

*AN EXPERIMENTAL ANALYSIS OF NEGATIVE REINFORCEMENT
CONTINGENCIES FOR ADULT-DELIVERED REPRIMANDS*

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Seven adults participated in simulated teaching sessions with an experimenter who role played as a student with developmental disabilities. The experimenter engaged in problem behavior and either (a) terminated problem behavior contingent on participant reprimands (negative reinforcement) or (b) did not terminate problem behavior contingent on reprimands (extinction). Results suggested that reprimands were sensitive to negative reinforcement in the form of the immediate cessation of problem behavior. These preliminary findings support role play as a potentially viable laboratory model for analyzing behaviors of typical adults.

Key words: experimental analysis, extinction, functional analysis, negative reinforcement, reprimands

Results of several studies suggested that problem behavior exhibited by children may function as an aversive event for caregivers (e.g., Carr, Taylor, & Robinson, 1991). If so, escape from or avoidance of problem behavior may strengthen some adult behaviors via negative reinforcement. Understanding the impact of child behavior on adult behavior is important, because certain reactions to problem behavior (e.g., reprimands, removal of demands) can reinforce and maintain that problem behavior. Furthermore, these potential negative reinforcement contingencies may undermine the effectiveness of caregiver training programs.

Sloman et al. (2005), for example, observed interactions between children and their caregivers and found that children's problem behavior often temporarily decreased immediately following adult reprimands. This finding, which is consistent with a negative reinforcement con-

tingency for reprimands, provides a potential explanation for the common use of reprimands as a consequence for problem behavior. Addison and Lerman (2009) conducted descriptive analyses of student–teacher interactions after teachers were taught how to withhold putative reinforcers (e.g., reprimands) for problem behavior. Despite training, teachers delivered reprimands and other potential reinforcers following problem behavior, possibly because it often led to temporary reductions in problem behavior (i.e., negative reinforcement).

Although these descriptive data suggest a negative reinforcement contingency for reprimands, previous studies have shown poor correspondence between descriptive and experimental analyses (e.g., Thompson & Iwata, 2007). An experimental analysis is needed to demonstrate causality between adult behavior and children's problem behavior; however, directly manipulating problem behavior to examine this relation is impractical and raises ethical concerns (e.g., possible harm to the child or adult). Sloman et al. (2005) suggested that role play between adults may provide a viable means to evaluate the function of caregiver behavior. Therefore, the purpose of the current study was to conduct an experimental analysis of adult reprimands using role play in a laboratory setting.

This study was conducted in partial fulfillment of the requirements for the first author's MA degree at the University of Houston–Clear Lake.

We thank Emily Bellaci and Daniel LeSage for their assistance in conducting this study.

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doi: 10.1901/jaba.2010.43-769

METHOD

Participants, Setting, and Experimenters

Participants were seven female university students enrolled in a regular education teacher certification program (six undergraduate students, one graduate student). All participants were recruited from an introductory special education class and earned course credit for participating. Carrie, Cindy, and Grace had several years of experience working in regular education classrooms. Alice, Kim, Lisa, and Maria had no extended experience working with children. No participants had extended experience working with children with disabilities or severe problem behavior.

Sessions were conducted in a psychology laboratory (3.4 m by 4.3 m) equipped with a one-way observation window and an unobtrusive video recording system. The room contained tables, chairs, a couch, and a variety of educational materials (i.e., flash cards, manipulatives, puzzle). Two experimenters conducted each session. One experimenter delivered instructions to the participants and interacted with them before and after each session. The second experimenter role played with the participant during sessions, acting as a student with severe developmental disabilities. The confederate engaged in stereotypic behavior (hand flapping, body rocking), inattentiveness, and limited speech when in the presence of the participant, both during and between sessions. He engaged in property destruction and self-injury during some sessions (see description below).

Response Measurement, Interobserver Agreement, and Procedural Integrity

Reprimands were defined as any statement of disapproval or any statement to stop engaging in an ongoing behavior or to not engage in a specific behavior (e.g., “no,” “stop,” “that’s not nice”). Observers collected data on the occurrence or nonoccurrence of reprimands during 30-s trials, either from behind the one-way observation

window or while watching videotaped sessions. Trial-based measurement was used to isolate periods when the potential establishing operation (i.e., presence of problem behavior) was present or absent. A second observer independently collected data during at least 25% of videotaped sessions for each participant. Occurrence and nonoccurrence agreement were calculated on a trial-by-trial basis. Mean interobserver agreement was 88% (range, 60% to 100%) for occurrence and 91% (range, 67% to 100%) for nonoccurrence across all participants.

