scoring a correct or incorrect response on the data sheet for a given step. IOA was collected for 33% of baseline sessions for Mrs. Paul, 38% for Ms. Sparks and 31% for Mr. Schoon. IOA was calculated to be 100% across each participant for baseline sessions. IOA was collected for 50% of all BST sessions across participants, and IOA was calculated to be 100% for each participant. IOA was collected for 100% of all post-training sessions across each participant and IOA was calculated to be 100% for each participant. IOA for the selection responses of the concurrent-chains arrangement was calculated by dividing the total number of agreements by total number of agreements and disagreements and multiplying by 100. IOA was collected during 33% of sessions during the concurrent-chains arrangement for each participant. For all participants, the agreement was 100% across all trials.

Procedural integrity data were scored by the second observer during 50% of all sessions in baseline, BST, post-training, and the concurrent-chains arrangement to ensure that the procedures were implemented with fidelity. The experimenter used a written script during each session to teach the SPAs and engaged in an equal number of problem behaviors, dual selections, and no selections across participants and assessments. The second observer used the scripts to record whether the experimenter completed each step correctly. Procedural integrity was calculated for each session by dividing the total number of steps completed correctly by the total number of steps on the script. Procedural integrity scores were 100% for all phases with all participants.

A social validity questionnaire developed by the researchers for the purposes of this study was administered to each participant following completion of the study (see Table 2 for questions). The social validity questionnaire was administered to gain teacher insight on the procedures, goals, and outcomes of the study. Additionally, participants were asked to state their most preferred SPA to measure consistency with the concurrent-chains arrangement and gather qualitative reasons for the identified preference. The questionnaire asked the participants to rank various statements (see Table 2) from 1 (*strongly disagree*) to 5 (*strongly agree).*

Procedures

SPA training. The purpose of baseline was to identify the percentage of correctly performed steps in each SPA in the absence of training. During each baseline session, the experimenter instructed the participant to conduct each of the SPAs and provided materials necessary to do so (e.g., data sheet, toys); no instructions or feedback were provided. Baseline sessions continued until all four SPAs were assessed at least three times. After a stable baseline was established for all participants, BST was implemented sequentially to teach one SPA at a time (per session) to each participant. The order in which the SPAs were taught was adapted from the Lerman et al. (2008) study; because many of the SPAs had similar steps, we anticipated carryover when beginning a new SPA.

Intervention consisted of BST and included instructions, modeling, rehearsal, and feedback. Specifically, the experimenter provided written instructions to the participant in the form of a task analysis and read the directions aloud. Next, the experimenter modeled the correct behaviors associated with each step in the task analysis. During rehearsal, the experimenter role played the behaviors with the participant until all steps of the task analysis were demonstrated correctly. The experimenter provided immediate feedback in the form of descriptive praise for correct performance and corrective feedback for incorrect performance. To aide in discrimination of the SPAs, the experimenter placed a colored card with the name of the SPA on the table during each session. After the training portion of the session was complete, the experimenter had the participant engage in the

SPA again to assess the effects of training on performance. Once a participant completed a SPA with 100% accuracy for two consecutive sessions, the next SPA was taught. Training sessions continued until a participant met mastery for all SPAs.

Following training, we conducted post-training sessions to evaluate performance in the absence of training. Sessions were the same as baseline sessions and no instructions or feedback were provided. If participants scored 100% correct on each SPA during post-training, the concurrent-chains arrangement was conducted. Failure to meet 100% correct during post-training would have resulted in booster training sessions.

Social validity assessments. A concurrent-chains arrangement was used to obtain an objective measure of individual preference for the four SPAs. During each trial, the experimenter placed four colored cards on the table, each of which had been present and correlated with a SPA during training sessions. To begin, the experimenter asked the participant to select the card associated with the SPA that he or she wanted to complete. The experimenter then provided necessary materials and instructed him or her to conduct that SPA. Sessions continued until the preference criterion was met. Following the concurrent-chains arrangement, the experimenter administered a questionnaire developed specifically for the study to gather information regarding the acceptability of the procedures and goals. The questionnaire targeted the goals and procedures of the training procedure, as well as a qualitative assessment of preference. The experimenter asked each participant to complete the questionnaire honestly, accurately, and independently.

