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Evaluation of Video Modelling and Self-Instructional Manual to Teach Students to Conduct a Preference Assessment

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Abstract

This study evaluated the use of video modelling to teach university students to conduct multiple-stimulus without replacement preference assessment. Using a multiple-baseline across six participants and using a multiple-probe technique, video modelling substantially improved performance accuracy from baseline for all participants. However, none of the participants met a predetermined mastery criterion of 85% accuracy. A self-instructional manual was added to the video modelling and all participants met the mastery criterion. Moreover, all participants maintained their performance accuracy above 85% during a one-week retention/generalization assessment.

Previous research has shown that behaviour modification programs that use reinforcers that are highly preferred by clients are more effective than programs that use items that are less preferred (Vollmer, Marcus, & LeBlanc, 1994). However, one of the main characteristics of individuals with autism and developmental disabilities is an impaired ability to communicate verbally (Volkmar & Pauls, 2003). This poses a problem when attempting to determine a person's likes and dislikes, because we cannot simply ask them. Preference assessment is a solution to this problem because it allows us to identify a person's preferred items, even if that person is non-verbal (Tullis et al., 2011). Two commonly used procedures are the paired-stimulus (PS) and the multiple-stimulus without replacement (MSWO) procedures. The PS procedure (Fisher et al., 1992) involved 16 stimuli which were presented in pairs. Each stimulus was paired once with every other stimulus for a total of 120 paired presentations in randomized order. If a client selected one of the stimuli, five seconds of access to the chosen stimulus was provided. If a client attempted to select both stimuli simultaneously the response was blocked, and if the client did not approach either stimuli within five seconds, the therapist would prompt the client to sample the stimuli. Once both stimuli were sampled they were again placed in front of the client for five seconds; selection of a stimulus lead to five seconds of access to the stimulus, and no response lead to removal of both items followed by the next trial. The MSWO procedure (DeLeon & Iwata, 1996) involved presenting the client with an array of stimuli that were arranged in a straight line on the table and instructing them to pick one. If a selection was made the item was removed from the table and the remaining stimuli were rotated. Trials continued until all items were selected or

until a client made no more selections within 30 seconds of the instruction. In this case, the session would be concluded and remaining items would be recorded as "not selected."

There is relatively little research on teaching individuals to conduct preference assessments (Graff & Karsten, 2012; Lavie & Sturmey, 2002; Ramon, Yu, Martin & Martin, 2014; Roscoe & Fisher, 2012; Weldy, Rapp, & Capocasa, 2014). For example, Lavie and Sturmey (2002) used a multiple-baseline design across participants to train three teaching assistants to conduct the paired stimulus (PS) preference assessment procedure. The intervention consisted of a checklist, description of the target behaviours, one-to-one instruction delivered by the trainer, and video modelling. If the trainees did not achieve a mastery criterion of 85% or higher after this phase, they viewed the video demonstration again before conducting another set of trials. All trainees met the mastery criteria after one or two training sessions, with an average training time of approximately 80 minutes across participants. In a similar study, Roscoe and Fisher (2008) taught eight newly hired behavioural technicians to implement the multiple stimulus without replacement (MSWO) and PS preference assessment procedures. In the initial baseline, each participant was given a brief method description of both the MSWO and PS derived from Fisher et al. (1992) and DeLeon and Iwata (1996), respectively. The intervention consisted of video modelling, feedback, and role-play and each training session took a maximum of 20 minutes. A total of 16 assessments were conducted during which participants implemented the procedures with over 80% accuracy. In 14 of the 16 sessions, participants achieved 90% accuracy.

