The Effects of Behavioral Skills Training on Staff Implementation of Multiple Stimulus without Replacement Preference Assessment

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Abstract: In this study, three special education teachers were trained to evaluate preferences without alternative multiple stimulus in 10 children with special needs using a multiple baseline across subjects experimental design and behavioral skills training program. The results showed that the behavioral skill training significantly improved the accuracy of the three special education teachers' preference assessment procedures, and the skill was generalized in the preference assessment of other special children.

Keywords: behavioral skills training, special education teachers, special children, preference assessment

1. Introduction

In 1981, Poche et al. proposed Behavioral Skills Training (BST) [1], which is used to teach certain Skills to individuals. Generally speaking, BST includes an intervention training package. In their experiments to improve children's self-protection skills, they divided BST into modeling, behavioral rehearsal and social reinforcement. The teacher acts as the child and shows the child how to present the target behavior and provides reinforcement for the child's correct response.

With the gradual development of BST, researchers have further divided BST into instruction, modeling, rehearsal and feedback[2]. Instruction refers to the describing of the target behavior, which included what should be done, what should not be done, and when to do it. Modeling means that the trainer teaches skills by on-site demonstration or video demonstration. Rehearsal is to show skills in the form of simulation or role play, from easy to difficult, practice many times, until the learner has mastered the skill. Feedback is immediate feedback on the learner's performance, including praise and correction based on the performance of learners. BST has been proved by a number of studies to be an evidence-based practice method that can be used to train teachers, students and company employees[3]. Himle et al used BST method to teach elementary school students in ordinary schools weapons safety skills in 2004[4].

In the field of special education, more and more researchers are using BST to teach special children target skills and train special education teachers and parents. Sarokoff and Sturmey used the BST method in 2004 to improve the level of special education teachers in Discrete Trial Training [5]. Lavie and Sturmey also adopted the BST method to train special education teachers in the evaluation of paired stimulus preference in the literature in 2002, which also proved the effectiveness of the BST method[6]. Based on this, this paper will continue to explore the effectiveness of BST in improving teachers' evaluation ability of Multiple Stimulus without Replacement (hereinafter referred to as MSWO).

2. Research methods

2.1 Participants

Participants in this study included 3 special education teachers and 10 children with special needs. Teachers A, B and C have been engaged in Applied Behavior Analysis (ABA) teaching for two months, half a year and one year respectively, and have not participated in preference assessment training before. Ten special children aged 4-8 were diagnosed with autism spectrum disorder, language retardation and intellectual development disorder. Currently, all 10 children are receiving ABA rehabilitation intervention in a certain institution, and the training duration is 1-2 hours a day.

In the process of MSWO assessment, children are required to make a choice of the item, after which the preference will be removed. Therefore, the selected children in this study have the ability to distinguish stimuli and make choices, and on most occasions, they demonstrated no problem behavior in removing the preference.

2.2 Setting and materials

This study was conducted in a training room. Based on the results of a preference questionnaire, the researchers prepared five items for each of the 10 children, including toys and food. The researchers also signed letter of consent with the participants' guardians.

2.3 Experimental design and measurement

This study adopt multiple baseline across subjects experimental design, the reason to choose this design is that: This research involves three special-education teacher, therefore, it enables researchers to demonstrate the experimental control under different conditions. Experimental replication was used to confirm the functional relationship between behaviors and interventions, and the design was also suitable for the establishment of new behaviors.

The independent variables of this study refers to the BST method, which includes instruction, modeling, rehearsal and feedback. The researcher initially explained to three teachers how to conduct the MSWO assessment assessment, and asked three teachers to act as students respectively. The researcher demonstrated the specific operation procedures to them, and asked the three teachers to practice, combined with immediate feedback, to ensure that they had mastered this skill.

The dependent variable measurement refers to the percentage of the three teachers who correctly performed the MSWO assessment steps. Considering the literature of DeLeon and Iwata, the assesser divided the operation steps into the following ten parts, as shown in Table 1. Three teachers' responses were recorded for each teaching step on the assessment step checklist. The operating procedures were in full compliance with the steps in the checklist, and were marked with +; those not in full compliance were marked with -.

After the ten steps are completed, it can be taken as one complete trial. Each child will be assessed for three trials. Three trials mean one session, and only one child will participate in the assessment for each session. The percentage of each teacher performing the MSWO assessment steps correctly is calculated by dividing the total number of MSWO assessment steps performed correctly in the three trials by the total number of 30 steps performed correctly in the three trials and multiplying by 100%.

