

A COMPONENT ANALYSIS OF "STEREOTYPY AS REINFORCEMENT" FOR ALTERNATIVE BEHAVIOR

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Results from several studies have suggested that the opportunity to engage in stereotypic behavior may function as reinforcement for alternative, more socially desirable behaviors. However, the procedural components of this intervention include several distinct operations whose effects have not been analyzed separately. While measuring the occurrence of stereotypy and an alternative behavior (manipulation of leisure materials), we exposed 3 participants to three or four components of a "stereotypy as reinforcement" contingency: (a) continuous access to materials, (b) prompts to manipulate materials, (c) restricted access to stereotypy (i.e., response blocking), and (d) access to stereotypy contingent on manipulating the materials. Continuous access to materials and prompting (a and b) produced negligible results. Restriction of stereotypy (c) produced a large increase in the alternative behavior of 2 participants, suggesting that response restriction per se may occasion alternative behavior. However, contingent access to stereotypy (d) was necessary to increase the 3rd participant's object manipulation; this finding provided some support for the use of stereotypy as reinforcement for alternative behavior. Finally, when transfer of the effects of intervention was assessed during periods in which active intervention components were withdrawn, the alternative behavior was maintained for 1 participant.

DESCRIPTORS: stereotypy, alternative behavior, play, preference, reinforcer assessment, maintenance, functional analysis, restriction, contingency, Premack principle

Research on the treatment of high-rate stereotypic behavior has often focused on strengthening more socially acceptable alternatives. Ideal alternative behaviors are those that, like stereotypy, either are immediately or eventually maintained in the absence of reinforcement delivered by parents or therapists. Collectively, these behaviors have been referred to as "leisure skills," "object manipulation," or simply "play behavior."

Attempts to increase play as an alternative to stereotypy have generally examined three types of interventions: (a) altering the consequences for stereotypy through procedures such as punishment and observing concomitant increases in play (e.g., Koegel & Covert, 1972), (b) directly prompting play behavior (Singh & Millichamp, 1987), or (c)

altering the consequences for play behavior through supplemental reinforcement (e.g., Dyer, 1987). Punishment of stereotypy that is not inherently dangerous may be undesirable for a number of reasons, and prompting play behavior has not always been effective (Lindberg, Iwata, & Kahng, 1999). Thus, the third strategy may seem most desirable, although its effects may also be limited if individuals show little preference for reinforcers that might be used to strengthen play or if these reinforcers do not compete successfully with those derived from stereotypy.

Results obtained in several studies suggest that stereotypy itself can function as a reinforcer in strengthening alternative behavior (Charlop-Christy & Haymes, 1996; Hung, 1978; Sugai & White, 1986; Wolery, Kirk, & Gast, 1985). In perhaps the most comprehensive evaluation of stereotypy as reinforcement to date, Charlop, Kurtz, and Casey (1990) showed that access to stereotypic behavior (e.g., hand flapping, object tap-

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ping, body rocking, echolalia) was more effective than food reinforcement in producing increases in correct task responding for 10 children with autism. In addition, adverse side effects from using stereotypy as reinforcement, such as an increase in stereotypy outside of training sessions, were not observed.

In considering the technical aspects required to program stereotypy as reinforcement, the procedure includes several distinct components, at least within the context of strengthening an alternative behavior. These include (a) providing access to relevant materials, (b) prompting the desired response, (c) restricting access to stereotypy until a criterion for reinforcement is met, and (d) providing access to stereotypy contingent on the occurrence of the alternative behavior. Previous studies in which stereotypy has been used as reinforcement were not designed in such a way that the effective (functional) components of intervention could be identified. As notable exceptions, Charlop *et al.* (1990) and Wolery *et al.* (1985) included control conditions for prompting, thus suggesting that this component (independent of the others) did not account for observed increases in appropriate behavior.