Although the above studies showed that staff could be taught to implement preference assessment procedures accurately after approximately 80 minutes of training, all of these studies required one-to-one training by a trained behaviour analyst. This may be impractical for facilities that do not have a trained behaviour analysts present regularly. Further, this training method may be costly given the high turnover rate of staff working with individuals with developmental disabilities. To address this problem, some studies have developed self-instructional materials to eliminate face-to-face instruction (Graff & Karsten, 2012; Ramon et al., 2014; Weldy et al., 2014). For example, Graff and Karsten (2012) evaluated the effects of a self-instructional package for special education teachers to implement, score, and interpret the results of PS and MSWO procedures in a multiple baseline design across the two procedures. The results showed that the teachers did not accurately implement the procedure using the brief method description alone, but achieved 90% or higher accuracy after receiving enhanced written instructions. A limitation of this study, however, was that the enhanced written instructions were always preceded by the brief method description and a sequence effect might have influenced the results. Ramon et al. (2014) also completed an evaluation of a self-instructional manual (Ramon & Yu, 2010) to teach 18 undergraduate university students to conduct the MSWO preference assessment procedure. They compared the self-instructional manual to a method description of the procedure from published articles in an unbalanced crossover design with random assignment and in a multiple-baseline design across four participants within each group. For 9 participants who received the method description first, no one met mastery criterion after studying the method description, but 7 of the 9 participants went on to achieve mastery after completing the self-instructional manual. For 9 participants who received the manual first, 4 achieved mastery after completing the manual and only 1 participant went on to achieve mastery after studying the method description. For the 6 participants who did not meet mastery after receiving both interventions, all met mastering by observing a live demonstration of the procedure.

Although the self-instructional manual was significantly more effective than the method description (Ramon et al., 2014), it was not clear whether the participants could have learned to carry out the procedure based on modelling alone given that this was preceded by the method and the manual. In a recent study, Weldy et al. (2014) was able to use video instruction and modelling to teach participants to use MSWO and free operant preference assessment procedures. However, all participants in this study had considerable experience working with persons with autism. It would be valuable for future research to study less experienced participants. Moreover, it would be valuable to examine the

modelling component in isolation since Ramon et al. reported that modelling required less time than studying the self-instructional manual. If modelling alone is sufficient, the results could substantially improve the efficiency of teaching. Therefore, the purpose of the current study was to evaluate the use of video modelling alone to teach students to conduct MSWO preference assessment. The self-instructional manual used by Ramon et al. was provided in this study only if the participants did not meet the mastery criterion after video modelling. This study had received ethical approval from one of our institutional research ethics boards before it began. All individuals had signed a consent form to participate prior to the beginning of the study.

Method

Participants and Setting

Participants included six undergraduate students (four female and two male), ranging from 19 to 23 years old, recruited from our university. None had prior training on conducting a direct preference assessment and none performed at 85% accuracy or higher during either of the two baseline simulated assessments (described below). Sessions were conducted in a testing room. During simulated assessments (described below) participants were seated across the table from the experimenter. All the necessary materials were placed on a table beside the participant.

Materials

During a simulated assessment, each participant was provided with six different leisure items such as marbles, puzzles, glow stick, Play Doh®, Elmo® figurine, a picture book, an action figure, and a toy train. Food items such as Smarties®, Fruit Loops®, and potato chips were provided for the simulated assessments during the generalization phase. Participants were also provided with a data sheet, pencil, calculator, and a stopwatch during each simulated assessment.

Research Design

A multiple-baseline, using a multiple-probe technique, across participants was used to evaluate the interventions (Horner & Baer, 1978). During a baseline probe, each participant was asked to conduct a preference assessment with a simulated client who was a student playing the role of an individual with developmental disabilities with no language skills. The video intervention was then introduced for each participant successively, and the simulated assessment probe was repeated immediately after the video intervention. Participants who did not meet an *a priori* criterion of 85% accuracy or higher were given the self-instructional manual, followed by another simulated assessment probe. All participants were brought back one week after their last simulated assessment for a retention/generalization assessment.

Procedure

Simulated Assessment Probes

Simulated assessment probes were conducted during baseline, post-video intervention, post-manual intervention, and during retention/generalization assessment. During a simulated assessment, each participant received a bin containing six leisure items, a data sheet for scoring the MSWO assessment from the self-instructional manual (Ramon & Yu, 2010), pencil, calculator, and a stopwatch. The experimenter gave each participant the following written instructions:

> Thank you for helping me with this study. Today, you will conduct a preference assessment using six items with <*name of the actor*>, who will be playing the role of a person with developmental disabilities with no speech. I cannot provide you with any additional information about the assessment procedure. Please do your best to find out what she likes and dislikes. You can begin whenever you are ready. You can take as much time as you need to complete the assessment. Let me know when you are finished and we can stop.