Data were also collected on procedural integrity. Correct implementation was scored during a trial if the confederate provided the appropriate consequence for reprimands (termination of problem behavior within 2 s or continuation for at least 5 s) for that condition. Mean procedural integrity was 99% (range, 96% to 100%) across all participants.

Procedure

Sessions were conducted during 3-hr blocks across 1 or 2 days. All sessions were 10 min long (16 min for Maria). The total number of sessions conducted with each participant was determined by the amount of time available for sessions within the 3-hr block as well as her willingness to continue. All participants were asked to return for the 2nd day, but only four agreed to do so. On the 1st day, the experimenter described the general format of sessions and obtained informed consent. Participants were told that they could stop their participation at any time, and they would still receive course credit if they stopped prematurely. The experimenter stated that the purpose of the study was to assess the use of actors in simulated teaching environments for training and evaluation. The experimenter then asked participants to teach a variety of academic skills (e.g., identifying or matching colors, numbers, letters, and body parts) to the confederate. Participants were exposed to the following conditions in either a reversal design or a combined reversal and multielement design.

No problem behavior. The participant sat at a table with her back facing the one-way mirror, and the confederate sat opposite her. For the purposes of data collection, 30-s trials occurred on a fixed-time (FT) 60-s schedule beginning after the 1st minute, for a total of nine trials per session (15 for Maria); however, no problem behavior occurred during any trials. Four of the seven participants were exposed to this condition. The purpose was to examine the level of reprimands in the absence of problem behavior.

Negative reinforcement. This condition was similar to the previous condition, except that the confederate engaged in 30 s of problem behavior (e.g., face slapping, tossing task materials, hitting and kicking furniture) at the onset of each trial (FT 60 s). Contingent on participant reprimands, the confederate immediately stopped engaging in problem behavior until the start of the next trial. The first experimenter signaled the confederate to engage in problem behavior via a small flashlight operated from behind the one-way mirror. The purpose of this condition was to determine if problem behavior would set the occasion for reprimands and if reprimands would be sensitive to the negative reinforcement contingency.

Extinction. This condition was similar to the negative reinforcement condition, except that the confederate continued to engage in problem behavior for 30 s, regardless of the participant's behavior. To prevent adventitious reinforcement at the end of a trial, problem behavior did not stop until 5 s elapsed without a reprimand. The purpose of this condition was to determine if reprimands would decrease when they no longer terminated problem behavior.

RESULTS AND DISCUSSION

Results for all participants are depicted in Figure 1. Data from the condition with no problem behavior show the percentage of trials that contained participant reprimands when the confederate did not exhibit problem behavior.

Data from the negative reinforcement and extinction conditions show the percentage of trials that contained participant reprimands when the confederate exhibited problem behavior. None of the four participants exposed to the no-problem-behavior condition engaged in reprimands during trials in these sessions. Maria, Carrie, Cindy, and Lisa engaged in reprimands during a high percentage of trials in the negative reinforcement condition. For each of these participants, the percentage of trials with reprimands decreased during the first extinction phase. Cindy and Lisa were exposed to a second extinction phase. Cindy's responding was similar to that during her first extinction phase, although suppression was less pronounced. By contrast, Lisa's level of reprimands decreased only slightly compared to that in the preceding negative reinforcement phase. Results for Alice were similar to those described previously. However, Alice stopped her participation during the second extinction phase. Grace and Kim engaged in reprimands during a moderate to high percentage of trials when reprimands terminated problem behavior. Grace asked to stop her participation after experiencing one extinction session. Kim asked to stop her participation after 7 min of the first extinction session.

Results suggested that adult reprimands may be sensitive to negative reinforcement in the form of termination of children's problem behavior. These findings are consistent with those of previous descriptive analyses (Addison & Lerman, 2009; Sloman et al., 2005); however, firm conclusions should be made with caution given the limited analysis with several of the participants. Three participants asked to stop the sessions prematurely (i.e., in the middle of a 3-hr block). Interestingly, each participant discontinued her participation during or immediately after an extinction session, providing some evidence that problem behavior was aversive to these individuals. When reprimands no longer produced immediate escape, they