Table 1. Operation checklist for MSWO assessment

1. Based on the questionnaire survey, the teacher prepared 5 items needed for the assessment;

2. The teacher put 5 items in front of the children, and the 5 items are placed in a straight line with each two items 8 cm apart;

3. Children are asked by the teacher to "choose one".

4. After the children make the choice, the teacher removes the remaining items and makes a note;

5. The teacher allows the children to eat the food they choose or children are allowed to play with a choice of toys for no more than 30 seconds;

6. The teacher presented the items to the children again. The selected items did not appear any more. The teacher put the remaining items in a random order with an 8cm interval between two items;

7. Children are required by teachers to "choose one", after the children make a choice, the teacher removes the remaining items and make a correct record, the teacher allows the children to eat the selected food. Children are allowed to play with a selection of toys for no more than 30 seconds. The teacher follows this rule, presents the remaining items, and repeats the above steps to continue the assessment until all items are selected;

8. If the child has not made a choice within 30 seconds, he/she is repeatedly told to "choose one". If the child has not made a choice within 30 seconds, the assessment is finished and the first trial of assessment is finished;

9. Assess the second and third trials according to the above steps, with a break of 5 minutes for each trial;

10. Count the points selected for each item's three trials and rank them from highest to lowest.

2.4 Procedures

2.4.1 Baseline

During the baseline, the researcher gave three teachers a paper MSWO assessment procedure and told them to complete the assessment based on the procedure. The researcher recorded videos, collected baseline data of the three teachers and made records. No feedback was given to the teachers.

2.4.2 Intervention

After the baseline data of teacher A was stabilized, teacher A entered the BST intervention phase. The researcher recorded teacher A's operational performance during the intervention. When the data of teacher A was stable during the intervention, teacher B entered the intervention phase. As the data of teacher B was stable during the intervention, teacher C entered the BST intervention phase. The researcher recorded the assessment operation data of teacher C during the intervention.

In the BST intervention phase, the researcher's work mainly includes instruction, model, rehearsal and feedback. The researchers explained the MSWO assessment procedure to three teachers and asked them to repeat it. The researchers answered questions such as why we should pay more attention to the interval between the items on the table. In the model phase, three teachers played the role of children, and the researcher acted as an assesser and demonstrated to them how to

record data and present preferences. After the model phase, three teachers practiced the assessment operation. After the rehearsal, the researchers gave feedback on the performance of the three teachers, praised the teachers for the correct steps, and gave them correction practice for the improper steps until they could accurately operate each step.

During the intervention phase, when the teacher's correct operation steps reached 100% for three consecutive times, the teacher's BST training ended.

2.4.3 Maintenance

In order to maintain the training effect, the researchers recruited 3 children with special needs during the maintenance phase. Three teachers were asked to assess their MSWO preferences, and the researchers recorded the data on site.

2.5 Interobserver agreement

In this study, 35% of the data were selected from baseline phase, intervention phase and maintenance phase respectively, and an institutional supervisor and researcher were invited to record the teacher's assessment operation in the video using the same evaluation operation checklist. The study used a trial-by-trial method to compare the agreement between the two observers by taking the same number of observations divided by the sum of the same and different observations multiplied by 100%. The mean observer agreement of the two observers was 97%, 98%, and 100%, respectively.

2.6 Social validity

The social validity based questionnaire of teachers' evaluation of BST training was compiled in this study. The questionnaire included validity, feasibility and acceptance willingness. Each part covered 3 questions and the score ranged from 5 points (strongly agree) to 1 point (Fully disagreement).
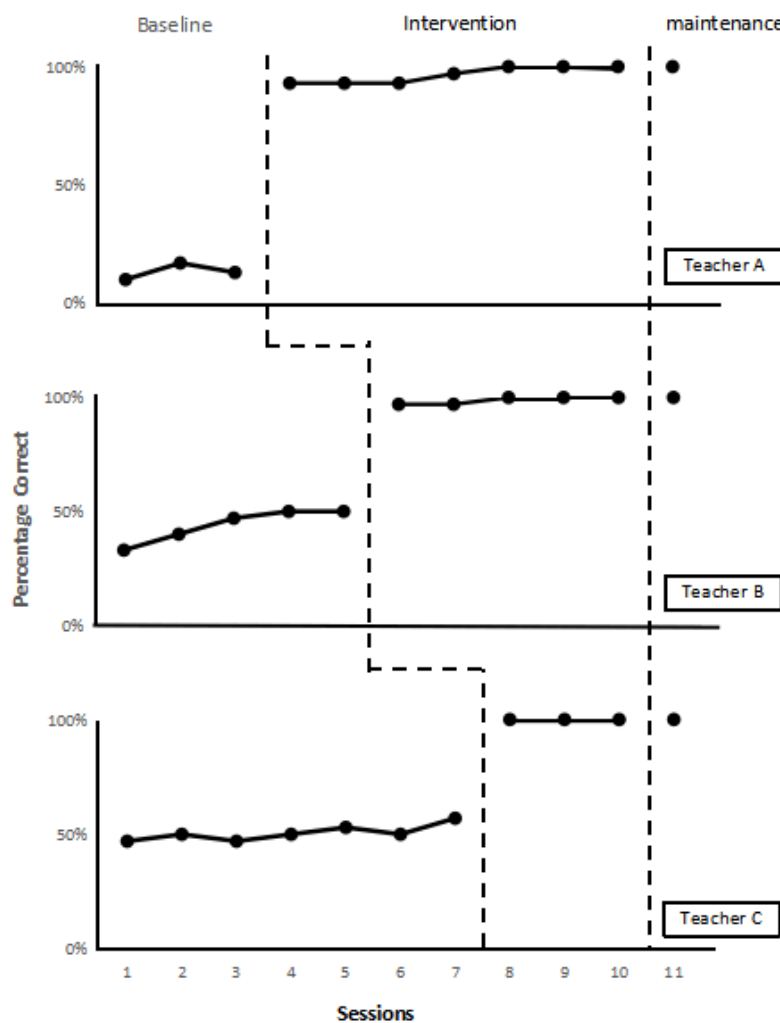
3. Results