The effects of simply restricting stereotypy (e.g., through blocking) have not been evaluated independent of the effects of contingent access to stereotypy. Restricting access to stereotypy below its baseline level (Component c) is necessary for the establishment of a reinforcement contingency (Component d); however, it is possible that mere restriction of access to one behavior may lead to increases in alternative behaviors that are occasioned by the presence of various materials (Green & Striefel, 1988). For example, it is possible that the increases in correct task responding observed by Charlop *et al.* (1990) may have been a function of either contingent access to stereotypy (i.e., a direct effect of reinforcement) or simply the restriction of

stereotypy. If the latter is the case, contingent access to stereotypy may be an incidental component of procedures described as using stereotypy as reinforcement (i.e., it may contribute little to the observed treatment effect).

The purpose of this study was to identify the functional components of stereotypy as reinforcement for the occurrence of behavior that involved the manipulation of leisure materials. More specifically, we measured both behaviors (stereotypy and object manipulation) under three or four conditions in which new intervention components were added to those previously in effect: continuous access to materials, prompting to manipulate materials, restricted access to stereotypy (i.e., response blocking), and access to stereotypy contingent on manipulating the materials. The primary goal of the assessment was to identify those components that, collectively, facilitate the occurrence of object manipulation (the alternative behavior). Measures of stereotypy also were included to observe the direct and indirect effects of the intervention components on this behavior. In addition, transfer of the effects of the intervention was observed following treatment during periods in which active intervention components were withdrawn.

METHOD

Participants and Setting

Three individuals who lived in a state residential facility for persons with developmental disabilities participated. All participants had been diagnosed with profound mental retardation and engaged in little or no manipulation of leisure materials. Jane was a 36-year-old blind woman who had been diagnosed with autism and who engaged in self-restraint. Rick was a 33-year-old man who was blind and deaf and engaged in body hitting and tapping. Jake was a 46-year-old man who had been diagnosed

with autism and whose stereotypic behaviors included hand mouthing, skin pressing, and clothes twisting. All individuals engaged in near-continuous stereotypy and engaged in few other adaptive behaviors. During preference assessments (Pace, Ivancic, Edwards, Iwata, & Page, 1985), these individuals rarely or never approached items. When leisure items were placed directly in their hands, the participants typically dropped or threw the objects and then resumed some form of stereotypic behavior.

All sessions were conducted in therapy rooms at a day-treatment program located on the grounds of the residential facility. Sessions lasted for 10 min and were conducted two to six times daily, 4 to 5 days per week.

Response Measurement and Reliability

Jane's target behavior was defined as placing one or both arms inside her clothing or under her body while seated. Rick's hitting and tapping were defined as striking any part of his hand or limbs against his head, face, body, or objects. Jake's hand mouthing was defined as any part of his hand crossing the plane of his lips, skin pressing was defined as forceful contact between his fingernail and his face, and clothes twisting was defined as twirling the bottom of his shirt between his fingers. During conditions in which stereotypy was blocked, attempts to engage in these behaviors were scored as responses.

Materials of various types were present throughout sessions during several conditions of the functional analysis as well as during intervention phases of the study (see below). The particular materials were selected because they produced varied types of stimulation, they could be made available in each participant's home, and their manipulation was deemed more socially acceptable by staff than the participants' preexisting stereotypic behaviors. Jane's materials included strings of beads, a Koosh® ball, a fake fur piece (20 by 30 cm), and a scented cinna-

mon box. Rick's materials included a string of beads, a Koosh® ball, a scented cinnamon box, a rubber snake, and a handheld massager. Jake's materials included plastic shapes and a sorter, plastic rings with stand, a textured rubber ball, and a beaded microswitch that vibrated and emitted music when pressed.

Data were collected on stereotypy and object manipulation by trained observers on handheld computers (Assistant Model A102) during continuous 10-s intervals and were summarized as the percentage of intervals during which responding occurred. Occurrences of stereotypy were scored on a partial-interval basis. Object manipulation was scored if at least one of Jane's hands touched the materials for at least 1 s, if both of Rick's hands touched the materials for at least 2 s, and if at least one of Jake's hands touched the materials for at least 1 s. In addition, a second observer recorded the duration of each play episode during the blocking condition (described below) for each participant. The alternative behaviors targeted for these participants (e.g., holding a plastic ring for Jake) represented rudimentary forms of leisure behavior that were assumed to facilitate the development of more socially acceptable leisure behaviors (participants exhibited neither these relatively simple behaviors nor more complex leisure activities prior to the study).