Results

Figure 1 shows the percentage of correct steps for each participant when conducting the four SPAs. During baseline, all participants showed very low, stable results with 0-20% correct steps across SPAs. During the BST (training) phase, Mrs. Paul and Mr. Schoon scored 100% for two consecutive sessions when conducting the SSPA, which met mastery criteria. Ms. Sparks scored 85.7% for one session, and the following two sessions scored 100% which met mastery criteria for the SSPA. All participants met mastery criteria of 100% correct steps for two consecutive sessions for each of the remaining SPAs (i.e., PCPA, MSWO and FOPA). During post-training, all participants maintained the skills at 100% accuracy for each SPA.

Figure 2 shows the results of the concurrent-chains arrangement for all participants. When given the choice to implement any of the four SPAs, Mrs. Paul and Mr. Schoon consistently selected the FOPA, and Ms. Sparks selected the MSWO. Following three consecutive selections of any one SPA, only the three remaining SPAs were presented. Mrs. Paul selected the SSPA, Ms. Sparks selected the FOPA, and Mr. Schoon selected the MSWO. These results were replicated for all participants when they were represented with four SPAs followed by only three SPAs.

Table 2 shows the results from the social validity questionnaire. Overall, the results were favorable in that the participants strongly agreed that the training procedure (BST) improved their knowledge of implementing the SPAs. Additionally, the participants strongly agreed that they would be able to implement the SPAs in their classroom. However, the participants rated the time requirements less favorable. That is, Mrs. Paul indicated that she strongly disagreed that the time requirements were reasonable. Anecdotal data suggested that our mastery criteria may have been too stringent, given that she responded at 100% correct continuously. To provide an additional measure of preference, each participant was asked to name his or her favorite SPA and indicate why. Mrs. Paul identified the FOPA because "it lets students choose instead of me presenting them with choices they could make on their own. This is also the quickest assessment." Mr. Schoon also identified the FOPA

because "it is less time consuming with less time taken away from instruction in my general education classroom." Finally, Ms. Sparks identified the MSWO because "it requires less time and can be fairly easily implemented in my classroom. It was also simple to implement and record; some of the others required a lot more on the part of the teacher." All self-reported preferred SPAs matched those obtained from the concurrent-chains arrangement.

Discussion

We sought to evaluate the effectiveness of BST on three teachers' correct implementation of four commonly used SPAs. Additionally, we evaluated social validity by measuring preference for the various SPAs. The results of this study demonstrated that BST was an effective and efficient procedure for training all three participants to implement four types of SPAs. The results of the SPA training are consistent with Lerman et al. (2008), which showed low levels of correct responding during baseline followed by rapid mastery of the skills. That is, almost all participants reached 100% correct responding during the first training session, and all maintained high levels following training sessions. Additionally, each participant showed clear preferences for one or more of the SPAs indicated through a formal assessment and a questionnaire.

This study extended Lerman et al. (2008) by training three licensed teachers four SPAs (instead of three SPAs) to mastery through the use of BST. We also extended Hanley et al. (1997) by using a concurrent-chains arrangement to identify teachers' preferences after learning the SPAs. To our knowledge, this is the first study to apply the concurrent-chains arrangement to typically developing adults as an objective measure of preference. Despite the fact that the concurrent-chains arrangement required additional session time and revealed the same results as self-reported vocalized preferences via the questionnaire, these findings verify that typically developing adults have strong preferences for different procedures. In addition, the correspondence of results between the concurrent-chains arrangement and questionnaire provide evidence that self-report data may be valuable when little time or resources are available.

While examining each teacher's preferred SPAs, there was inconsistency with respect to which SPA was high preferred across participants. That is, two of the teachers preferred the FOPA and one teacher preferred the MSWO, and each provided a different reason to defend their preference. It is important to note that the teachers did show consistency with their own selections in that their first and second preferred selections were systematically replicated via the concurrent-chains arrangement and were later verified via the questionnaire. These data emphasize why it is important to incorporate a variety of social validity assessments into the training process. Had this training taken place during a teacher in-service, the trainer might have only taught one SPA (to save time), and the principal may have subsequently required the teacher to conduct that SPA with his or her students for the academic year. Unfortunately, if the one SPA taught during the in-service was low preferred, one might assume that the teacher would be unlikely to comply with the principal's request and incorporate it into the classroom routine. Therefore, these data highlight how important it is to evaluate preferences for behavior-change procedures prior to instructing professionals to engage in them. As a result, trainers, administrators, and consultants may seek to increase their use of social validity assessments, including self-report methodologies (Kormos & Gifford, 2014; Wilder, Ellsworth, White, & Schock, 2003), given the large amount of information that can be gathered in a relatively short period of time.

