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Self-management of Initiations by Students Diagnosed with Autism

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During prebaseline observations, three students diagnosed with autism were unable to make social initiations to another individual. The ability to make initiations would be considered a "pivotal response" in that it would allow an individual to come into contact with a wide variety of social reinforcement. A multiple-baseline design was implemented to measure the effects of a using a self-management package to teach the students to make social initiations. Two interventionists worked with each student to prompt and reinforce initiations. All students acquired social initiations during externally-determined reinforcement. The initiations were maintained when reinforcement changed from externally determined to a self-management system. The prompts to initiate and self-reinforce were faded over the course of the sessions. The use of self-management by the student led to less need for staff intervention. Implications from the literature are discussed.

Key words: autism, initiations, self-management, self-reinforcement.

Over the past few decades, the science known as Applied Behavior Analysis has developed a wide variety of techniques to teach new skills to people diagnosed with autistic-spectrum disorders and to manage inappropriate behavior (e.g., Lovaas, 2003). A continuing problem, however, is the failure of student skills to generalize to settings/individuals beyond where training was actually conducted. Failure to generalize is much more the rule than the exception among people with autistic-spectrum disorders, and this keeps many students dependent upon outside agents in order to maintain behavioral progress (Maurice, Green, & Foxx, 2001).

One method that has been suggested as a means to increase the chances of stimulus generalization is self-management training (e.g., Koegel, Koegel, & Dunlap, 1996). When one implements self-management training, the student becomes responsible for monitoring and reinforcing his/her own behavior, thus reducing the need for extra staff assistance and increasing chances for generalization. The "change agent" is always with the student (Newman, Buffington, Hemmes, & Rosen, 1996). Self-management training has been used to increase a wide variety of skills and to develop socially appropriate behavior to students diagnosed with autistic-spectrum disorders (e.g., Koegel, Koegel, Hurley, & Frea, 1992; Newman, Tuntigian, Ryan, & Reinecke, 1997; Reinecke, Newman, & Meinberg, 1999; Stahmer & Schreibman, 1992).

Another issue associated with autistic-spectrum disorders is the failure of students to make social initiations (e.g., Sundberg & Partington, 1998). Many students learn to respond very well to the initiations made by others, but do not easily learn to make initiations themselves. The ability to make such initiations would be considered a "pivotal response" (Koegel & Koegel, 1995) in that it would bring the student into contact with many more opportunities for appropriate social interaction/social reinforcement. A student who has learned to make initiations to others would come into contact with a wide range of social reinforcers and activities. Such sampling, it is suggested, would lead to greater socialization.

In the current study, an attempt was made to teach self-management skills to three students

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with autism so as to help them to learn to make initiations to others. By learning such skills, they would contact greater sources of social reinforcement and require less interventionist supervision.

METHOD

Subjects

Subjects in the study were all of school age, ranging from 6 to 9 years old. All scored in the mild/moderate range of mental retardation as scored on the Peabody Picture Vocabulary and Stanford-Binet Intelligence tests (4th ed.). Two subjects were verbal, in that they could emit three- to four-word utterances. A third student used the PECS system to communicate. Prebaseline observations were collected in the subjects' classrooms. The prebaseline demonstrated that the utterances or picture symbols were never used without prompting from an interventionist. Subjects would only direct a request towards an adult in response to a prompt such as "what do you want?"

All three subjects attended the school program for students diagnosed with autistic-spectrum disorders where the study was conducted. The school was operated according to an applied behavior analytic model, with an initial emphasis on discrete trial teaching. This intensive teaching was faded towards group instruction as the student acquired the necessary skills.

Setting

The study took place within an empty room that was set aside for research purposes. The room was approximately fifteen feet by ten feet. Within this room were one large rectangular table, three chairs, an opaque bag, and toys that could be placed into the bag. The toys were in a basket on the floor that was out of view of the subject, who was never aware of what toy would be in the bag at any given time. Toys included hand-held computer games, toy cars, action figures, and other manipulables that were "one player" activities. The experimenter made no overt sounds while playing with the toy. Certain toys, however, such as the computer games, made audible beeps. Tokens that would be used during the token economy were available in a pile in the center of the table.

During all phases, two adults accompanied the student into the empty room. One staff member served as a "prompter" and "reinforcer reminder," whose purpose was to prompt the student to make initiations to the second adult and to prompt the student to take tokens in keeping with experimental protocols. The second adult, the "player," played with a toy in an opaque bag and was the individual to whom the student made an initiation. No other students or adults were present at the time of the experiment.

Dependent Variable

For the purposes of the current study, an "initiation" was defined as the student directing a spoken request to, or placing a picture symbol in front of, the "player." If the subject made a nonverbal response such as tugging at the player's sleeve or pointing at the bag, these would have been accepted as well. Such initiations never occurred, however.

