

PROPOSAL FOR CREATING AND EVALUATING TEACHER
TRAINING MODULES IN APPLIED BEHAVIOR ANALYSIS

By,

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ABSTRACT

A Proposal for Creating and Evaluating Teacher Training Modules in Applied Behavior
Analysis

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The use of applied behavior analysis (ABA) in the treatment of young children with autism has shown to be effective in increasing their developmental trajectory. The skills necessary to implement these interventions are not readily found in any given teacher or therapist. In training individuals to implement ABA interventions, didactic training should be paired with activities supervised practice and immediate feedback. The purpose of this project will be to evaluate the effectiveness in the use of computerized training modules in training staff to understand the principles involved in ABA program implementation.

CONTENTS

	Page
ABSTRACT.....	2
INTRODUCTION.....	4
PURPOSE.....	9
METHODS.....	11
Participants.....	11
Setting.....	11
Procedures.....	11
Measure.....	13
Data Analysis.....	14
REFERENCES.....	15
APPENDIX.....	18

INTRODUCTION

Over the last 50 years, there has been much research conducted in the treatment of autism spectrum disorder. (Baer, Wolf, & Risley, 1968; Matson, Benavidez, Compton, Paclawskj, & Baglio, 1996) The behavioral excesses and deficits exhibited by individuals with autism inhibit acquisition of skills in the way a typical individual acquires new skills. In early childhood, typically developing children learn through observing and interacting with their environment. Typical children receive feedback from their environment which shapes their future behavior to resemble what they have observed. In children with autism, however, social skills deficits and behavioral excesses may be so pervasive that they are unable to attend to the environmental cues that would prompt learning behavior through observation. Many times they must be taught simple skills that allow them to attend to their environment before more complex interactions can be introduced. (Matson et al., 1996) Therefore children with autism require specially designed instruction to address there specific skill deficits. This should occur in the form of early intervention that is intensive in nature (Howard et al., 2005)

Harris and Delmolino (2002) reported on interventions conducted by researchers such as Lovaas (1966), Brinbrauer and Leach (1993), Anderson (1994), and Smith et al (2001). The effects and outcomes of these studies suggest early intensive intervention can alter a child with autism's development and enable them to learn more typically then they would have without intervention. Intensive intervention includes a very low student to teacher ratio (1:1), high number of oppportunities for student response, and a significant number of hours per week. IWhat constitutes intensity of time in intervention is still undefined in the research. Studies suggest that 10 hours of intervention is not as

beneficial when compared to a 40 hour a week program. Other studies suggest 20-30 hours a week may be intensive enough to produce beneficial results (Harris & Delmolino, 2002). These studies also suggest that benefits from intervention increase when sustained over time. Children who began intervention at a younger age made significantly greater gains in development as compared to children who began intervention at an older age (Harris & Delmolino, 2002).

Intervention should be delivered directly to the child; meaning, intervention should directly focus on the child's daily experiences. Interventions that seek to increase parental competency, the child's quality of living conditions, or alter the child's environment indirectly have less effect on a child's developmental trajectory (Ramey & Ramey, 1999). Intervention that is intensive and focuses on student engagement creates substantial gains in learning (Librera, Bryant, Gantwerk, & Tkach, 2004).

An element of ABA interventions with children with autism is Discrete Trial Training (DTT). DTT as a part of ABA comes from the idea that behaviors are learned through principles of reinforcement and that these principles can be applied systematically in educating young children with autism. Those who apply DTT as an intervention trust that these children will acquire information readily when it is presented in a structured, clear, concise, and consistent fashion (Harris & Delmolino, 2002).