The social validity data also allowed us to identify any perceived strengths or limitations of the procedures viewed by the participants. For example, one participant strongly disagreed that the time commitment of the procedures was reasonable. It should be noted that the participants completed the

social validity questionnaire following the completion of all phases of the study (baseline, intervention, and preference phases). Thus, it is unclear whether the teacher rated the efficiency of the BST intervention or the entire study. Despite the low rating, we are confident the BST procedure was efficient given the small number of training sessions needed to master each SPA.

The results of this study have several implications for school-wide implementation, staff trainings, and teacher preparation. First, BST increased correct responding quickly for all teachers, suggesting that BST might be a desirable procedure for training other necessary skills to school professionals. Several studies have shown that BST is an effective training procedure, and these results replicate those findings (Hogan, Knez, & Kahng, 2015, Lavie & Sturmey, 2002; Roscoe & Fisher, 2008; Sarokoff & Sturmey, 2004). The data obtained from the questionnaire support the continued use of BST, as all three teachers strongly agreed that their knowledge of implementing the SPAs improved. The data from the questionnaire (Table 2, question 8) also suggest that the teachers support efficient training sessions, which could be possible with a less stringent mastery criterion (one session at 100% correct) or use of a multiple probe design (Horner & Baer, 1978).

Second, variations in preferences across teachers highlight the idiosyncrasies that are involved in preference and why offering an array of evidence-based strategies (as opposed to only one strategy) is superior. Future research might address the specific variables that affect teacher preference, including limited time, classroom responsibilities, student population, perceived cost of materials, and lack of previous training. Third, training in evidence-based procedures using BST may be best introduced at the level of teacher preparation rather than while the teacher is fully employed to ensure the students maximally benefit for the greatest amount of time. The teachers in this study each had varied years of experience teaching, yet had never conducted SPAs despite the known benefits. Lack of use may have been a result of previous poorly-structured trainings, barriers to access current literature, and time, resource, or financial constraints. Therefore, by targeting teacher candidates, future research may be able to address what variables can be manipulated to increase the use of SPAs (and other evidence-based strategies) in the natural setting.

Although we observed fast acquisition of and clear individual preferences for the SPAs, we identified some limitations that could be addressed with future research to improve upon the existing literature base. First, the sessions were not conducted in a school setting, which is the desired target setting for teachers to use SPAs. The contrived setting (home or private office) allowed for controlled data, exposure of teachers to the same situations, and the opportunity for questions; however, it also limited the array of "real-life" training examples that could be provided (e.g., multiple ages and functioning levels of students). Additionally, we were unable to evaluate whether the skills transferred to the natural setting with high integrity in the absence of additional training. Future research could address these limitations by conducting all SPA trainings in the teachers' classrooms with real students and addressing generalization of the skills across settings and students.

Another limitation is that we did not conduct an "instructions only" baseline condition, which is common when evaluating the effects of BST. However, each teacher had indicated that he or she had previously heard of SPAs through staff trainings. Therefore, we wanted to gather a more natural baseline of knowledge related to SPAs. Future research might also include an "instructions only" baseline phase to evaluated whether the full training package was necessary. Finally, all SPAs were taught in the same order to each participant, which may have resulted in confounding order effects. Future research may extend this study by varying the order in which assessments are taught to identify whether fast acquisition still occurs.

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Table 1

Task Analysis Steps for each Stimulus Preference Assessment

Stimulus Preference Assessment	Task Analysis Steps
Single Stimulus Preference Assessment (SSPA)	1. Allowed time to sample items. 2. Presented item(s) correctly (based on format used). 3. Waited at least 5 s for student response. 4. Permitted 20 s access to item selected. 5. Collected data appropriately.
Free Operant Preference Assessment (FOPA)	1. Organized items in environment prior to client arrival. 2. Told student they can play. 3. Recorded time spent with each item on data sheet. 4. Terminated assessment after 5 minutes and removed items. 5. Calculated data.
Multiple Stimulus Preference Assessment (MSWO) and Paired Choice Preference Assessment (PCPA)	1. Allowed time to sample items. 2. Presented item(s) correctly (based on format used). 3. Waited at least 5 s for student response. 4. Permitted 20 s access to item selected. 5. Immediately removed items(s) not selected. 6. Blocked selection of multiple items. 7. Item(s) re-presented. 8. Collected data appropriately.

