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COMPUTER-BASED TRAINING FOR MSWO PREFERENCE ASSESSMENT WITH  
PARAPROFESSIONALS IN A SELF-CONTAINED  
SPECIAL EDUCATION CLASSROOM

by

Megan Robertson

A thesis submitted in partial fulfillment  
of the requirements for the degree

of

MASTER OF SCIENCE

in

Special Education

Approved:

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Logan, Utah

2021

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## ABSTRACT

Computer-based Training for MSWO preference assessment with Paraprofessionals in a  
Self-Contained Special Education Classroom

by

Megan Robertson, Master of Science

Utah State University, 2021

Major Professor: Dr. Ray Joslyn  
Department: Special Education and Rehabilitation

COVID-19 has forced special educators to rethink the way they train their paraprofessionals who work in their classroom. This study examined the effect of video modeling with a comprehension quiz on the implementation of a multiple stimulus without replacement preference assessment. Participants in this study were paraprofessionals who worked with students with severe disabilities in a self-contained special education classroom. Data were collected on the percentage of steps correctly implemented by the participants. The results of this study demonstrated the paraprofessionals were able to increase their accuracy and acquire the skills necessary to conduct an MSWO preference assessment using a video model.

(31 pages)

## PUBLIC ABSTRACT

Computer-based Training for MSWO preference assessment with Paraprofessionals in a  
Self-Contained Special Education Classroom

Megan Robertson

Special educators are required to train the staff who work in their rooms to be competent in working with students with severe disabilities. Oftentimes these special educators do not have enough time to adequately train the staff and this often results in a high turnover rate and frustrated staff. This study looked at the effects of using a video model to train staff to complete a multiple stimulus without replacement assessment which identifies a student's preferences. These preferences can then be used for a student to earn throughout their school day. The participants were paraprofessionals who work in a self-contained special education classroom. Data were collected on how well the participants were able to conduct the assessment before the video training as well as after. The results of this study demonstrated the participants were able to increase their accuracy and acquire the skills necessary to conduct an MSWO preference assessment using a video model. These results show that video modeling can be effective when training staff to in special education classrooms.

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# **Computer-based Training for MSWO preference assessment with Paraprofessionals in a Self-Contained Special Education Classroom**

## **Introduction**

Federal data indicate that 458,676 paraprofessionals work with students with disabilities and outnumber the amount of special education teachers currently employed (U.S. Department of Education, 2020). In many self-contained special education classrooms, educators work with several paraprofessionals to support the students in their classrooms. Because most students in these programs have severe disabilities, paraprofessionals and other staff are needed to address problem behavior and assist with teaching duties. However, training these paraprofessionals adds additional effort to educators' complex job assignments. Paraprofessionals are often underprepared to implement the evidence-based practices they need to use in the classroom (Carter et al. 2008). Paraprofessionals who did receive training often report their training was inadequate and did not prepare them completely to work with students with disabilities in the classroom (Breton, 2010).

Students placed in self-contained classrooms typically have Autism Spectrum Disorder (ASD), Down Syndrome, other intellectual disabilities, or language delays (Yoder & Warren, 2004). These delays can present with behavioral problems (Bornstein et al. 2013) and make it challenging to find reinforcers for these students to motivate learning. Preference assessments are behavioral procedures that allow teachers and therapists to identify reinforcers for their students or clients (e.g., DeLeon & Iwata, 1996;



Fisher et al. 1992). One of these preference assessments is a multiple stimulus without replacement (MSWO) assessment (DeLeon & Iwata, 1996). This assessment presents possible reinforcers in front of the student and determines the students' preferences based on the order in which they select the item. Once an item is chosen by the student, they are given the item and asked to choose again from the remaining items. This process is repeated until all items have been chosen or the student refuses to choose an item. This assessment is typically repeated three times to determine possible reinforcers of the student. This style of preference assessment has been shown to identify reinforcers more quickly than other preference assessment methods (Carr et al. 2000), which makes it useful for educators who need to quickly identify reinforcers for their students (Paramore et al. 2005). To effectively identify reinforcers using a preference assessment, staff need to be able to demonstrate the skills necessary to run an MSWO to quickly identify reinforcers. Given the limited time teachers have to train paraprofessionals, video modeling (VM) may provide a solution. VM has been used to train paraprofessionals successfully in special education classrooms (Catania et al. 2009). This training is one way educators can ensure their staff is highly trained, and can work effectively with the students in their classroom.