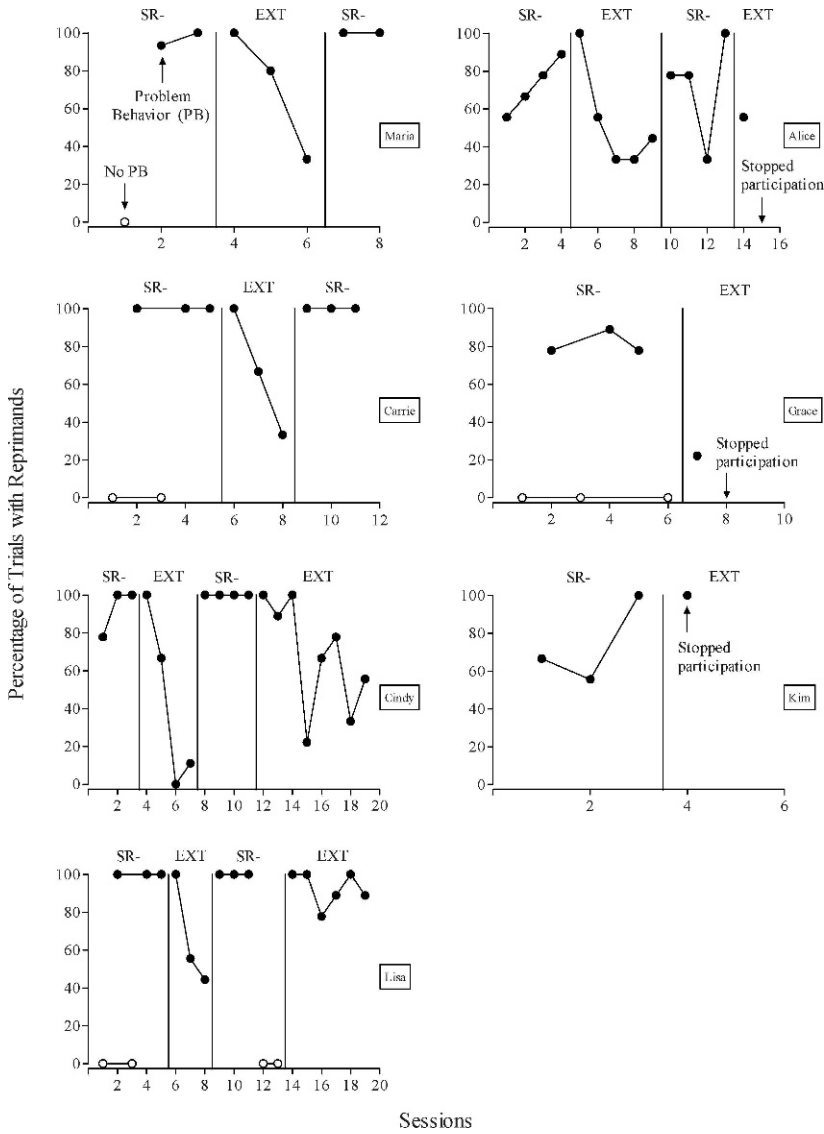


Figure 1. Percentage of trials with reprimands across conditions. Filled circles indicate sessions with problem behavior. Open circles indicate sessions with no problem behavior.

engaged in an alternative response that provided escape from and further avoidance of problem behavior (i.e., requesting to stop the study).

The current results provide preliminary evidence that role play is a viable approach for evaluating caregiver responses. A functional relation was established for most participants during limited session time (3 to 6 hr). However, several limitations should be noted. The effects of extinction were somewhat

difficult to replicate for the two participants who were exposed to two complete extinction phases. Their reprimands appeared more resistant to extinction during the second extinction phase. Perhaps the repeated exposure to the FT termination of problem behavior in the negative reinforcement condition was insufficient for preventing adventitious reinforcement of reprimands despite the programmed 5-s delay in the extinction condition. Also, the confederate's

problem behavior was scripted only to the extent that two general topographies were exhibited (property destruction and self-injury). It is possible that the specific behaviors of the confederate were shaped by the participants (e.g., higher probability of throwing materials because it was most likely to evoke reprimands). An additional limitation was the rate of participant attrition. Moreover, several participants displayed emotional reactions (e.g., crying) during the study. Steps should be taken to avoid attrition and emotional responses in future studies (e.g., by modifying the type or intensity of problem behavior).

Although we did not directly investigate treatment integrity per se, the current results illustrate the potential for children's behavior to affect caregivers' implementation of behavioral interventions. For example, response bursting or other side effects of extinction may punish caregivers' attempts to withhold reinforcement for problem behavior. Greater understanding of the factors that affect adult behavior is important for improving treatment integrity and adherence (Allen & Warzak, 2000). Other consequences that may maintain caregiver behavior (e.g., approval from peers, escape from unwanted attention of peers; Sloman et al., 2005) should be examined in further studies, along with parameters of reinforcement that

maintain caregiver behavior (e.g., intermittent or delayed consequences). Furthermore, it would be worthwhile to examine other adult behaviors that have been previously shown to maintain problem behavior, such as the delivery of tangible items or the removal of demands. The model presented here seems well suited for this line of inquiry.

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Received October 5, 2009

Final acceptance March 30, 2010

Action Editor, John C. Borrero