Research Design

A multiple baseline across subjects was used in this research. The study was divided into three phases.

Noncontingent reinforcement baseline. During baseline, tokens were awarded noncontingently to students. In baseline and all subsequent phases, token reinforcement took the form of pennies that were exchangeable for time in favored activities following the session (e.g., play on the computer or with a toy train set). A picture menu of available reinforcers was available for all subjects. Such systems had been in place within the school for each of the subjects previously, and thus the students were fluent in the use of token systems.

The experimental session began when the student came into the room with the two adults. The player played with a toy in the opaque bag, attempting to create a motivating condition. If the subject did not make an initiation within one minute, the student was verbally prompted by the "prompter" to ask the "player" what she had in the bag or to ask if he could play with the player (e.g., "say what's that?" or "say can I play?"). For the student who used the PECS system, PECS that represented these phrases were available and the subject was prompted to use these with a physical prompt that was

delivered from behind the subject. This physical prompt was paired with a verbal prompt that was equivalent to that given to the subjects who made spoken initiations. The symbol card that was used was a generic "toy" or "play" symbol from the Mayer-Johnson set.

Throughout the study, if the subject made an initiation to the player (prompted or unprompted), the toy was removed from the bag and the subject was allowed to play with the toy for 30 s. The player made a statement such as "nice asking, sure you can play" while presenting the toy. No other verbal reinforcement was offered at any time, however. Following the 30 s, the player asked for the item back. Protocols allowed for the player to physically retrieve the item if necessary, but this did not prove necessary with any subject. Following the toy being returned, the procedure was begun again, with the player playing with the toy within the bag and the subject able to initiate to request the toy. If he did not initiate within one minute, a prompt was provided.

The student was prompted to make the initiation to the player adult ten times during this baseline and to play with the toy for 30 s. At the end of a 15 min session, the student was given 10 tokens noncontingently by the prompter and prompted to count them. During this and all phases, tokens were moved from the central pile to a placement on the table in front of the subject. The student could then pick an activity from the picture menu of available reinforcers.

Data were collected in a partial interval recording system, with ten 90 s intervals per session. Timing was collected on synchronized digital watches worn by the two experimenters.

Across all phases, both interventionists collected data. Measures taken consisted of number of intervals with initiations and (during the self-management phase) the number of intervals in which tokens were taken if earned. Interobserver agreement was 100% on both measures. During external and self-management conditions, sessions were conducted for up to 15 min, or 10 successful initiations (whichever came first). Data are expressed in terms of percentage of initiations made out of the ten total possible for the session and percentage of correct token taking occurrences out of the ten total possible opportunities to take tokens.

External reinforcement. Following a baseline period of observation, a token reinforcement system was put into place to encourage initiations. During this period, the prompter verbally whispered to the student to make verbal initiations to the player, and awarded a token following successful completion of each initiation. Following the staff-prompted and staff-determined reinforcement system, a fading procedure towards self-management was implemented.

Self-management. When the fading procedure was implemented, the interventionist faded prompts to make initiations or to take tokens. Fading began with the first session of the self-management phase. To begin fading token-taking, rather than telling the student whether or not he had earned reinforcement, the prompter asked him whether or not he had made initiations and allowed him to award himself tokens based upon his behavior. The fading was accomplished over four sessions. Following these four sessions, the prompter faded his prompts entirely and the student was self-monitoring and self-reinforcing appropriately.

RESULTS

As can be seen in Figure 1, all subjects learned to make the social initiations during external reinforcement. This performance was maintained during the self-management phase. During baseline, no student made more than two initiations. During external reinforcement, initiations increased for each student, and this performance was maintained when the reinforcement system switched to self-management.

Accuracy of self-management was recorded in terms of tokens taken. A correct response consisted of taking a deserved token. An incorrect response consisted of failure to take an earned token, or taking a token that was not earned. Accuracy of self-management (taking tokens that were deserved) varied across students. Accuracy of self-management was not correlated with performance of initiations, however.

DISCUSSION

In the current study, students diagnosed with autism learned to make social initiations to an adult. The results maintained during a self-