### **Literature review**

The following databases were used to locate articles used in this review: Google Scholar, ERIC, and EBSCOhost. The terms used in these searches included paraprofessional training, MSWO preference assessment training, video modeling for paraprofessionals, video modeling for MSWO preference assessment and

paraprofessionals in special education. The articles were selected to demonstrate the research already completed as well as show the areas where this research could be extended and implemented in a self-contained classroom with paraprofessionals. There have been several recent attempts to show the effectiveness of VM (Bovi et al. 2016; Merkley, 2014; Weldy et al. 2014) and self-instruction (Graff and Karsten, 2012) with training staff on the skills necessary to complete a variety of preference assessments. Merkley's research had seven female participants between 20 and 60 years old. Each of the participants worked in a special education preschool classroom for less than two years and did not have a college degree. The training and baseline sessions of this study were conducted in the students' designated cubicles in the classroom. Merkley measured the percentage of steps correctly performed in the MSWO preference assessment as the dependent variable. During baseline the participants were given minimal written instructions describing the MSWO procedure. Three participants were excluded due to proficiency in performance during baseline. These three participants were able to reach the mastery criteria of 90% without intervention. The remaining four participants averaged 61% on baseline trials. After baseline was collected, the participants were shown a VM and again asked to conduct the assessment. Once shown the VM, all participants except one were able to implement the steps to the mastery criterion. The remaining participant needed feedback from the researcher, and then was able to demonstrate mastery. Merkley found that while written instructions may be effective for some staff members, more information in the form of a VM was needed to assist the majority participants in reaching mastery criteria for the MSWO assessment. One limitation of this study was that participants had extensive experience in the classroom

and were administering discrete trial training (DTT) almost exclusively before the study began. This high level of training may have made it easier for these participants to learn the skills necessary to run an MSWO.

Weldy et al. (2014) used video presentations, instructions, and modeling to train staff to implement an MSWO and a free-operant (FO) assessment. This study was conducted with nine participants who were employed at a behavioral clinic for children and adolescents with ASD. Seven of the nine participants in this study held a bachelor's degree in a related field and all nine participants were experienced and trained in behavior analytic programs as well as data collection. Baseline sessions were completed in the client's treatment room while training sessions were completed in the lunchroom of the clinic. The dependent variable measured in this study was the percentage of steps correctly performed in the MSWO and FO preference assessment. During baseline sessions participants were told which assessment to conduct but were not given any written instructions. Once baseline data were collected, the participants were shown a PowerPoint with a VM for each step of the two preference assessments. In this study, a second adult acted as the "student" in the videos. After being shown the VM, all participants were able to display the mastery criteria of 90%. Two of the participants needed to participate in a booster training session which involved viewing the video a second time. Although participants were able to demonstrate the steps necessary to effectively conduct an MSWO and FO assessment, these participants all had at least one year of training and most had a bachelor's degree in a related field.

Graff and Karsten (2012) used a self-instruction package to train staff to implement, score, and interpret results of preference assessments. The participants in this

study were 11 certified teachers who all held a bachelors or master's degree and had no previous experience with preference assessments. All sessions were conducted in individual classrooms, treatment rooms, or conference rooms in the school building. The dependent variable in this study was scored on five specific target responses exhibited by the participants. These target responses included: stimulus presentation, stimulus position, post-selection response, response blocking, and trial termination. During baseline, participants were given written instructions for conducting both preference assessments. The participants were allowed to bring the written instructions with them into the session. Once baseline was completed, the participants were given more detailed instructions as well as a data sheet and diagrams to review. None of the participants were able to demonstrate mastery using the written instructions alone. Five out of the six participants demonstrated mastery when provided the enhanced written instructions. Although participants were able to demonstrate mastery using this training method, all participants held bachelor's or master's degrees. Graff and Karsten (2012) also trained teachers, and not paraprofessionals to complete these assessments.