Interobserver agreement was assessed by having a second observer collect simultaneous but independent data during 32%, 44%, and 44% of the sessions for Jane, Rick, and Jake, respectively. Observers' records were compared on an interval-by-interval basis, and an agreement was scored in any interval in which the two observers both scored either the occurrence or nonoccurrence of behavior. Agreement percentages were calculated by dividing the number of agreement intervals by the total number of intervals and multiplying by 100%. Mean

agreement scores for stereotypy were 97.4% (range, 88% to 100%), 91.8% (range, 76.8% to 100%), and 96.3% (range, 85% to 100%) for Jane, Rick, and Jake, respectively. Mean agreement scores for play were 97.2% (range, 93.1% to 100%), 92.7% (range, 85.6% to 100%), and 94.1% (range, 81.8% to 100%) for Jane, Rick, and Jake, respectively.

PHASE 1: FUNCTIONAL ANALYSIS

Procedure

Each participant was exposed to a series of four assessment conditions in a multielement design based on procedures described by Iwata, Dorsey, Slifer, Bauman, and Richman (1982/1994). During the attention condition (the test for behavior maintained by social-positive reinforcement), the participant had free access to leisure materials throughout the session. The therapist ignored the participant except to deliver attention (e.g., "Don't do that; you might hurt yourself") following each occurrence of stereotypic behavior. During the demand condition (the test for behavior maintained by social-negative reinforcement), the therapist presented learning trials (e.g., wiping one's face, picking up an object) approximately every 30 s. The therapist used a three-step prompting sequence (instruction, model, and physical prompt) with Jake and modified this sequence with Jane and Rick by including a partial physical prompt to assist them in locating the materials. Completion of the task following either the instruction or model prompt resulted in praise from the therapist, whereas occurrences of stereotypy resulted in a 30-s break from the task. During the alone condition (the test for behavior maintained by automatic reinforcement), the participant did not have access to any leisure or work materials, and there were no programmed consequences for stereotypy. During the play condition (the control), the par-

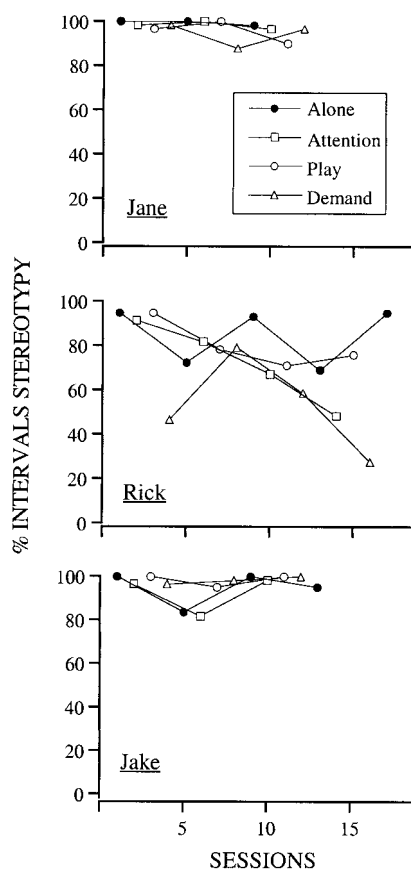


Figure 1. Percentage of intervals containing stereotypy during the functional analysis for Jane (top panel), Rick (middle panel), and Jake (bottom panel).

participant had free access to leisure materials, and the therapist delivered 3 to 5 s of attention at least once every 30 s but did not provide consequences for occurrences of stereotypy.

Results

Figure 1 shows percentages of intervals in which stereotypy occurred during the functional analyses. Participants engaged in stereotypy almost continuously during all assessment conditions (an exception to this pattern was Rick's somewhat lower levels of stereotypy during demand sessions), and they rarely manipulated any of the leisure materials during attention or play sessions. These high levels of stereotypy were char-

acteristic of their behavior during most portions of the day, regardless of changes in ongoing activities, and suggested that their behavior was not maintained by social contingencies. Thus, results of the functional analyses, along with information provided by staff, suggested that participants' stereotypy was maintained by automatic reinforcement, and served as the basis for interventions evaluated during Phase 2

PHASE 2: ESTABLISHMENT OF ALTERNATIVE BEHAVIOR

Experimental Design

Levels of stereotypy and object manipulation were observed under a baseline condition consisting of one treatment (noncontingent access to leisure materials) and under two (Jane and Rick) or three (Jake) additional treatment conditions, which were introduced in an additive arrangement (i.e., each new treatment was combined with previous treatments). The effects of the functional component of the intervention were demonstrated in a multiple baseline across subjects design (Jane and Rick) or in reversal designs (Rick and Jake). All sessions were 10 min in duration, except as noted below.