A need for training. In a report on system analysis in autism interventions from the Princeton Child Development Institute (1993), the authors, McClannahan, & Krantz, speculated that if one were to visit a sampling of intervention programs for individuals with autism, one would find that progress in these programs is "less than illustrious" and that the procedures and practices being used are not well documented for their impact on

learning outcomes (McClannahan, & Krantz, 1993). If this is true, what is causing the gap between research-based best practice and implementation within intervention programs? Later in the report mentioned above, the author's state that the structure and organization of an agency should allow for and ensure that all staff members are properly trained and equipped with the knowledge and expertise necessary for implementation of ABA intervention. Thus it is the responsibilities of educators to provide necessary training to ensure staff mastery of skills necessary for implementation of ABA intervention. It is the responsibility of administrators and those funding intervention programs to allocate resources necessary for adequate training of direct service staff.

Common elements of instruction that have been included in the research on teacher training are delivery of antecedent, prompting procedures, shaping, delivery of consequences, management of aberrant behavior, and pacing of instruction (Koegel et al., 1977; Lerman et al., 2008; Sarokoff & Sturmey, 2004).

The research on the effects of ABA interventions in changing behavior in children with autism has been replicated in numerous studies (Meyers, 2007). However, many teachers and therapists do not exhibit the understanding and skills necessary to implement these interventions (Koegel, Russo, & Rincover, 1977). In an assessment of special education teacher's general use of ABA with children with autism by Koegel Russo, and Rincover (1977) it was found that 10 of 11 teachers in the study performed basic intervention skills at or below 58% accuracy. The basic skills assessed were delivery of the instruction, prompting, shaping, delivery of consequence, and inter-trial interval. In a more recent study on the skills of staff in implementing DTT, Sarokoff and

Sturmev (2004), found that three participants in their study were implementing correct procedures 43%-49% of the time before training.

Training procedure. Teacher training is of paramount importance in the implementation of ABA interventions. When structured correctly with the correct elements, teacher training can be highly successful in equipping teachers with the skills necessary to perform at mastery levels. A review of the research has shown that didactic training alone is insufficient training to allow teachers to master the skills necessary to implement ABA interventions effectively. Didactic training should be paired with activities such as modeling, role-playing, and supervised practice with immediate verbal feedback (McClannahan, & Krantz, 1993). The New Jersey Department of Education (2004) recommends that training and professional development of staff be conducted by professionals who are highly knowledgeable in the area of ABA interventions. The training should consist of initial pre-service and in-service training, continuing in-service through workshops and conferences, and ongoing consultation with staff who are implementing or monitoring an ABA intervention (Librera et al., 2004). The Princeton Child Development Institute recommends frequent assessment of all staff members' skills to demonstrate if training procedures are indeed effective. They advocate that everyone in the organization be evaluated, the evaluation guides future training, staff are evaluated on skills they have been trained to perform, and the person evaluating is the person who does the training (McClannahan, & Krantz, 1993).

Much of current research on teacher training is based on the research done by Koegel et al. (1977). The training procedures implemented in this research study were to first give trainees a manual listing the correct and incorrect use of behavior modification

in the intervention of children with autism. Then the trainees were shown video models of the skills being trained. This was followed by feedback given by the trainer to the trainee during implementation. The complete training occurred over 25 hours and each teacher reached 90% proficiency on skills taught during training.

Lafaskis and Sturmey (2007), in training parents to implement DTT with their children, provided a definitional list of 10 component skills prior to meeting with the parents. The trainer then gave a description of the component skills to the parent followed by modeling of the skills with the child. The parents were then observed while they implemented the skills with their child. They were given feedback and the model /observation/feedback was continued until parents reached 90% proficiency on the component skills. This was research used the same training procedures as a previous experiment in training teachers to implement discrete-trial training in their classrooms with similar results (Sarokoff & Sturmey, 2004).

Lerman, Tetreault, Hovanetz, Strobel, and Garro (2008) designed a study to see the effects of a brief intensive training model for special education teachers focused on implementing direct teaching and preference assessments effectively in their classrooms. The procedures for the training in this study consisted of a five day workshop. The first day and for half a day on the other four days consisted of lectures discussion and role play. The other half of the day for the remaining four days consisted of in-class modeling and practice with feedback between the trainer, trainee and with the trainee's students. Teachers met the accuracy criteria, 100% correct for two consecutive sessions, with all direct teaching techniques during the study. Follow-up at 3 months post training showed that six of nine teachers performed with at least 80% accuracy in teaching skills.

