What are the Best Ways to Determine Effective Reinforcers for Children with Autism?

SPLH 660

Dr. Nancy Brady

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In 2012, the Centers for Disease Control and Prevention reported through the Autism and Developmental Disabilities Monitoring Network that approximately 1 in 88 children in the United States have been identified with autism spectrum disorder ("Prevalence of autism," 2008). Autism is defined as a set of complex neurological disorders that impair social, communicative and cognitive functions. Behaviors range in severity and include stereotyped actions, insistence of sameness, resistance to change and in some cases aggression or self- injury ("Autism science foundation," 2012). All people with autism have some core symptoms in the areas of social interactions and relationships, verbal and nonverbal communication, and limited interests in activities or play ("Autism- Symptoms", 2010).

According to the article by Smith, (1999) a number of research articles in the past two decades have reported encouraging data about the efficacy of intensive early intervention approaches for children with autism. These intervention approaches have been focused on principles of applied behavior analysis, and specifically, the operant conditioning procedure of reinforcement. Reinforcement, in applied behavior analysis, is defined as an event that follows a behavior and increases the likelihood that the behavior will occur again. B.F. Skinner, a well-known research pioneer in the field of applied behavioral analysis presented a rule that said, "What behavior is strengthened is what behavior is reinforced." (Bijou & Baer, 1978). A challenge in teaching and maintaining new skills for children with autism lies in determining efficient and effective reinforcers. Children with autism often do not respond to reinforcers that interest other children (Horner, Carr, Strain, Todd & Reed, 2002). Much research in the field of applied behavior analysis has focused on strategies for determining effective reinforcers for individual children with autism.

Across multiple research articles choice preference has been found to be an important variable in determining effective reinforcers for children with autism. Four studies were reviewed that explored methods for determining these effective reinforcers. In a study by Saunders and Saunders, (2010) researchers determined that two-choice preference in a given amount of time was preferred by subjects over a one-choice preference. Thus stating that individuals with severe disabilities preferred to choose their own reinforcer, rather than have one chosen for them. A study conducted in 1989 by Mason, McGee, Farmer-Dougan and Risley, also supports this conclusion stating that individual preferences for reinforcers result in greater improvement of a behavior change than having no choice.

In a study by Fisher, Piazza, Bowman, Hagopian, Owens and Slevin, (1992) individuals with severe to profound mental retardation were presented with two stimuli at the same time, but they were only given access to the stimuli that they approached first. The results of this study indicated that the forced-choice stimulus preference assessment could be used to predict which stimuli would produce a higher responding level (Fisher et al, 1992). This means that when the individual had a choice between two reinforcers, the reinforcer that is chosen first may be stronger and more effective than the other. This was supported by a study completed in 1998, by Vollmer, Ringdahl, and Marcus which concluded that a brief preference assessment with children with autism identified effective reinforcers for simple operant responses. Therefore, when these reinforcers were used, fewer problem behaviors occurred and tasks took less time to complete.

Together these four studies state that when an individual with severe disabilities has a choice the first reinforcer chosen should reduce any unwanted behavior or produce a higher responding level. It can also be concluded that the more choice an individual receives the greater

effect the reinforcer will have on a behavior. As stated in a research synthesis conducted by Horner, Carr, Strain, Todd and Reed (2002), children with autism and other severe disabilities appear to behave based on the "same mechanisms" that control the behavior of children without autism, allowing the inference that these studies can be used and applied to children with autism.

Few gaps were found across these studies. The Fisher et al, (1992) and Saunders and Saunders, (2010) studies were conducted on individuals with other disabilities, and not on children with autism. However, the same tools can be used to find effective reinforcers for children with autism for it is highly likely that children with autism would also prefer a choice of reinforcers. Another gap found in all four studies was sample size; increasing the number of participants in the data collected would have increased significance. In the Vollmer et al, (1998) and Mason et al, (1989) studies there was no clear scale for determining the severity of the participant disability. Without a scale it becomes difficult to generalize the results to other individuals. However, despite the gaps found in these studies, the results of these studies were consistent and compatible. In all studies a small sample size did enable the researchers to ensure consistency in the disabilities of subject and provide statistically significant results. The most effective reinforcers for children with autism were identified using a stimulus preference time; and then applying the highly preferred stimuli as the reinforcer.

The purpose of the current study is to determine if a two choice preference time is an effective measure to obtain an effective reinforcer for three preschool children with autism. The hypothesis is that on- task behavior will increase, compared to baseline on-task behavior, due to finding effective reinforcers using two choice preference opportunities.

Method

Participants. The participants will be three boys diagnosed with autism who attend the XYZ integrated preschool. Individuals will be given the names Tyler, Ewan and Harold for confidentiality. The three boys are four years of age. Each of the boys are considered "high-functioning" according to the Autism Diagnostic Observation Schedule (ADOS) scores and the director of the preschool. They have all been considered to be on the same level of high functioning autism. The boys are enrolled in separate classrooms. The teacher who provides literacy activities across all classrooms has expressed an interest in determining effective reinforcers that are easily available in the classroom to be used to reward on-task behavior for individual children. All participants will be from monolingual English speaking homes.