Baseline

The baseline condition was similar to the alone condition of the functional analysis, except for the presence of leisure materials. The participant was seated near a table containing the leisure materials described previously. Prior to each session, the therapist physically guided the participant to touch each of the leisure materials and then left the area.

Treatment Conditions

Prompting. This condition was similar to baseline, except that the therapist remained in the area and physically guided the participant to manipulate one or two leisure items every 30 s if the participant was not already

touching an item. Object manipulation was not scored when the therapist was delivering a physical prompt to touch the materials.

Blocking. The therapist stood directly behind Jane and Jake or in front of Rick and blocked all attempts to engage in stereotypy (e.g., the therapist placed a hand between Jake's hand and his mouth when Jake lifted his hand towards his mouth). As noted previously, blocked attempts were scored as occurrences of stereotypy.

Contingent access to stereotypy. During this condition, to which only Jake was exposed, a differential-reinforcement-of-alternative-behavior (DRA) contingency was arranged between the occurrence of object manipulation and the opportunity to engage in stereotypy. The therapist prompted play behavior and blocked stereotypy as in the previous condition. When Jake manipulated a leisure item for the required duration of time, the therapist initiated a reinforcement interval (during which Jake had free access to stereotypy for 30 s) by turning Jake's chair approximately 45° from the table and moving approximately 1 m away from him. Access to stereotypy was initially contingent on 5 s of continuous object manipulation (throughout the condition, the duration of object manipulation was monitored by an observer using a stopwatch). The initial 5-s requirement was selected to increase the likelihood that Jake would contact the reinforcement contingency and was determined by multiplying his mean duration of object manipulation across the last 10 sessions of his previous blocking condition by 75%. After five sessions, 1 s was added to the object-manipulation requirement following each session in which the behavior occurred during 90% or more of the intervals, until the requirement for access to stereotypy was 15 s of continuous object manipulation. Thereafter, the criterion for object manipulation was changed from a continuous to a cumulative measure (i.e., the stopwatch was not reset

when object manipulation was interrupted), and 5 s were added to the requirement following each session in which object manipulation occurred during 90% or more of the intervals until the criterion reached 60 s of cumulative object manipulation. Throughout this condition, data collection was suspended during reinforcement intervals, and session time was corrected by extending the session duration for 30 s following each reinforcement interval until 10 min (corrected for reinforcement intervals) or 20 total minutes elapsed, whichever came first.

Baseline Probes

During a condition in which a treatment effect was observed (Jane and Rick), 5-min probe sessions were conducted periodically under baseline conditions to assess whether the effects of treatment might transfer to conditions in which prompting and blocking were withdrawn. Jake's baseline probes were conducted periodically throughout all phases of his treatment.

Results

The top panel of Figure 2 shows Jane's results. During baseline, in which materials were available but no other intervention was in effect, Jane engaged in high levels of stereotypic behavior and no object manipulation. When prompts to manipulate objects were delivered during the next condition, very little change was observed in Jane's behavior from baseline; she still engaged in high levels of stereotypy and little or no object manipulation. When blocking was introduced, Jane's attempts to engage in stereotypy decreased immediately to a near-zero level, and her object manipulation increased and was maintained at above 80% of the intervals during the last eight sessions of the condition. Jane's baseline probes, which were interspersed with treatment sessions during her prompting-plus-blocking condition and continued for six additional

sessions after formal treatment sessions were terminated, in effect, represented an unsuccessful reversal. During the final probe sessions, Jane's stereotypy remained at zero while her object manipulation consistently maintained at above 90%. In addition, the mean duration of each object-manipulation episode exceeded 1 min. Thus, her probe performance suggested that, after acquiring a relatively brief history of manipulating leisure materials, the alternative behavior had replaced stereotypy as a self-stimulatory response.