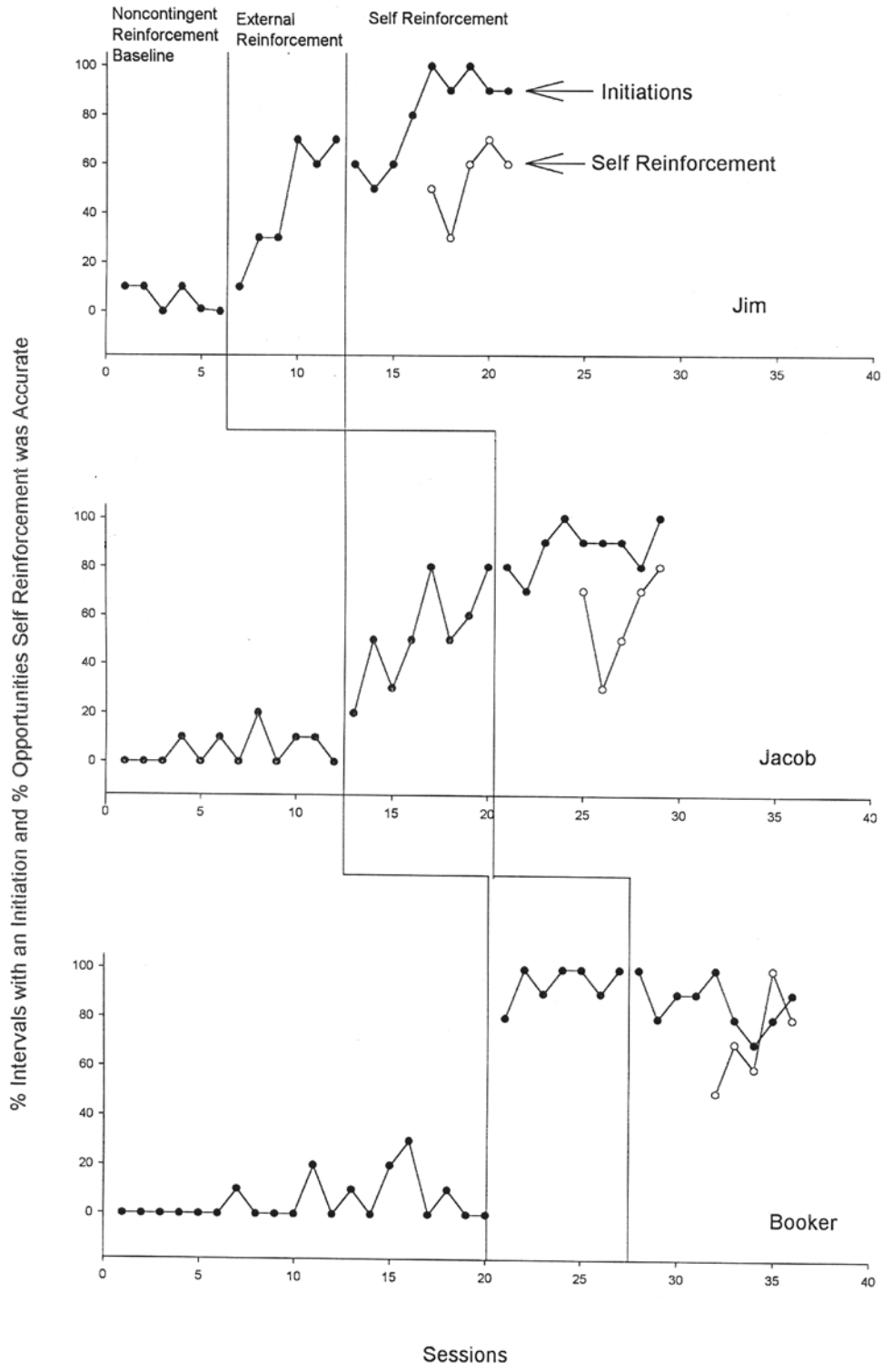

Figure 1. Initiations made by students, and accuracy of self-management.

management of initiations procedure. These results are consistent with prior results regarding the ability of students diagnosed with autism and other language-based disorders to learn social behavior and to maintain it via self-monitoring and self-reinforcement procedures (Ninness, Fuerst, Rutherford, & Glenn, 1991; Newman, Buffington, & Hemmes, 1996; Newman, Buffington, O'Grady, McDonald, Poulson, & Hemmes, 1995; Newman, Reinecke, & Meinberg, 2000; Stahmer & Schreibman, 1992). This ability is crucial, as it brings students into contact with reinforcers inherent in social interactions. Such training is generally an early step in teaching for children with autism, but the subjects in the study came to the program with no such teaching in their history.

Looking at the data from baseline to external reinforcement, it is clear that there is an increase for all students. During baseline, however, there were no such increases, despite being able to play with the toy following the prompted initiation. To explain this, it must be remembered that a prompt was provided during baseline to ask for the toy, and the student was able to play with the toy for the 30 seconds following the prompted initiation. In other words, we reinforced prompted initiations and may have inadvertently created some prompt dependency with the baseline procedure. It is also strongly suggestive that the toys themselves may not have been sufficiently reinforcing. The additional reinforcers available through the token economy proved necessary to increase the initiations.

For two of the subjects, Jim and Jacob, initiations actually increased during the self-management condition. Why this should be the case is open to interpretation. It may have been a simple practice effect, or may have involved a reactivity effect in that the subjects were now presumably self-monitoring to a greater extent than had been the case in previous phases.