In 2016, Bovi et al. used VM to train participants to run an MSWO and a stimulus preference assessment (SPA). The participants in this study were two members of the staff at a public school. One participant was the vice principal, and the other was a paraprofessional in an ASD classroom. The two participants had no experience running preference assessments. All sessions were completed in the conference room of the school. The dependent variable measured in this study was the percentage of steps correctly performed by the participants. For baseline data, the participants were given the instruction to complete the MSWO assessment with no written instructions. Next, they

were given simulated data to calculate the results of the assessment. Once baseline data was collected, the participants were shown a video with each step of the preference assessment that included a voiceover of the steps being shown in the video. Participants were not given feedback on their sessions. If they were not able to reach mastery criteria, they viewed the video until they met the 90% mastery goal. Both participants were able to reach mastery within two training sessions. Although participants worked with actual clients for two generalization probes at four and eight weeks, most of the data was collected with a simulated client. More research is needed to determine the efficacy of VM when the participants are required to run sessions with actual clients or students.

Although previous research has evaluated VM with simulated clients and trained teachers to complete preference assessments, there is limited research on using video models to train paraprofessionals to conduct preference assessments with students in a school classroom. The previous research also lacks demonstrations of students in training videos and comprehension checks during training. The training video used during this study is also shot from the point of view of the paraprofessional which is unique from the previous research. Thus, the purpose of the current study was to examine the effectiveness of VM with an actual student in the video, as well as a quiz to demonstrate comprehension in training staff in a self-contained special education classroom to conduct an MSWO assessment.

## **Method**

### *Participants and Setting*

Four paraprofessionals, three female and one male, employed in a self-contained special education classroom participated in this study. All participants were White and held a high school diploma. The participants ranged from 21-40 years of age. The classroom where the paraprofessionals were employed contained students diagnosed with autism spectrum disorder, Down syndrome, and intellectual disabilities. This classroom on average contains 10 students ranging from age 5-12. Each of the participants had a range of experience working in the classroom ranging from 2-3 years. None of the participants had experience working in a self-contained special education classroom prior to working in the classroom the study was conducted in. Participant 1 (20-year-old male), Participant 2 (21-year-old female), and Participant 3 (23-year-old female) are all enrolled in a university program studying education. Participant 4 (40-year-old female) is not enrolled in any higher level educational program.

All sessions before and after the computer-based training module took place at a table behind a partition in the classroom. Sessions were conducted once per day, three times per week, on average. Participants worked one-on-one with a student during each session. Each session was videotaped and sent to the researcher via Box® for data analysis. Sessions were completed throughout the school day based on students' schedule and availability during the day.

#### *Target Responses and Data Collection*

Data were collected on the percentage of steps correctly implemented by each participant, then converted to a percentage by dividing the number of steps completed correctly by the total number of steps. These steps were based on procedures written by DeLeon and Iwata (1996):

1. Allow the student to interact with each item individually for 1 min before you begin the preference assessment.
2. Place five items in front of the student in a straight line about 2 inches apart.
3. Give the verbal instruction: "Pick one".
4. Wait for student choice (maximum 10 s)
5. If the student chooses an item, remove all other items.
6. Record the student choice on the data sheet.
7. Let the student use the item for 15-25 s.
8. Give a direction to indicate the student is finished playing with the item.
9. Place all unchosen items back in front of the student and repeat steps 2-8 until all of the items have been chosen. (data will be collected individually on each of the above steps for each item the student chooses)
10. Remove all items from the student at the end of the session.
11. Complete steps 2-10 two more times. (data will be collected individually on each of the aforementioned steps)
12. After 15 trials, add the three numbers associated with each item (the order in which they were chosen).
13. Record the total number for each item. The lowest number will be the most preferred item and the highest number will be the least preferred item.

Additional criteria will be given to staff. These criteria include:

1. If a student attempts to grab more than one item, the staff will block the student, reset the trial and repeat "pick one"

2. If the student does not reach for any of the items after 10 seconds, remove the items and allow the student to interact with each item for 30 sec, then repeat the trials.
3. If after interacting with items, the student still does not make a choice within 10 seconds, remove the remaining stimuli and mark “not selected” for the remaining items on the data sheet.