One barrier to the proper training of teachers and direct service staff is limited time available for teachers to engage in professional development activities (Lerman et al., 2008) Training procedures need to be developed and implemented in a cost efficient and time efficient manner. Effective training needs to be made available to all professionals in a manner that allows them to be prepared to implement ABA intervention. Due to the shortage of certified special education teachers, turn over rate of direct service staff, and children are entering the early childhood special education program throughout the year training in ABA intervention needs to be available to address these challenges.

PROJECT PURPOSE

The purpose of this project is to create computerized didactic teacher training modules that effectively increase teacher understanding of the principles and skills involved in ABA program implementation. The modules will focus on elements of instruction and implementation of basic behavior interventions during instructional sessions. I would propose to create a training module in the following areas

1. Basic theory of ABA
2. Management of antecedents and environmental arrangement
3. Prompting and error correction
4. Managing consequences
5. Pacing
6. Management of student behavior during instruction

I propose that each training module will include a pre-test and post-test to check for understanding, video models of appropriate and inaccurate implementation of the skill to allow a range of examples, and written explanations of appropriate implementation of the skill being addressed. Each module will cover the content included in the instructor evaluation form (Appendix A). Explanations and definitions of each component will be divided between the modules,

These modules will allow for didactic training in ABA intervention to take place in a cost efficient and timely manner. They will address the need to train new staff throughout the year. Training will be accessed at any time necessary and let each trainee move at a pace that allows him/her to master skills at an individual rate.

METHODS

Participants

Six to ten paraprofessionals in the early childhood special education (ECSE) setting will be chosen to participate in this project. The participants will be chosen through nominations from the classroom teachers, Autism Project specialists, and program directors based on either a) recent employment within the ECSE (under 4 months), or b) show a score of 40% or less on the Instructor Evaluation Form (Appendix A). All participants will be administering DTT and ABA-based interventions in a one-on-one instructional setting for at minimum 5 hours a week.

Settings

Observation of the participants using the Instructor Evaluation Form will occur within the paraprofessional's ECSE classroom. Written or computerized pretests and posttests on each training module will occur at the ECSE facilities or at a computer at the participant's home. The participants will complete the individual training modules on a computer with audio and video capabilities at the ECSE facilities or at a computer at the participant's home.

Procedure

Training modules will be created using PowerPoint with audio and video. The modules will be reviewed for clarity and accuracy of information by at least two of the following: a) the ECSE coordinator, b) Autism Project specialist, or c) ASSERT program director or graduate assistant. Each of these individuals has special knowledge in the area of ABA and its use as an intervention with young children with autism. Following this review, the training modules will be copied onto discs that will be made available for use by the participants.

After participants are selected, the project designer will meet briefly with each of them. They will receive an outline of the tasks that they will be asked to participate in (i.e. instructor evaluations, pre/post tests, modules, etc.). They will receive an explanation of how to access and navigate the pretest, posttests, and training modules. Each participant will be checked for an understanding of these basic computer skills.

Participants will be broken up into three cohorts. Each group will be given a schedule of when to complete each training module. Cohort 1 will be asked to complete a comprehensive pretest then begin module 1. The pretest and posttests will be completed

electronically and results will be evaluated by the project designer. Participants will be asked to repeat a training module until a score of 90% correct is reached on that module's posttest. When this occurs they will be asked by the project designer to comment on the effectiveness of each module before they move to the next module. The project designer will create necessary adjustments to the previous modules and then instruct the next cohort to begin. During this project, participants will continue to participate in their classroom staff meetings and staff trainings as well as continue to receive feedback on their performance from their classroom teachers and other administrators.