Table 2

Social validity questionnaire responses

Questions	Mrs. Paul	Ms. Sparks	Mr. Schoon
1. The use of behavioral skills training improved my knowledge of implementing four different preference assessments.	5	5	5
2. The target behavior of teachers correctly implementing preference assessments in their classroom is of sufficient concern to warrant the use of this intervention	3	4	4
3. I believe that this intervention will produce effective results if implemented across the district.	4	4	3
4. I understand the intervention steps in completing the four preference assessments.	5	5	5
5. The intervention can be easily incorporated into my classroom system.	4	4	5
6. I believe that I can accurately implement this intervention in my classroom.	5	5	5
7. I have the necessary materials to implement this intervention accurately.	5	4	5
8. The time requirements of this intervention are reasonable.	1	4	3
9. I believe that the assessment with the colored cards accurately identified the preference assessment I liked the most.	3	4	4
10. Which preference assessment did you like the most and why?	FOPA	MSWO	FOPA

Note. Ranking scale: 1 was strongly disagree, 2 was somewhat disagree, 3 was don't agree or disagree, 4 was agree and 5 was strongly agree.

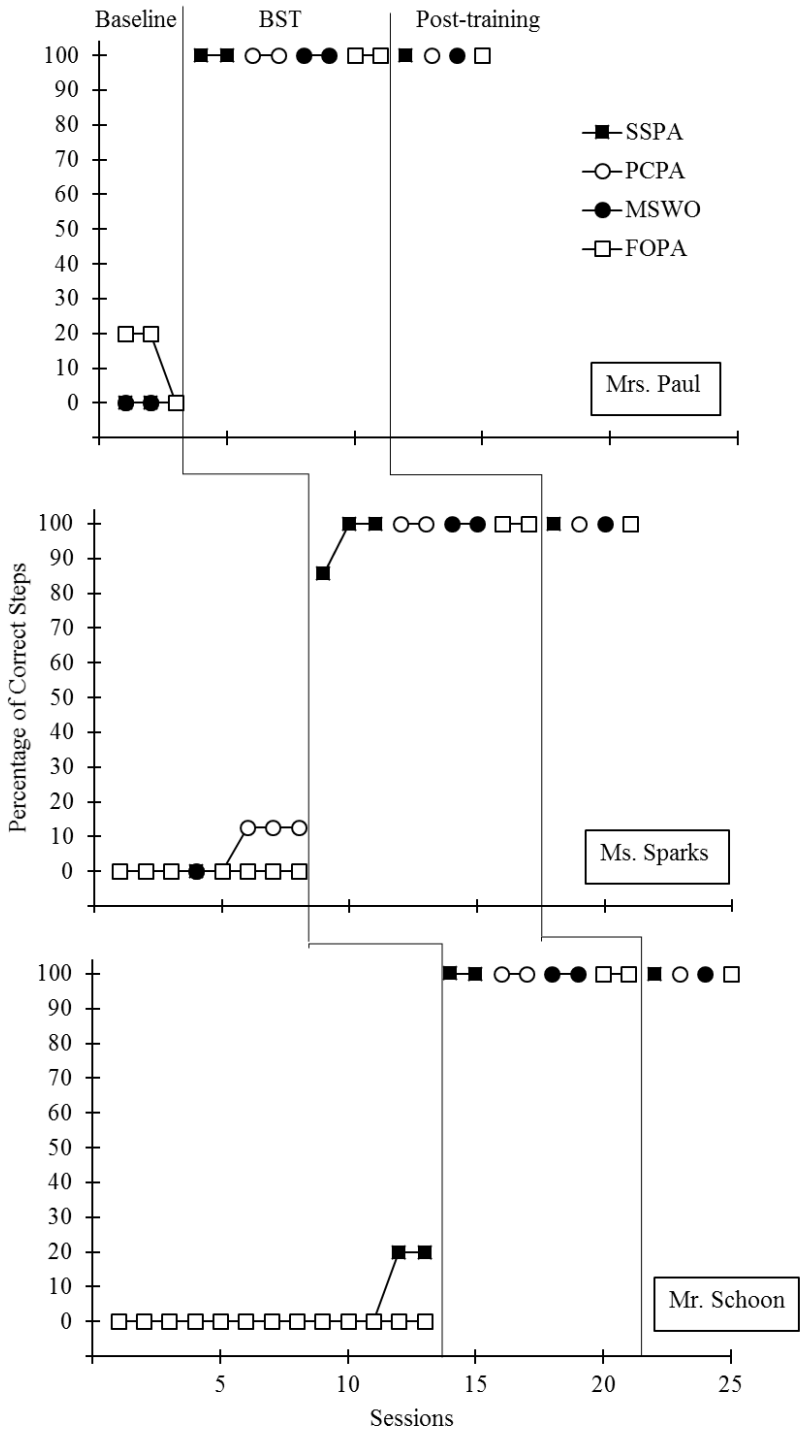

Figure 1. Percentage of correct steps for singe-stimulus (SSPA), paired choice (PCPA), multiple stimulus without replacement (MSWO), and free operant (FOPA) preference assessments during baseline, BST, and post-training for all three teachers.

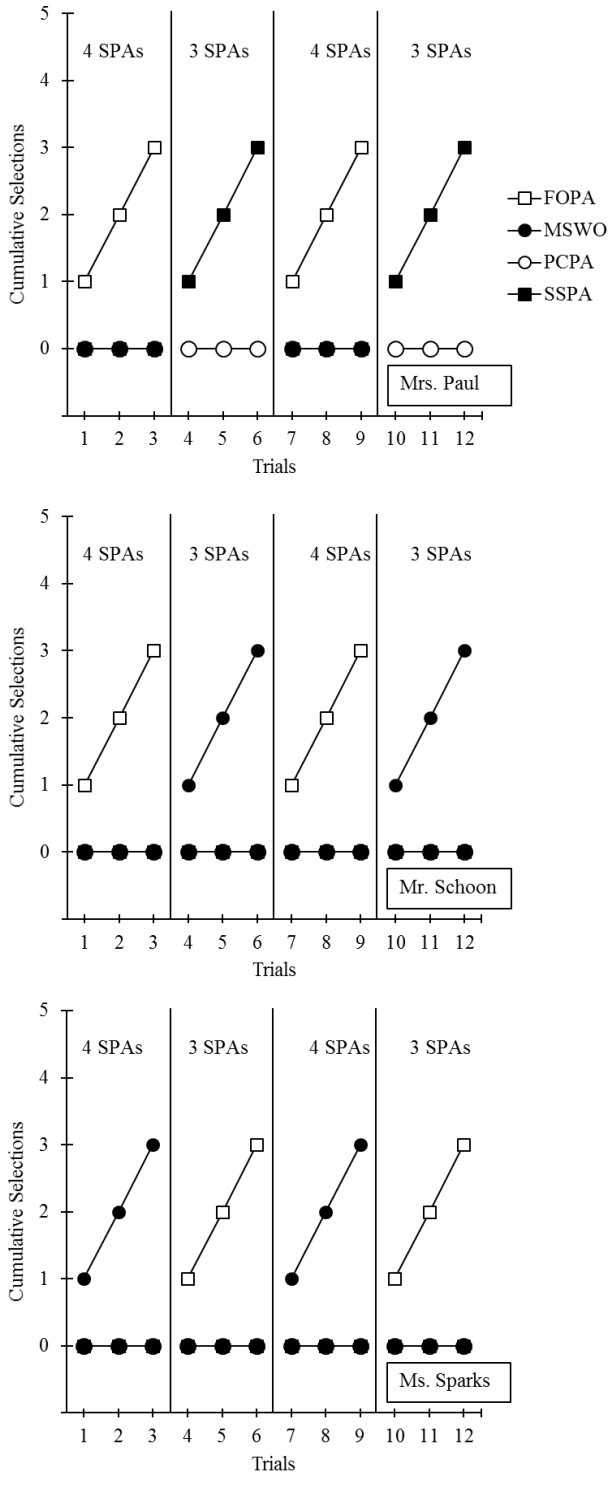

Figure 2. Number of cumulative selections during the concurrent-chains arrangement for all three participants when four preference assessments (4 SPAs) and three preference assessments (3 SPAs) were available.