Rick's results are shown in the bottom panel of Figure 2. During baseline, Rick engaged in high levels of stereotypic behavior and no object manipulation. During the prompting condition, stereotypy initially decreased and object manipulation initially increased, but this pattern reversed after several sessions. The addition of the blocking component was associated with a decrease in attempted stereotypy and an increase in object manipulation. These patterns were reversed during a return to the prompts condition and reversed again when blocking was reinstated. During the final 12 sessions of the blocking condition, the mean duration of each object-manipulation episode exceeded 1 min. Rick's behavior during the baseline probes conducted during his final treatment condition resembled his behavior during his previous baseline and prompting conditions (high levels of stereotypy, low levels of object manipulation). Thus, there appeared to be very little transfer from conditions in which treatment was present to those in which treatment was absent.

Figure 3 shows the results obtained for Jake. During the baseline and prompting conditions, Jake engaged in high levels of stereotypy and low levels of object manipulation. When blocking was introduced, a gradual decrease in stereotypy and a gradual but small increase in object manipulation

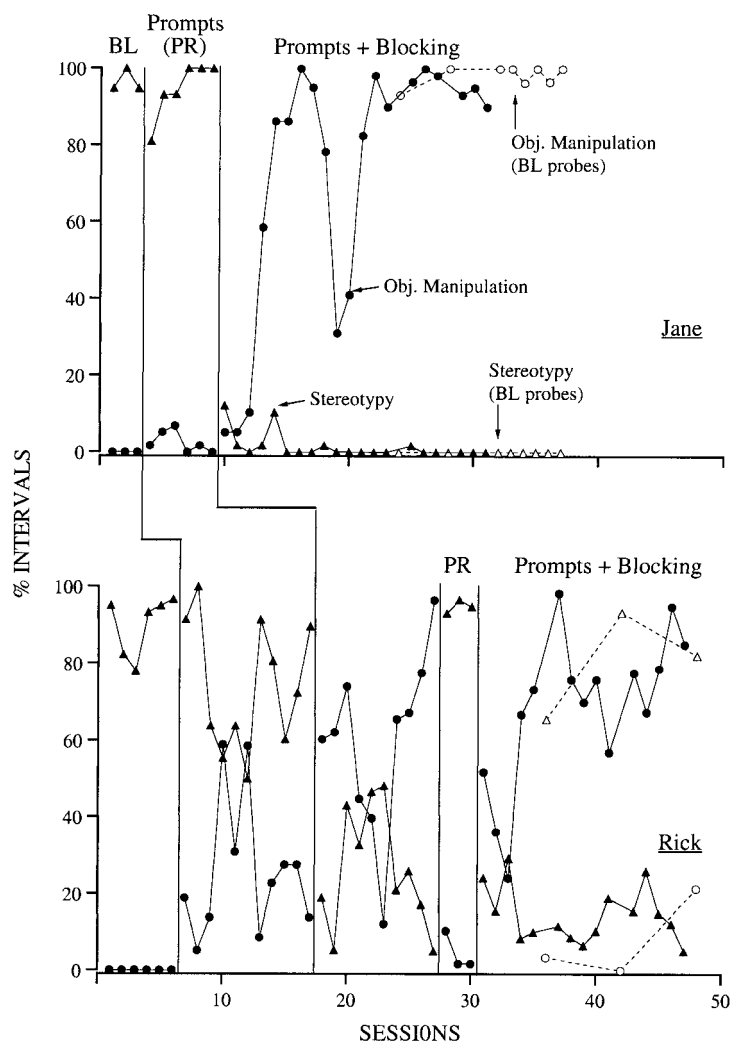


Figure 2. Percentage of intervals containing stereotypy and object manipulation during baseline, treatment conditions, and baseline probes for Jane (top panel) and Rick (bottom panel).

were observed. Because the blocking procedure was not very effective in producing an increase in object manipulation (in contrast to what was observed with Jane and Rick), Jake received the final treatment component (contingent access to stereotypy), which was associated with slight decreases in stereotypy and large increases in object manipulation. When the DRA contingency was discontinued, object manipulation and stereotypy returned to levels similar to those observed in the previous prompts-plus-blocking condition. When

the DRA contingency was reintroduced, object manipulation increased and was maintained at high levels, whereas stereotypy decreased only to a moderate degree. Baseline probe data taken on stereotypy and object manipulation throughout Jake's treatment analysis indicated that stereotypy remained high and object manipulation remained low regardless of changes observed during treatment conditions.