All simulated assessments were videotaped for scoring (described below). The actor's responses were scripted to ensure that each participant encountered the full range of responses. The order of the scripted responses varied across assessments within each participant, but the same scripts were used for all participants.

Video-Only Intervention

During video intervention, each participant was given the following written instructions:

> Thank you for helping me with this study. Today, you will learn how to do a preference assessment. The preference assessment procedure is demonstrated in a video. You can watch it on this computer as many times as you want. You can take as much time as you need. After you are finished, I will ask you to conduct an assessment with <*name of the actor*>, who will be playing the role of a person with developmental disabilities with no speech. You will not be able to refer to the video during the assessment. Let me know when you have finished watching the video.

The video showed the experimenter conducting an MSWO preference assessment with an actor following the same procedure described in the self-instructional manual (Ramon & Yu, 2010).

Self-Instructional Manual Plus Video

If a participant did not meet the 85% mastery criterion during the post-video simulated assessment probe, they were asked to study the manual. During this phase, the video demonstration from the previous intervention remained available. Participants were given the following written instructions at the beginning of the session:

> Thank you for helping me with this study. Today, you will study how to do a preference assessment. The preference assessment procedure is described in the self-instructional manual here <*pointing to the manual*>. Take as much time as you need to read and familiarize yourself with the procedure. There is a video that demonstrates the procedure and you can watch it on this computer whenever you want and as often as you want. After you finish studying, I will ask you to conduct an assessment with <*name of actor*>, who will be playing the role of a person with developmental disabilities. You will not be able to refer to the manual or the video during the assessment. Let me know when you have finished studying.

The manual has eight units (Ramon & Yu, 2010). Each unit is followed by an exercise that included study questions, and each exercise is followed by an answer key. The eight units consist of a total of nine pages, not counting the study questions and answer key. Participants were asked to study the materials, complete the study questions for each unit, check their answers for accuracy, and re-read the appropriate section(s) of the manual if necessary, until all units had been completed. There was no time limit to study the manual. The same video used in the previous intervention was available to the participants.

Social Validity

All participants were given a questionnaire to complete anonymously at the end of the study. Participants were asked to indicate on a 5-point scale the extent to which they agree with five statements about the importance of the goals of the study and the effectiveness of the procedures (Kazdin, 1977).

Retention and Generalization

One week after the last post-intervention simulated assessment, each participant was asked to conduct a simulated assessment with a new actor who they had not assessed before and with food items instead of leisure items.

Scoring and Reliability Checks

All simulated assessments were videotaped and scored using a 25-item behaviour checklist (Ramon & Yu, 2010) by the experimenter. Interobserver reliability checks were conducted by a trained observer who independently scored all of the simulated assessments. The experimenter and observer's recording of the participant's response on each trial was compared. A checklist item was considered an agreement if both the experimenter and observer scored the response as correct or as incorrect. The item was considered a disagreement if the experimenter and observer scored the response differently. Percent agreement was calculated for each session by dividing the number of agreements by the number of agreements plus disagreements, and multiplying by one hundred. Mean percent agreement scores across sessions and participants were 93% (range, 86–95%) for baseline, 97% (range, 95–98%) for post-video, 99% (range, 98–100%) for post manual plus video, and 97% (range, 95–98%) for retention/generalization.

Procedural fidelity checks were conducted using a checklist to evaluate whether the experimenter had carried out the procedures correctly for each session. Checklist items

included giving the correct instructions to the participant, presenting the correct materials to the participant, and refraining from providing instructions on how to conduct the assessment. All steps were carried out correctly in every session.

Results

The percentages of correct responses during simulated assessments for Participants 1 through 3 are presented in Figure 1. A large and immediate improvement from baseline to post-video was observed for all three participants. Although all three participants were close to meeting the mastery criterion after watching the video, none did. All three participants went on to receive the self-instructional manual plus the video and all three performed above the mastery criterion following that intervention. All three participants also maintained their performance accuracy above the mastery criterion during the retention/generalization assessment.

The results for Participants 4 through 6 are shown in Figure 2. Findings were similar to Participants 1 through 3 in that the video alone produced large and immediate improvements from baseline for all three participants; however, none met the mastery criterion. After receiving the self-instructional manual plus video, all participants achieved mastery and maintained their performance during the retention/generalization assessment.