A digital data sheet was used to score each participant. The data sheet was marked with a + if the staff completed the step correctly, and a - if the staff did not complete the step correctly.

The independent variable used in this study was the video training the participants watched. The video consisted of the researcher completing an MSWO preference assessment with a student in the special education classroom. The training video showed examples of how to fill out the data sheet, as well as what the final product of the data sheet should look like.

#### *Interobserver Agreement*

Interobserver Agreement (IOA) was calculated using the point-by-point method. This method is calculated by dividing the total number of agreements by the total number of agreements plus disagreements and multiplying that number by 100. IOA data were collected for at least 33% of the baseline sessions and 33% of treatment sessions for each participant. A graduate student who is employed as a self-contained special education teacher served as the data collector for IOA.

During baseline, IOA was collected for 40%, 43%, 33%, and 36% of sessions for Participants 1, 2, 3, and 4, respectively. Average IOA during baseline was 97% (range,



95.9%-97.5%), 96% (range, 93.4%-96.7%), 94% (range, 91.8%-95.1%), and 93% (range, 90.4%-95.9%) for Participants 1, 2, 3, and 4, respectively.

During treatment, IOA was collected for 60%, 50%, 50% and 60% for Participants 1, 2, 3, and 4, respectively. Average IOA during treatment was 97% (range, 95.1%-99.1%), 99% (range, 98.3%-99.1%), 96% (range, 95.9%-97.5%), and 98% (range, 96.7%-97.6%) for Participants 1, 2, 3, and 4, respectively.

## **Design and Procedures**

### *Computer-based training*

Based on the video training used by Weldy et al. (2014), a computer-based training video was created and uploaded for the participants to view on Box®. This training included a video of the researcher conducting an MSWO with a student. The participants were instructed to pause the video at certain times to answer comprehension questions about the steps of the MSWO procedure. This video also contained examples of how to fill out the corresponding data sheet.

### *Baseline*

We used a nonconcurrent multiple baseline (MBL) design to evaluate the video training. This is the most appropriate design for a school setting since this design allows for flexibility with sessions as well as any limitations that resulted from COVID-19 shutdowns. This intervention is also likely irreversible because the participants are learning a new skill, making MBL the ideal design for evaluation. Similar to the arrangement of Graff and Karten's study (2012), participants were instructed to conduct an MSWO preference assessment and were given basic written instructions (see Table 3 in appendix) on how to complete this assessment. No other instructions were given to the

participants during baseline. They were supplied with all materials necessary including a data sheet, pen, and stimuli to be used in the preference assessment. The stimuli included toys that were available in the self-contained classroom. Some of the toys used were cars, sensory items, animals, a jack-in-the-box, and toy drums. These toys were randomly selected for each session. The stimuli used during each session varied among a small group of toys. Once stability in data was reached, treatment began and was staggered among participants. The first participant to show stability in baseline was the first to receive treatment.

### **Training and Implementation**

The training and implementation steps used were adapted from the steps used by both Merkley (2014) and Weldy (2014). When training began, the staff viewed a video model of the researcher completing all steps of the MSWO assessment. The staff watched each step of the video and answered open-ended questions (see table 4 in appendix) about the steps periodically through the training. This ensured their comprehension and encouraged staff to focus on the training. Once the participants completed the video and the quiz and scored at least an 80% on the quiz, they were again asked to conduct an MSWO assessment. Participants filmed their session and uploaded it to Box® for analysis, and their data were monitored to determine if the participant needed to review the video and complete the quiz again. If at any time during the treatment phase the participant fell below the 90% accuracy, they were informed of the parts of the procedure they were missing and asked to watch the training video again. Participants were paired with one student for baseline and treatment sessions. Once participants reached three sessions above 90% accuracy, the treatment phase ended. Following treatment, each

participant completed a generalization probe with a different student than the student they were paired with for baseline and treatment.