At the completion of formal treatment sessions, all 3 participants were engaging in low levels of stereotypy and high levels of

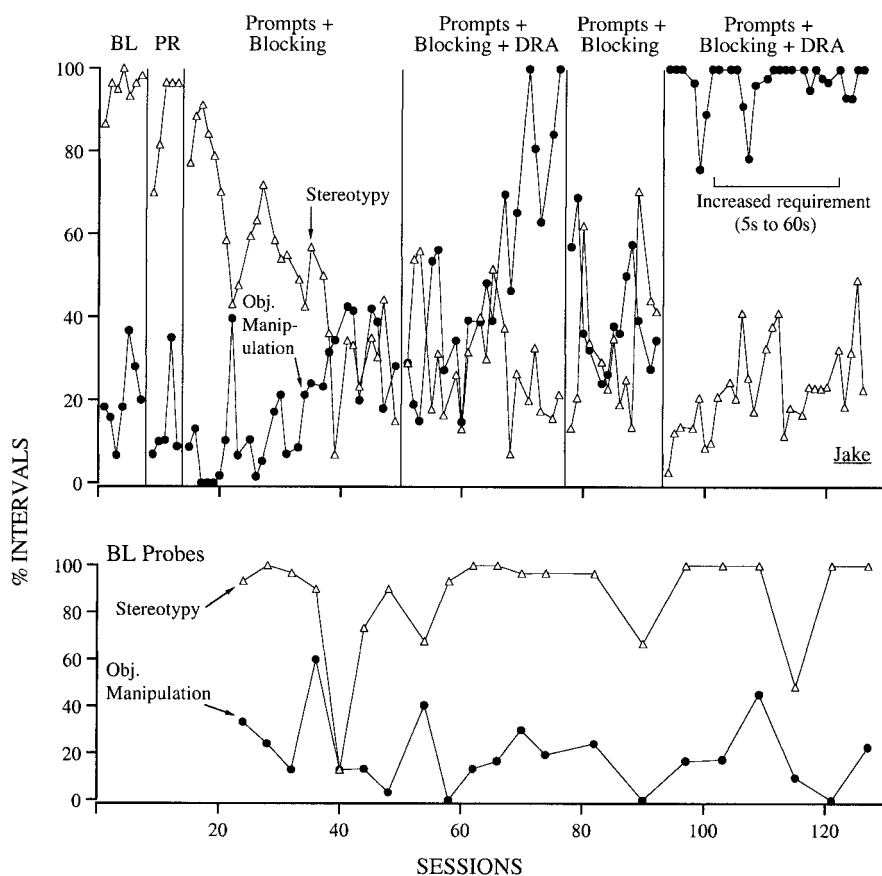


Figure 3. Percentage of intervals containing stereotypy and object manipulation during baseline, treatment conditions, and baseline probes for Jake.

object manipulation (each participant was engaging in episodes of object manipulation that were at least 1 min in duration). In addition, the forms of object manipulation exhibited by participants seemed appropriate to the types of materials provided (e.g., Jane held and stroked the fur piece, Rick bounced the ball in the palm of his hand). However, different interventions were recommended to their regular therapists based on participants' performance during treatment and probe sessions. Jane's staff were instructed to simply provide her with access to preferred leisure items throughout the day outside of formal training sessions. Rick's staff were trained in the blocking procedure, after which they scheduled 10- to 15-min sessions at various times

throughout the day. During these sessions, staff provided Rick access to leisure materials and implemented the prompts-plus-blocking procedure. Jake's staff were trained in all three components of the intervention program and then scheduled daily sessions in which these procedures were implemented (during these sessions, access to stereotypy was contingent on 1 min of play). In addition, some of Jake's staff were trained to deliver reinforcement only for particular forms of prompted object manipulation in order to increase certain forms of leisure behavior (e.g., placing the correct shape into the shape sorter) while extinguishing others (e.g., simply holding the materials). Finally, staff working with all of the participants were encouraged to introduce more socially

acceptable leisure alternatives within more formal training sessions.