Across all six participants, mean percent accuracy in conducting the MSWO procedure was 15% (range, 0–38%) during baseline, 82% (range, 78–84%) after watching the video, 98% (range, 97–100%) after watching the video and self-instructional manual, and 94% (range, 86–100%) during retention and generalization.

During the video-only intervention, participants spent an average of 17 minutes (range, 15–19 minutes) watching the video demonstration. During the video plus self-instructional manual, participants took an average of 12 minutes (range, 10–13 minutes) to complete studying.

The results of the social validity questionnaire are shown in Table 1. All participants strongly

Table 1. Mean Rating (Maximum = 5) Across Participants (N = 6) for Each Statement

	Post-Video	*Post-Manual & Video*
It is important for people who work with individuals with developmental disabilities to learn to conduct preference assessments.	3.67	4.67
The video was easy to follow and understand (for post-video). *or* The written material and video were easy to follow and understand (for post-manual & video).	4.50	4.67
The video provided all the necessary information for me to do the assessment (for post-video). *or* The written material and the video together provided all the necessary information for me to do the assessment (for post-manual & video).	3.83	4.50
I believe I have successfully learned how to conduct the MSWO preference assessment.	3.67	4.33
I feel confident and ready to conduct a preference assessment using the MSWO procedure with clients after studying the materials.	3.50	4.00

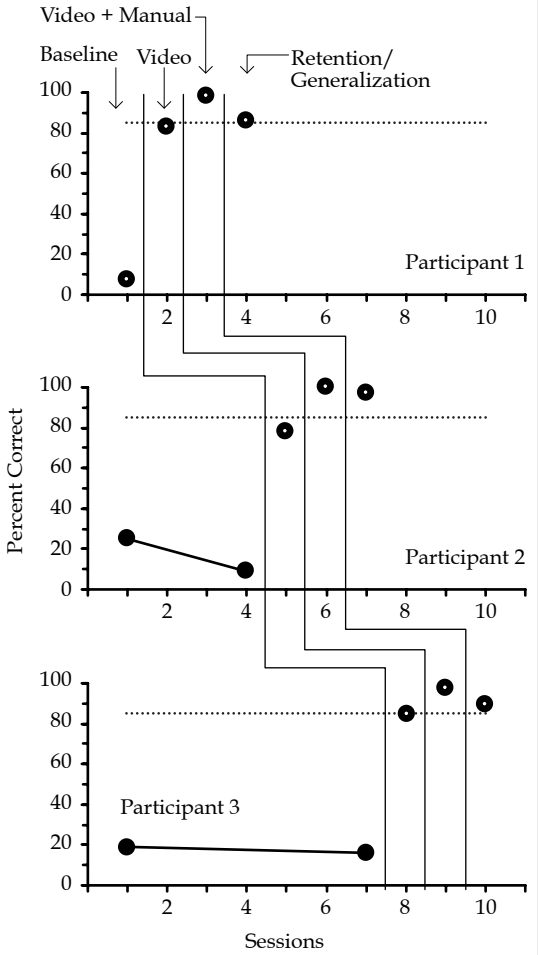

Figure 1. Percentage of correct responses during simulated assessments for Participants 1 through 3. The horizontal dotted lines represent the mastery criterion of 85%.