Measures

To measure the effectiveness of the training modules, I will compare a comprehensive pretest to posttest scores on didactic information taught via the computer-based modules and evaluate performance using the Instructor Evaluation Form,

Pre/post tests. A comprehensive pretest will be administered before the participant begins module 1 and will include an assessment of questions that will be included in each of the training module posttests. Each training module will contain a posttest on information discussed within that module which will be administered directly after the module has been completed. The computerized quizzes will be submitted to the project designer for analysis as each is completed. If the participant has not reached a score of 90% or greater they will be asked to review the areas they missed and attempt the post test again. Each time the participant completes a posttest the questions will be rearranged with some questions replaced by new ones.

Instructor evaluation form. Participants will be observed in the ECSE classroom working in a one on one DTT session with a student prior to implementation of the project. Their performance will be evaluated using the revised ASSERT Instructor Evaluation Form (Appendix A). This form examines through general observation and trial-by-trial data collection of performance each area of instruction that will be address by training modules. Performance of each skill is given a raw score and a percentage score is computed on overall performance at the completion of the observation. The Instructor Evaluation Form will again be used to track performance when all modules have been completed. The information collected from the instructor evaluation form will be a secondary measure.

Data Analysis

Pretest and post test scores will be represented visually for analysis in a table of scores per training module received by each participant. This table will display the score on the first attempt of each posttest, number of attempt, and the final posttest score. The scores collected with the instructor evaluation form will be reported as a secondary measure that may be interesting for future study.

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Appendix A

Instructor Evaluation Form – ECSE Version

Instructor: _____ Date: _____ Child: _____

Observer: _____

Time began: _____ Time ended: _____

Section 1a: Observations on SD (Instructions)Programs observed: _____

	SD, Instruction	1	2	3	4	5	6	7	8	9	10	Total	Percent	Score
A	Gains child's attention											/	%	
B	Uses proper S ^D Voice											/	%	
C	Proper instruction provided											/	%	

Scoring Guide: 0-60%=0, 70-80%=1, 90-**100%=2****Total 1a: (After assigning percentages a weighted score, add up last column to get score) = _____****Comments:****Section 1b: Data Collection**

Programs observed: _____

	Data Collection	1	2	3	4	5	6	7	8	9	10	Total	Percent	Score
A	Instructor data													
B	Observer data													
	Target													
C	Agreements											/	%	

Scoring Guide: <80%=0, 80-89=3, 90-99%=4, 100%=6**IOA Percentage: _____****Total Score 2a: _____****Comments:**

Section 1c: General observations:

0 = Not completed 100% of the time

2 = Completed 100% of the time

NA =

Not applicable

	Environmental Arrangement				Notes
A	Stimuli prepared and available for teaching at beginning of each teaching session	0	2	NA	
B	Potential reinforcers prepared and available at beginning of each teaching session	0	2	NA	
C	Removes possible distractions	0	2	NA	
D	Starts teaching session with brief rapport building activity	0	2	NA	

Total Score Section 1c: (Omit NA) = _____

Section 2a: Observations on Error Trials

Programs observed: _____

Error trials	1	2	3	4	5	6	7	8	9	10	Total	Percent	Score
A Appropriately ends trial on error (after 5 sec. for no response or immediately upon error/misbehavior)											/	%	
B Gives immediate correct feedback for error (e.g. "try again", clears materials)											/	%	
C Quickly represents SD after feedback											/	%	

Scoring Guide: 0-60%=0, 70-80%=1, 90-

100%=2

Total Score 2a: (After assigning percentages a weighted score, add up last column to get score) = _____

Comments:

Section 2b: Observations on Prompted Trials

Programs observed: _____

Prompting	1	2	3	4	5	6	7	8	9	10	Total	Percent	Score
A Provides prompt immediately after S ^D (Before the child responds)											/	%	
B Uses correct prompt											/	%	
C Gives correct feedback, removes materials, represents S ^D											/	%	