Figure 1. The percentage of correct implementation of MSWO preference assessment for Teachers A, B and C

3.1 BST training can improve teachers' ability of MSWO preference assessment

According to Figure 1, the correct percentage of teachers who performed the assessment procedure is shown, the data for teachers A, B, and C at baseline is at 10%-17%, 33%-50%, and 47%-57%. After the BST training, the correct operation implementation of the three teachers has been significantly improved. The correct operation percentage of teacher A has been increased from 83% to 100%, the correct operation percentag of teacher B has been increased from 90% to 100%, and the correct operation percentag of teacher C has been stable at 100% after the training. Due to the mastery of the assessment skills, the data of the three teachers in the generalization phase were also stable, remaining at 100%. It can be concluded that BST training can improve teachers' ability to master MSWO preference assessment skills.

3.2 Social validity of BST training

According to the results of the questionnaire on the social validity of BST training, all the scores were 5 points, indicating that three teachers highly recognized the effectiveness of BST training in improving assessment skills and the feasibility of BST training for teachers in assessment skills. They also expressed their willingness to participate in BST training in the future.

4. Discussion

The results of this study proved the effectiveness of BST training in preference assessment of MSWO, which was consistent with the previous results of Lavie and Sturmey, and proved once again that the BST method could be used in preference assessment training. In addition to paired assessment and multiple stimulus assessment without replacement, preference evaluation also includes single stimulus assessment and multiple stimulus assessment with replacement. Therefore, future studies on BST and preference evaluation can also be expanded in these two aspects.

As the three teachers selected in this study have different working length of ABA intervention, it can be seen from the data that the accuracy rate of the assessment step operation of teachers with longer years can always be maintained at 100% after passing BST training, while that of teachers with shorter years shows a gradual increase after intervention. Therefore, it can be analyzed again on whether the length of working experience can be treated as a worthy variable of study in BST training.

Since BST is a training package containing four contents, although this study proves that BST training can improve teachers' MSWO preference assessment skills, it is not clear which part of the package plays the most important role. Future studies can explore the most effective strategies for BST training through element analysis.

References

[1] Poche, C., Brouwer, R., Swearingen, M. Teaching self-protection to young children. *Journal of Applied Behavior Analysis*. 1981, 14(2), 169–175.

[2] Leaf, J. B., Townley-Cochran, D., Taubman, M., et al. The Teaching Interaction Procedure and Behavioral Skills Training for Individuals Diagnosed With Autism Spectrum Disorder: A Review and Commentary. *Review Journal of Autism & Developmental Disorders*. 2015, 4, 402−413.

[3] Scherrer, M. D., Wilder, D. A., Austin, J. Training to Increase Safe Tray Carrying Among Cocktail Servers. *Journal of Applied Behavior Analysis*. 2008, 41(1), 131–135.

[4] Himle, M. B., Miltenberger, R. G., Flessner, C., Gatheridge, B. Teaching safety skills to children to prevent gun play. *Journal of Applied Behavior Analysis*. 2004, 37(1), 1–9.

[5] Sarokoff, R. A., Sturmey, P. The effects of behavioral skills training on staff implementation of discrete-trial teaching. *Journal of Applied Behavior Analysis*. 2004, 37(4), 535–538.

[6] Lavie, T., Sturmey, P. Training staff to conduct a paired-stimulus preference assessment.. *Journal of Applied Behavior Analysis*. 2002, 35(2), 209–211.

[7] DeLeon, I. G., Iwata, B. A. Evaluation of a multiple-stimulus presentation format for assessing reinforcer preferences. *Journal of Applied Behavior Analysis*. 1996, 29, 519-533.