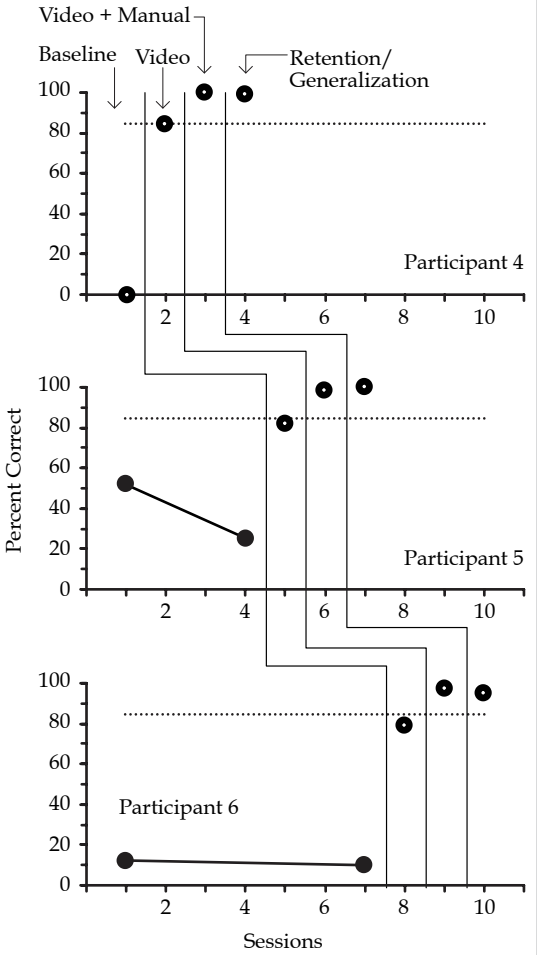

Figure 2. Percentage of correct responses during simulated assessments for Participants 4 through 6. The horizontal dotted lines represent the mastery criterion of 85%.

agreed that the manual and the video together provided all the necessary information to conduct the assessment, but only when paired together. All participants also strongly agreed that they would feel confident conducting a preference assessment with a client after the video plus manual phase, but not after the video only phase.

Discussion

The results of this study support the use of video modelling to teach students to conduct a preference assessment procedure; however, results indicate that video modelling alone is insufficient to produce mastery performance. Further, the self-instructional manual combined with video modelling was superior to video modelling alone to produce mastery level performance. Given that all six participants showed large and immediate improvement and achieved a high percent accuracy near mastery level following the video alone, it is possible that the video may be modified to improve its effectiveness further. This may eliminate the need for the self-instructional manual.

The present study contributes to this area of research in several ways. First, the intervention examined could be delivered without one-to-one live instruction. This is important because the presence of a qualified instructor may be impractical or expensive for some organizations.

Second, the video and self-instructional manual can be distributed to a large number of students or staff quickly and consistently, thus avoiding variability in the trainee's learning experience. Third, the video and self-instructional manual can be accessed easily by the trainee at his/her convenience, eliminating complications with scheduling and instructor availability. Lastly, the current study was also substantially more efficient in teaching participants to conduct a preference assessment in comparison to previous studies. Specifically, while the intervention employed by Lavie and Sturmey (2002) required an average of 80 minutes of training, the current study required an average of 29 minutes of training to master the material.

Several limitations of the current study should be noted. First, the study had a small number of participants. Replication is necessary to determine if similar findings would occur with a larger number of participants. Second, the study did not conduct a generalization assessment with a real client. The results could have been strengthened by demonstrating that the participant could generalize their learned skills to real clients. Third, the video plus self-instructional manual intervention was always preceded by the video alone condition. That is, exposure to the video alone intervention provided extra opportunities for the participants to watch the videos and this could have enhanced the effectiveness of the video plus manual intervention. Future research should address this limitation and compare video only to video plus manual using a between subjects group design. Fourth, although participants rated the video and manual highly following exposure to the interventions, we did not have a pre-intervention comparison. Future research should conduct the social validation survey before and after the intervention to provide more information. Lastly, although we conducted procedural integrity checks on the experimenter's behaviours, no checks were made on the script adherence of the actor during the simulated assessments.

Given the results of the current study, several suggestions for future research may be made. First, future research should examine video instruction and modelling (e.g., Weldy et al., 2014) for students. Second, research is needed to validate the mastery criterion. The criterion of 85% correct was selected partly because it had been used in similar research (Lavie & Sturmey, 2002; Ramon et al., 2014) and partly because it seemed reasonable. However, no study has been conducted to examine the predictive validity of the criterion.

In summary, video demonstration alone improved performance; however, it was not sufficient to produce mastery criterion performance. When paired with a self-instructional manual, all six participants met the mastery criteria and correctly implemented the preference assessment procedure with a simulated client. All participants maintained their performance after one week and showed generalization to a different simulated client and novel stimuli. The results suggest that the interventions examined have tremendous potential for reducing training resources.

Key Messages From This Article

People with disabilities: Making choices by expressing your preferences is important to improving your quality of life.

Professionals: One way to implement self-determination is to directly assess the preferences of people with disabilities frequently and provide the identified preferred items or activities to enhance their daily lives.

Policymakers: Policy to promote the uptake of preference assessment technology by staff and support workers is necessary.

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