Scoring Guide: 0-60%=0, 70-80%=1, 90-

100%=2

Total 1c: (After assigning percentages a weighted score, add up last column to get score) = _____

Comments:

Section 3a: Reinforcement

Programs observed:

	Reinforcement (10 trial sample)	1	2	3	4	5	6	7	8	9	10	Total	Percent	Score 0-2
A	Gives consequence immediately (w/in 3s) following correct, ind. response											/	%	

Scoring Guide: 0-60%=0, 70-80%=1, 90-100%=2

	Reinforcement (20 min sample)	Description of reinforcers	Total	Score 0-2
B	# of quality social interactions in first 20 min given as Reinforcement	1. 2. 3. 4. 5.		
C	# of different tangible reinforcers given in first 20 min	1. 2. 3. 4. 5.		

Scoring guide: 0-1=0, 2-4=1, 5+=2

Total 2b: (After assigning percentages a weighted score, add up last column to get score) = _____

Section 2c: General observations: (Prompted trials)

0 = Not completed 100% of the time **2** = Completed 100% of the time **NA** = Not applicable

	Prompting				Notes
A	Ends on a correct independent response	0	2	NA	
B	Uses correct SD for all programs	0	2	NA	
C	Uses correct prompting procedure for all programs	0	2	NA	
D	Fades prompts were appropriate	0	2	NA	
E	Uses transfer trial	0	2	NA	

Total Score Section 1d: (Omit NA) = _____

Section 3b: General Observations (reinforcement)

0 = Not completed 100% of the time

2 = Completed 100% of the time

NA =

Not applicable

	Managing Consequences				Notes
A	Uses choice procedures to identify reinforcers	0	2	NA	
B	Amount of reinforcement corresponds with difficulty of task	0	2	NA	
C	Varies reinforcement (social, tangible, etc.)	0	2	NA	
D	Varies voice inflection and praise statements	0	2	NA	
E	If delivers tangible, is paired with social reinforcement	0	2	NA	
F	Intermittently reinforces good attending/sitting	0	2	NA	
G	Changes reinforcer if not effective	0	2	NA	
H	Uses token system appropriately	0	2	NA	

Total Score Section 2c (Omit NA): = _____

Comments:

Section 4a: General Observations (Behavior Management)

0 = Not completed 100% of the time

2 = Completed 100% of the time

NA =

Not applicable

	Behavior Management				Notes
A	Appropriately redirects child's attention through waiting, light touch, holding hands, using materials, giving choice, mastered trials, etc.	0	2	NA	
B	Inappropriate behaviors without prescribed interventions are ignored or redirected	0	2	NA	
C	Does not reinforce responses which include poor behavior, poor attending, or inappropriate sitting.	0	2	NA	

	Maintaining good behavior				Notes
A	Uses high probability low probability sequence	0	2	NA	
B	Pacing is quick and appropriate	0	2	NA	
C	Intersperses trials between programs	0	2	NA	
D	Mixes in mastered trials to improve pacing	0	2	NA	
E	Breaks given after appropriate # of trials	0	2	NA	

Total Score Section 2d (Omit NA): = _____

Total Score Calculations:

	Section (points)	Score	# NA
S^D & Data collection	Section 1a (6)		
	Section 1b (6)		
	Section 1c (8)		

	Section	Score	# NA
Error trials & Prompting	Section 2a (6)		
	Section 2b (6)		
	Section 2c (10)		

	Section	Score	# NA
Reinforcement	Section 3a (6)		
	Section 3b (16)		

	Section	Score	# NA
Behavior Management	Section 4a (16)		

Grand Total:	
Total Percentage Score: [Grand Total / (80 - 2pts for each NA scored)] x 100%	/ x 100% =

Instructor Feedback

Strengths/Skills to maintain:

Needs improvement/skills to target:

Next evaluation recommended: _____