DISCUSSION

After determining that the stereotypic behaviors (self-restraint, body hitting and tapping, hand mouthing, skin pressing, and clothes twisting) of 3 participants were most likely maintained by automatic reinforcement, we evaluated a treatment program designed to strengthen an alternative behavior. The program was derived from a strategy using aberrant behavior as reinforcement (e.g., Charlop et al., 1990) and was based on the Premack principle (Premack, 1959, 1962), which states that behaviors having a higher probability of occurrence may be used as reinforcers to strengthen behaviors having a lower probability of occurrence. Components of the program were implemented in stages, and it was observed that not all of the components were needed to produce increases in object manipulation.

A contingency between the occurrence of object manipulation and access to stereotypy appeared to be a necessary component of Jake's treatment. Simply providing leisure materials, prompting object manipulation, or restricting access to stereotypy were insufficient to increase Jake's object manipulation. The blocking procedure was effective in reducing stereotypy; however, noticeable improvements in object manipulation occurred only when access to stereotypy was available contingent on object manipulation. Thus, Jake's results replicated those reported in previous studies (e.g., Charlop et al., 1990; Wolery et al., 1985) and suggest that stereotypy may function as a reinforcer for alternative forms of behavior. This procedure may be extremely useful in situations in which few other reinforcers successfully compete with those derived from stereotypy. Although elementary forms of leisure activity were initially developed through this in-

tervention, providing access to stereotypy following either longer durations or increasingly complex forms of object manipulation may eventually result in more socially desirable leisure skills that, in turn, may generate more diverse and powerful sources of reinforcement. Future research should be directed at extending contingencies that involve access to aberrant behaviors to successively more complex alternative behaviors.

Results obtained with Jane and Rick, however, indicated that the reinforcement component of the intervention was unnecessary. By simply restricting access to the putative reinforcer for stereotypy (by blocking stereotypy), attempts to engage in stereotypy by both Jane and Rick decreased greatly, while their object manipulation increased to high levels. These data suggest that, under some conditions, simply restricting one behavior (stereotypy in the present case) may result in response allocation to an alternative behavior (object manipulation) in the absence of any programmed reinforcement. These results are not necessarily surprising because, in the majority of studies in which increases in object manipulation have been observed, the interventions included one or more components that directly altered the consequences for problem behavior, such as extinction, response blocking, or punishment (Harris & Wolchik, 1979; Lindberg et al., 1999; Singh, Dawson, & Manning, 1981; Wells, Forehand, Hickey, & Green, 1977). For example, Koegel, Firestone, Kramme, and Dunlap (1974) observed increases in the appropriate object manipulation by 2 children with autism when stereotypy was suppressed via punishment. Koegel et al. suggested that the results reflected response covariation in which altered consequences for one response affected the probability of another response. Results obtained in both the Koegel et al. study and the present study also are consistent with those reported by McEntee and Saunders (1997),

who showed that when one stereotypic response was restricted by removing relevant materials, individuals simply reallocated their responding to other materials.

Thus, results of Jane's and Rick's component analyses suggest that some increases in desirable behavior attributed to the Premack principle may be unrelated to a contingency between high- and low-probability responses. In other words, any intervention that involves restriction of access to high-probability behavior (e.g., response blocking, removal of materials, or even instructions) may produce increases in low-probability behavior. The use of stereotypy as reinforcement may often exemplify this latter process because stereotypy frequently must be blocked as a prerequisite to its contingent delivery.