Measures. A single subject multiple baseline design will be used. Baseline data for all boys will be collected for 20 minutes during a 1:1 literacy activity in the classroom each of four days during one week of preschool. The data will be collected by a literacy teacher and a trained observer. Baseline data will include an "on-task" or "off-task" mark at the end of each fifteen second interval. On-task behavior is defined as the expected behavior (looking at, touching, attention toward) during an activity or task. Off-task behavior is the disengagement or distraction of attention to a particular activity or task. On-task and Off-task behaviors are incompatible e.g. a student cannot be on-task and off-task at the same time. During baseline, each boy will receive a sticker for "following directions" at the conclusion of the activity. The second week, the teacher will present Tyler with a brief time to select between two reinforcers. The two reinforcers will be chosen by Tyler's teacher with a focus on Tyler's preferences. For example, Tyler's favorite toys are Lightning McQueen, a toy car and a mini piano, so these two reinforcers will be chosen specifically for him. The first reinforcer selected by Tyler will be the reinforcer delivered at the

end of the 20 minute activity. The second week, the same traveling teacher will present Ewan with the same sequence. The third week, the same series of events will be conducted with Harold. In summary, Tyler will participate in one week of baseline (no intervention); and then three weeks of intervention. Ewan will participate in two weeks of baseline; and then 2 weeks of intervention. Harold will participate in 3 weeks of baseline and then one week of intervention. The effects of this intervention will be supported by the design of this study.

Reliability. Inter-rater reliability checks will be conducted every three sessions for all boys and across all settings. A percent agreement, inter-observer reliability score of 85% or more will be achieved between the literacy teacher and another trained observer.

Validity. A thirty minute mini workshop will be given to the parents on how to provide a choice preference time to determine an effective reinforcer. Two weeks after the mini workshop parents will be given a likert scale to determine the effects of the strategies used in the classroom and mini workshop. The survey will ask parents to rate the following on a scale of one to ten (1) The ease of providing a reinforce selection before activities and tasks; (2) The use of this intervention in other routines throughout the day, other than intervention; and (3) Their perception of the strategy for increasing on-task behavior during home activities. Responses to this survey will support social validity of the study.

Data Analysis. Effectiveness of the intervention, reinforcer selection time at the start of each literacy activity and then delivery of that reinforcer at the end of each literacy activity, will be determined by a 10% or more increase in time "on-task" during intervention, compared to baseline for each child. Further data analysis may involve additional subjects, preschool age boys

diagnosed with autism who are identified by the preschool director as "high-functioning," employing the same procedures and same measurements using a multiple baseline design.

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SPLH 660 Grading Rubric

Student _____ _____ **Grader** **Brady** **Assignment: Final Paper** **99/100**

Trait	Skills	Course Specific Notes	Grader Comments	Grade			
				Mastered	***Emerging***	***Basic***	***Absent***
Content	Content is appropriate for topic/question/ assignment	review is a synthesis of information and not merely a string of abstracts	yes	All skills present	Most skills present	Few skills present	All skills absent
	Content is accurate	major trends and commonalities in the research are pointed out	yes, good job				
		gaps in the literature are pointed out	yes				
/30	Content is complete/sufficient in scope	review ends with a stated research problem that can be addressed through research	yes				
		Methods includes description of participants, recruitment, and instruments/measures	yes				
		Descritipn of research desgn is included	yes,				
Critical Thinking /30	Appropriate criticue/critical evaluation of content	review discusses strengths and weaknesses in sampling, instrumentation, and/or experimental controls	yes	All skills present	Most skills present	Few skills present	All skills absent
	Accurate interpretation/conclusions from content	validity and reliability of measures described	yes- like the likert scale addition				
	Appropriate integration between topics/articles or with content from course	plan is described for analyzing results to determine if outcomes are significant	yes, very clear!				
Clarity/ Organization	Logical flow/sequencing. Organized and cohesive.	Review begins with statement of prolem aea, statistics or a conceptual derinition	yes	All skills present	Most skills present	Few skills present	All skills absent
	Writing is easy to understand upon first reading.	references are grouped together according to a common topic	yes				
30	Writing is appropriate to the type of audience (e.g., professional) and level of audience (e.g., advanced vs. naïve).	review moves from subtopic to subtopic	yes				
		Methods are described in sufficeint detail for replication	yes				
Mechanics	Puctuation and spelling are error free.	quotations are used sparingly or not at all	yes	All skills present	Most skills present	Few skills present	All skills absent
	Word choice and sentence structure are appropriate (i.e., no awkward phrasing or word use).	transition terms such as however, as a consequence, etc. are used	yes				
	Professional conventions are adhered too (e.g., appropriate citation conventions).	references are cited in text using APA style	sometimes				
10		Reference list is formatted correctly according to APA style	yes				

Instructor's grade	
Content	30
Critical Thinking	30
Clarity organization	30
Mechanics	9
Total	99