### **Social Validity**

Following training and implementation, participants were given a likert-rating scale survey to ask what aspects of the intervention they liked and any aspects that were difficult for them (see Table 1 in appendix). This survey was sent to the participants through Qualtrics®. The likert-rating scale was 1-5, with 1 representing strongly disagree and 5 representing strongly agree. The participants were asked to rate statements using this scale. Some statements included were: “I feel confident in my ability to run an MSWO preference assessment”, “I enjoyed this training method”, and “The training video was clear and easy to understand”.

### **Results**

Figure 1 displays the results for participants 1-4. During baseline these participants correctly conducted 75.6% of the steps correctly on average. Participant 1 was the first to receive treatment and increased from an average of 76% accuracy to 93% accuracy. They received 100% on the quiz associated with the video model. This participant maintained an average of 94% (range, 90%-98%) throughout treatment. Participant 2 was next to receive treatment. During baseline this participant averaged 80% accuracy. After treatment they increased to 94% accuracy and maintained a steady trend (average of 93.7%) during the rest of the treatment sessions. This participant received 100% on the quiz associated with the video model. Participant 3 had the highest average during baseline of 82.7%. Once the treatment phase began, this participant

increased to 94% accuracy and maintained an average of 96.7% throughout treatment. This participant received 100% on the quiz associated with the video model. Participant 4 had the longest baseline as well as the lowest average baseline percentage. This participant went from averaging 66.2% during baseline to 88% after watching the video model and taking the quiz. This participant received 88% on the quiz associated with the video model. Since this participant was not able to meet the mastery criterion of 90% after watching the video model, they were given performance feedback on the sections of the preference assessment they were missing. After this feedback was given, the participant watched the video again and was able to increase her percentage to 96% and maintain an average of 97.2% (range, 96%-98%) accuracy.

There was not clear experimental control demonstrated with the data collected in the study. Baseline performance was high for two of the participants. This could be due to the written instructions being detailed enough to explain the majority of the steps needed to complete the assessment. Although there was not strong experimental control demonstrated for all participants, Participant 1 showed a clear increase in data immediately after treatment and maintained above mastery criteria for the rest of the study.

The most frequently missed component by participants was the amount of time the student was allowed to play with the toy. The second most frequently missed component was allowing the student to play with the toy before they began the assessment.

During the social validity survey participants stated they enjoyed this training method and felt they were able to run an MSWO preference assessment effectively. All

participants stated they strongly agreed that the training video was clear and easy to understand. They also recommended that this training method be used to teach other skills in the classroom. The survey given was not anonymous, which could have affected responding.