The third subject, Booker, showed an even more dramatic effect. With the onset of the external reinforcement phase, initiations increased dramatically, reaching a maximum for at least one half of the sessions. This is strongly suggestive that the initiations response was already within his repertoire, but was not being adequately prompted during prebaseline or baseline conditions.

Initiations on the part of the subjects were maintained during self-reinforcement, although accuracy of token taking varied considerably. To create a true self-management condition, accuracy of token taking was simply measured during self-management phases, with no prompts to take earned tokens or corrections for taking undeserved tokens following the fourth session. Interestingly, inaccuracies tended to take the form of forgetting to take tokens, rather than taking undeserved tokens. This is consistent with prior studies that showed that students with disabilities may be less likely to cheat in such situations than some of their typically developing peers (e.g. Newman, Buffington, & Hemmes, 1996; Newman, Tuntigian, Ryan, & Reinecke, 1997). Reactivity or intermittent reinforcement effects may explain this finding, as well as a tendency towards rule-following that is sometimes created (over-learning of compliance).

Self-management as an area has occasionally been criticized (e.g., Catania, 1975; Goldiamond, 1976). Answering the objections of such theorists has been undertaken elsewhere (e.g., Brigham, 1980; Newman, Buffington, Hemmes & Rosen, 1996). The key to self-management training is to emphasize the two responses involved in self-management: self-monitoring and self-reinforcement, and to only call it self-management if the behavior increases that we associate with traditional reinforcement procedures are observed.

Anecdotally, it was reported that students began to make initiations to peers and adults not involved with the study at a greater rate than previously demonstrated. Data were unfortunately not collected in these generalized settings and are planned for future studies.

REFERENCES

Brigham, T. A. (1980). Self-control revisited: Or why doesn't anyone read Skinner anymore? *The Behavior Analyst, 3,* 25–33.

Catania, A. C. (1975). The myth of self-reinforcement. *Behaviorism, 3,* 192–199.

Goldiamond, I. (1976). Self-reinforcement. *Journal of Applied Behavior Analysis, 9,* 509–514.

Koegel, R. L., & Koegel, L. K. (1995). *Teaching children with autism.* Toronto: Paul H. Brookes.

Koegel, L.K., Koegel, R.L., & Dunlap, G. (1996). *Positive behavioral support: Includ-*

ing people with difficult behavior in the community. Toronto: Paul H. Brookes.

Koegel, L. K., Koegel, R. L., Hurley, C., & Frea, W. D. (1992). Improving social skills and disruptive behavior in children with autism through self-management. *Journal of Applied Behavior Analysis, 25,* 341–353.

Lovaas, O. I. (2003). *Teaching individuals with developmental delays*. Austin, TX: Pro-Ed.

Maurice, C., Green, G., Foxx, R. M. (2001). *Making a difference: Behavioral intervention for autism.* Austin, TX: Pro-Ed.

Newman, B., Buffington, D. M., & Hemmes, N. S. (1996). External and self-reinforcement used to increase the appropriate conversation of autistic teenagers. *Education and Training in Mental Retardation and Developmental Disabilities, 31,* 304–309.

Newman, B., Buffington, D. M., Hemmes, N. S., & Rosen, D. (1996). Answering objections to self-management and related concepts. *Behavior and Social Issues, 6* (2), 85–95.

Newman, B., Buffington, D. M., O'Grady, M. A., McDonald, M.E.,Poulson, C. L., & Hemmes, N.S. (1995). Self-management of schedule-following in three teenagers with autism. *Behavioral Disorders, 20* (3), 195–201.

Newman, B., Reinecke, D. R., & Meinberg, D. (2000). Self-management of varied responding in children with autism. *Behavioral Interventions, 15,* 145–151.

Newman, B., Tuntigian, L, Ryan, C. S., & Reinecke, D. R. (1997). Self-management of a DRO procedure by three students with autism. *Behavioral Interventions, 12,* 149–156.

Ninness, H. A., Fuerst, J., Rutherford, R. D., & Glenn, S. S. (1991). Effects of self-management training and reinforcement on the transfer of improved conduct in the absence of supervision. *Journal of Applied Behavior Analysis, 24,* 499–508.

Reinecke, D. R., Newman, B., & Meinberg, D. (1999). Self-management of sharing in preschoolers with autism. *Education and Training in Mental Retardation, 34,* 312–317.

Stahmer, A. C., & Schriebman, L. (1992). Teaching children with autism appropriate play in unsupervised environments using a self-management treatment package. *Journal of Applied Behavior Analysis, 25,* 447–459.

Sundberg, M. L., & Partington, J. W. (1998). *Teaching language to children with autism or other developmental disabilities*. Pleasant Hill, CA: Behavior Analysts, Inc.