



# Comparison of computer based instruction to behavior skills training for teaching staff implementation of discrete-trial instruction with an adult with autism

Melissa R. Nosik<sup>1</sup>, W. Larry Williams<sup>\*</sup>, Natalia Garrido, Sarah Lee

University of Nevada, Reno, United States

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## ABSTRACT

In the current study, behavior skills training (BST) is compared to a computer based training package for teaching discrete trial instruction to staff, teaching an adult with autism. The computer based training package consisted of instructions, video modeling and feedback. BST consisted of instructions, modeling, rehearsal and feedback. Following training, participants were evaluated in terms of their accuracy on completing critical skills for running a discrete trial program. Six participants completed training; three received behavior skills training and three received the computer based training. Participants in the BST group performed better overall after training and during six week probes than those in the computer based training group. There were differences across both groups between research assistant and natural environment competency levels.

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Discrete-trial teaching is a method commonly used in teaching children with autism new behaviors. Several behavioral studies have evaluated procedures for training staff to implement this training procedure and methods for improving the accuracy of implementation (Catania, Almeida, Liu-Constant, & DiGennaro Reed, 2009; Dib & Sturmey, 2007; Leblanc, Ricciardi, & Luiselli, 2005; Sarokoff & Sturmey, 2004). Koegel, Russo, and Rincover (1977) demonstrated that educational staff could implement discrete-trial procedures; however, training was very time consuming and in some cases took up to 25 h. Sarokoff and Sturmey (2004) used a behavior skills (BST) package consisting of instructions, modeling, rehearsal and feedback and were able to train 3 teachers (two of whom had master's degrees in special education and one who was working on a master's degree) to implement discrete trial procedures in three 10-min sessions (a total of 30 min). Dib and Sturmey (2007) extended the evaluation to educate staff and included the effects of improvements in staff behavior on student stereotypy. Sarokoff and Sturmey (2008) then extended this further to evaluate the implementation with novel programs and students and found corresponding improvements in staff teaching accompanied increased student skill acquisition. Lafasakis and Sturmey (2008) then evaluated this procedure with parents teaching their own children and extended Hardy and Sturmey (1994).

Due to the great success and repeated demonstrations of the BST approach for teaching implementation of discrete trial instruction, it serves as an empirical comparison to the rapid growing in popularity in computer based instructional

<sup>\*</sup> Corresponding author at: Department of Psychology, University of Nevada, Reno, NV 89557, United States.

E-mail addresses: melissa@melissanosik.com (M.R. Nosik), larryw@unr.edu (W.L. Williams).

<sup>1</sup> Department of Psychology, University of Nevada, Reno, United States. Tel.: +1 775 250 6990.

**Table 1**

Discrete-trial instructions introduced through training.

|     |                                                                                                                                                                                                                                            |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.  | Have appropriate materials ready.<br><i>Appropriate materials are those items indicated on the program and data sheet as being necessary for the program.</i>                                                                              |
| 2.  | Make eye contact with the learner.<br><i>Trainer should ensure that they have eye contact with the learner before delivering the instruction.</i>                                                                                          |
| 3.  | Deliver the instruction.<br><i>Trainer should provide the instruction for the task as indicated on the program sheet.</i>                                                                                                                  |
| 4.  | Present the materials.<br><i>Trainer will present the materials to the learner at the same time they are delivering the instruction.</i>                                                                                                   |
| 5.  | Wait at least 3 s for a response.<br><i>Trainer will wait for learner to respond for at least 3 s.</i>                                                                                                                                     |
| 6.  | If no response after 3 s, use a least to most prompt sequence to get correct response.<br><i>The least to most prompt sequence indicated in the training is: independent, verbal, gestural and physical (from least to most intrusive)</i> |
| 7.  | Provide appropriate reinforcement for the response.<br><i>The specific reinforce to be used is indicated on the program data sheet. In this case it was social praise and a cheese cracker for correct independent responses.</i>          |
| 8.  | Record correct/incorrect data.<br><i>Trainer should circle accurately whether the trial was correct or incorrect.</i>                                                                                                                      |
| 9.  | Record prompt strength.<br><i>Trainer should circle the accurate prompt used to assist the learner.</i>                                                                                                                                    |
| 10. | Provide a 5 s interval between each trial.<br><i>Trials are to be separated by at least 5 s.</i>                                                                                                                                           |

platforms. Computer based instruction may be preferable to instructor-based (i.e., mediated by another person) for many reasons when training staff. Ingvarsson and Hanley (2006) cite several reasons for this including: (a) flexibility of training schedule, (b) accessibility, (c) ease of data collection and (d) cost effectiveness. Despite these benefits, there is limited research on the effectiveness of a computer based platform for improving actual performance of behavioral teaching skills such as discrete trial instruction (Nosik & Williams, 2011). In the Nosik and Williams (2011) study the computer based training package appeared to have some effective components; however, there were several limitations. The limitations included: the evaluation was only undertaken in the training environment with very few natural environment measures, there were no corresponding student performance measures and there were multiple practice opportunities for evaluation of each component of the video based training that may have resulted in improved performance. In recent staff implementation studies, corresponding improvements in student performance of skills (Lafasakis and Sturmey, 2008) as well as reductions in maladaptive behavior (Dib and Sturmey, 2007; Ward-Horner & Sturmey, 2008) have been demonstrated when trainer performance has improved. These measures have been of utility in further validating the importance of staff accuracy and implementation integrity. This limitation is still present in the current study due to legal restrictions on publication of such data in the state of Nevada. The present study evaluated the following issues: (a) trainer accuracy in the training environment versus the natural environment, (b) effectiveness of a computer based training package in comparison to BST and (c) maintenance of trainer skills across programs and 6 weeks following training.

Finally, it is critical for the effectiveness of behavioral services that training is effective and trainers are competent. Having empirical support to help identify the best training, for any particular staff member, serving any particular client is critical. As research continues in this area additional variables such as cost and a person's history and education should also be of value when determining what type of training to do. For example, if you are a clinician with a group of staff who had no previous experience or education in behavior analysis, behavior skills training might be the most effective method for getting this type of group to competency. For a group of psychology undergraduate students that have implemented behavioral training procedures previously and have had coursework in behavior analysis, video based training could be most effective. More empirical demonstrations of variables in training literature are needed to make such statements. This study is an effort to continue to expand the training literature with the goal of comparing two commonly used training procedures.

## 1. Method

### 1.1. Participants and setting

Participants in this study were 6 direct care staff of a day program for adults who were randomly assigned to groups by selecting a number between 1 and 6, each of which represented a different group unknown to the participant. The three participants in the behavior skills training group were Rachel, Jamie and Natalie. Rachel had been working for the organization for 6 months and was 36 years old. Jamie had only been working for the organization for 1 month prior to training and was 28 years old. Natalie had been working for the organization for 11 months and was 24 years old. None of these participants had prior course work, training, or experience in applied behavior analysis or discrete trial instruction. The three participants in the computer based training group were Melany, Candy and Brenda. Melany had been working for the organization for 14 months, was 28 years old and was the only participant across both groups that had some coursework in behavior analysis although she had never had formal training in discrete trial instruction. Candy had been working with the organization for 8 months, was 32 years old and had no prior coursework or training in behavior analysis or discrete trial

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