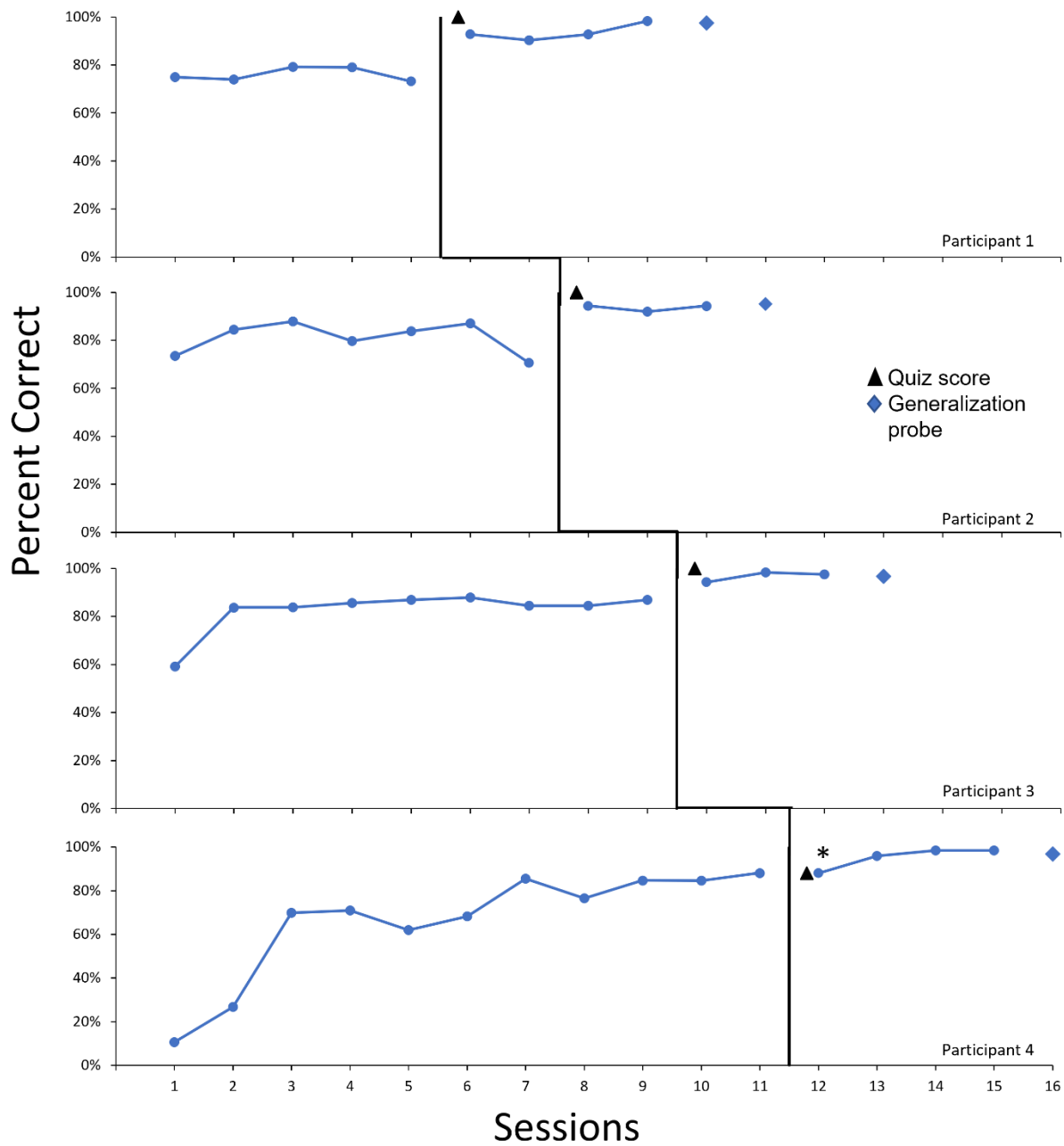


Figure 1. Percentage of steps implemented correctly by the participants during baseline and treatment sessions.

\* Feedback given

## Discussion

The purpose of this study was to evaluate the effectiveness of VM on training staff in a self-contained special education classroom to conduct an MSWO preference assessment. We found that participants were able to increase their accuracy in performing the skills necessary to complete the preference assessment. We also found that the participants enjoyed this training method and felt confident in their ability to complete the assessment after the training was completed.

The results of this study provide several implications about the effectiveness of using video modeling to train staff in a self-contained special education classroom. First, there were two participants that surpassed 80% accuracy during baseline. This suggests that the basic written instructions were enough to help the participants learn the majority of the steps needed to complete the MSWO preference assessment. It is possible that more detailed written instructions might have been effective enough to raise their percentage to above mastery criterion. Schools looking to train their staff may be able to do so with detailed written instructions and be able to provide more training in a shorter period of time. Future research should look at the effectiveness of detailed written instructions versus VM and other training methods for paraprofessionals.

Second, all participants but one (Participant 4) were able to increase their performance to above the mastery criterion once shown the video model alone. These results indicate that the video model used was an effective method of training to teach the skills necessary to increase three out of four participants' performance. For Participant 4, the video model was not entirely effective in increasing performance. While this

participants' percentage did increase, it was still slightly below the mastery criterion level. Once basic feedback was given, the participant was able to maintain the criterion for the rest of the treatment sessions. When asked to rate the following statement on the social validity survey: "I was able to build my skills in running an MSWO preference assessment without my supervisor's feedback" Participant 4 stated "disagree". This participant watched the training video during a particularly busy time in the classroom. This could have resulted in the participant being distracted while watching the video. This participant is the oldest participant as well as the only participant that is not currently enrolled in a university program.

The results of this study show that video modeling can be an effective method to train staff to complete an MSWO preference assessment without in person feedback from the classroom teacher. These results are significant because it shows the ability of staff members to be trained without a direct supervisor being present. This training method would allow for valuable resources to be used in other areas of the school and could possibly lead to a shorter training period for paraprofessionals.