The notion that response restriction *per se* alters the probabilities of other behaviors should be taken into account when designing interventions based on application of the Premack principle and when interpreting their effects. For example, in a study designed to increase consumption of nonpreferred foods (prescribed by a ketogenic diet) by a 15-year-old girl, Amari, Grace, and Fisher (1995) attributed treatment effects to the Premack principle. During baseline, the participant had access to a variety of foods previously identified as both preferred and nonpreferred. During treatment, the participant received a bite of one of three highly preferred foods following consumption of a nonpreferred food, and consumption of nonpreferred foods increased relative to baseline. The change in the consumption of nonpreferred foods may have been a product of reinforcement; however, it is possible that the participant would have increased her consumption of nonpreferred food if access to preferred food had simply been restricted (i.e., if the participant only had the option to consume nonpreferred foods and no access to preferred foods was arranged). A similar interpretive difficulty applies to other

studies in which access to high-probability behaviors has been used as reinforcement for the occurrence of low-probability behaviors (e.g., Mitchell & Stoffelmayr, 1973; Salzberg, Wheeler, Devar, & Hopkins, 1971).

When aspects of multiresponse environments are manipulated, two interrelated processes should be considered. First, the arrangement of a contingency between two responses necessarily requires restriction of the contingent response (the response to be used as a consequence) below its baseline level of occurrence. Second, manipulating the consequences for one response, as is done when one response is restricted, can alter the probability of other responses (including the target response for which the contingency is arranged). To understand why the probability of a given target behavior may change following an intervention that involves arranging a contingency between a target and a contingent behavior, it may be necessary to separate the effects of restricting a particular response from the effects of a contingency involving access to that response. Obtaining baseline data on the occurrence of the two behaviors of interest under unrestricted *and* restricted conditions may allow researchers and clinicians to determine whether behavior change during treatment is a function of response reallocation due to restriction alone or to reinforcement.

Regardless of the mechanism by which increases in an alternative behavior are produced, the potential value of strengthening such behavior is clear: New sources of reinforcement derived from engaging in alternative behavior may eventually compete with those derived from engaging in less desirable behavior. For example, Eason, White, and Newsom (1982) found that, once participants had acquired leisure behaviors (as a result of prompting and differential reinforcement with praise and food), leisure behavior was maintained at high levels and stereotypy remained low in a novel setting in

which no programmed contingencies were in effect. We conducted a similar assessment in the present study by periodically taking baseline probes and observed maintenance effects in the absence of treatment for only 1 of the 3 participants (Jane). Although these results were not encouraging, the practice of withdrawing supplementary treatment components (e.g., prompts, blocking, etc.) seems to be desirable as a means of assessing preference for reinforcement associated with different forms of activity. For example, it is possible that interventions designed to strengthen leisure behavior or, alternatively, exposure to a wide range of leisure activities over longer periods of time may lead to identification of alternative behaviors that compete with stereotypy. One method for increasing the likelihood of reinforcer competition suggested in several studies consists of matching the stimulation derived from object manipulation with that presumably produced by the stereotypic behavior (e.g., Favell, McGimsey, & Schell, 1982; Fisher, Lindauer, Alterson, & Thompson, 1998).

Finally, the component-analysis and baseline-probe arrangement used in this study may prove useful to both researchers and clinicians. The arrangement has methodological appeal in that it identifies which of several components of an independent variable exerts the greatest (or any) influence over behavior. The additive sequence also may have clinical appeal in that it identifies the least effortful (or least costly) treatment that results in optimal or at least acceptable outcomes. As an interesting alternative, Cooper et al. (1995) recently illustrated an approach to component analysis based on the subsequent removal of treatments following their initial implementation as a multicomponent intervention. The potential advantage of such an approach is more rapid production of initial behavior change.

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STUDY QUESTIONS

1. Describe three general approaches typically used to reduce stereotypy by replacing it with alternative (play) behavior.
2. What procedural components are involved in arranging a contingency in which access to stereotypy serves as reinforcement for an alternative behavior, and why might it be important to evaluate these components separately?
3. Describe the general pattern of results obtained during the functional analyses. Why was it important to identify the function of stereotypy prior to evaluating the particular interventions used in this study?
4. Briefly describe the treatment conditions and the manner in which they were implemented.
5. Summarize the results obtained during treatment, indicating which intervention components seemed to be necessary to produce desired behavior change in each participant.
6. What was the purpose of the baseline probes, and what did the results of these probes show?

7. What are the methodological implications of the present data for research conducted on the Premack principle?

8. What is the most significant limitation of using access to stereotypy as a reinforcer in treatment or training programs for persons with severe disabilities?

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