The current study had two notable limitations. First, we focused only on the acquisition of one type of preference assessment and it was a relatively brief evaluation. Future research could include the acquisition of more than one type of preference assessment, as well as a longer generalization session. Future research could also attempt to evaluate the effectiveness of enhanced written instructions in place of the video model. This enhanced written instruction method would be less effortful for teachers to create and could result in faster acquisition. Second, there is a chance these participants discussed their sessions with each other and this may have affected their performance.



Future research would benefit from looking at participants in different settings and possibly with different educational backgrounds.

The findings of the current study indicate that video modeling without in-person feedback could be used to train staff on skills needed in a special education classroom. If successful, this training method could be used to train large amounts of staff with minimal effort from a direct supervisor. This could lead to rural schools having access to more training methods and resources they may otherwise not have access to. Future researchers should consider examining the effectiveness of video modeling on other types of preference assessments as well as other behavior analytic skills paraprofessionals may need to be successful in the classroom environment.

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## Appendices

## Appendix A Social Validity Survey

Please rate the following on a scale of 1-5

- 1- Strongly disagree
- 2- Disagree
- 3-Neutral
- 4-Agree
- 5-Strongly agree

1. I am confident in my ability to run an MSWO preference assessment.
2. This training gave me all the knowledge and understanding I needed to be able to conduct an MSWO preference assessment.
3. I enjoyed this training method.
4. I would recommend this training method for other skills needed in the special education classroom.
5. The videos were clear and easy to follow/understand.
6. I am confident in my ability to fill out the corresponding data sheet.
7. I was able to build my skills in running an MSWO without a supervisor's feedback.
8. I felt the quizzes were helpful in demonstrating and testing my knowledge of the steps needed to complete an MSWO preference assessment.

<b>Question</b>	<b>Participant 1</b>	<b>Participant 2</b>	<b>Participant 3</b>	<b>Participant 4</b>
<b>1.</b>	5	5	5	5
<b>2.</b>	5	5	5	5
<b>3.</b>	4	5	5	5
<b>4.</b>	4	5	5	5
<b>5.</b>	5	5	5	5
<b>6.</b>	5	5	5	5
<b>7.</b>	4	5	5	2
<b>8.</b>	4	5	5	5

**Appendix B  
Preference Assessment Data Sheet**

Preference Assessment Data Sheet

Student: \_\_\_\_\_ Assessed by: \_\_\_\_\_ Date: \_\_\_\_\_

Stimulus Items	Rank by trial			Sum of trial 1, 2, & 3	Overall Rank (smallest sum is #1)
	1	2	3		

Student: \_\_\_\_\_ Assessed by: \_\_\_\_\_ Date: \_\_\_\_\_

Stimulus Items	Rank by trial			Sum of trial 1, 2, & 3	Overall Rank (smallest sum is #1)
	1	2	3		

Student: \_\_\_\_\_ Assessed by: \_\_\_\_\_ Date: \_\_\_\_\_

Stimulus Items	Rank by trial			Sum of trial 1, 2, & 3	Overall Rank (smallest sum is #1)
	1	2	3		

**Appendix C**  
**Written Instructions for Baseline**

1. Let the student interact with the five items for a short period of time
2. Place all five items in front of the student and allow them to make a choice
3. Do not let the student choose more than one item
4. Once they make a choice, allow them to interact with the chosen item while you remove all other items.
5. Lay out the remaining items and repeat steps 2-4 until all items have been chosen.
6. Mark the data sheet with the order the items are selected in.
7. Complete this entire process three times and add up the sequence number for each item.

Adapted from Graff and Karsten 2012 & Baron 2013

**Appendix D**  
**Quiz questions**

1. What is the first step in this preference assessment?
2. How long should the student play with each toy once they have selected the toy?
3. How many rounds of data should you have at the end of the assessment?
4. How do you rank the toys at the end of the assessment?
5. How do you determine which toy is most preferred on the assessment?
6. What three steps should you complete if the student tries to grab more than one toy?
7. What should you do if the student refuses to select an item in the array?
8. What is the purpose of a preference assessment?