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BEHAVIORAL PERSISTENCE AND VARIABILITY DURING EXTINCTION OF SELF-INJURY MAINTAINED BY ESCAPE

Han-Leong Goh and Brian A. Iwata
The University of Florida

The self-injurious escape behavior of a developmentally disabled adult was treated with extinction. Results of a reversal design showed substantial bursts of responding when extinction was introduced and reintroduced: self-injury remained at a variable and elevated rate for some time before stable, low rates were observed. Data on aggression, a nontarget behavior during both baseline and treatment, showed a pattern similar to that seen for self-injury during the extinction conditions.

DESCRIPTORS: aggression, escape behavior, extinction, negative reinforcement, self-injurious behavior

One approach to the treatment of self-injurious behavior (SIB) maintained by negative reinforcement is extinction, which involves continued presentation of stimuli that occasion responding, combined with discontinuation of the escape contingency. A number of studies have documented the effectiveness of this type of "escape extinction." For example, Iwata, Pace, Kalsher, Cowdery, and Cataldo (1990) used extinction to reduce or eliminate SIB in 7 children and adolescents. In that study, several subjects showed an initial burst of responding; these extinction bursts were brief in all but 1 subject and were followed by immediate decreases to zero or near-zero levels of SIB. No other side effects were observed (e.g., increased rates of other inappropriate behaviors). The present study describes a replication of the extinction procedure used by Iwata et al. (1990), during which there was a marked extinction burst and an increase in aggression at the outset of treatment.

METHOD: Steve was a 40-year-old male with profound mental retardation. His SIB consisted of two topographies: head banging (contact of the head against hard surfaces) and head hitting (contact of hand or fist against the head or face). Aggression consisted of two topographies: slapping (contact of his hand against any part of another's body) and kicking (contact of his foot against any part of another's body). Attempted aggression, in which slaps or kicks were initiated but contact was not made, was also scored.

Sessions were conducted at a day-treatment program located on the grounds of the residential facility where Steve lived. During each 15-min session (two to four per day, usually 5 days per week), data were collected on both SIB and aggression via hand-held computers during continuous 10-s intervals. Interobserver agreement was assessed on 33.3% of all sessions, and agreement percentages were calculated based on an interval-by-interval comparison of the observers' records. Agreement scores ranged from 79.3% to 100% (M = 91.3%) for SIB, and from 94.7% to 100% (M = 99.5%) for aggression.

Prior to treatment, Steve was exposed to a series of controlled conditions in a multielement design to determine which of several variables maintained his SIB (see Iwata, Dorsey, Slifer, Bauman, & Richman, 1982, for a description). Results of this functional analysis showed that his SIB was maintained by negative reinforcement; specifically, escape from instructions. Treatment consisted of extinction, whose effects were evaluated in an ABAB reversal design.

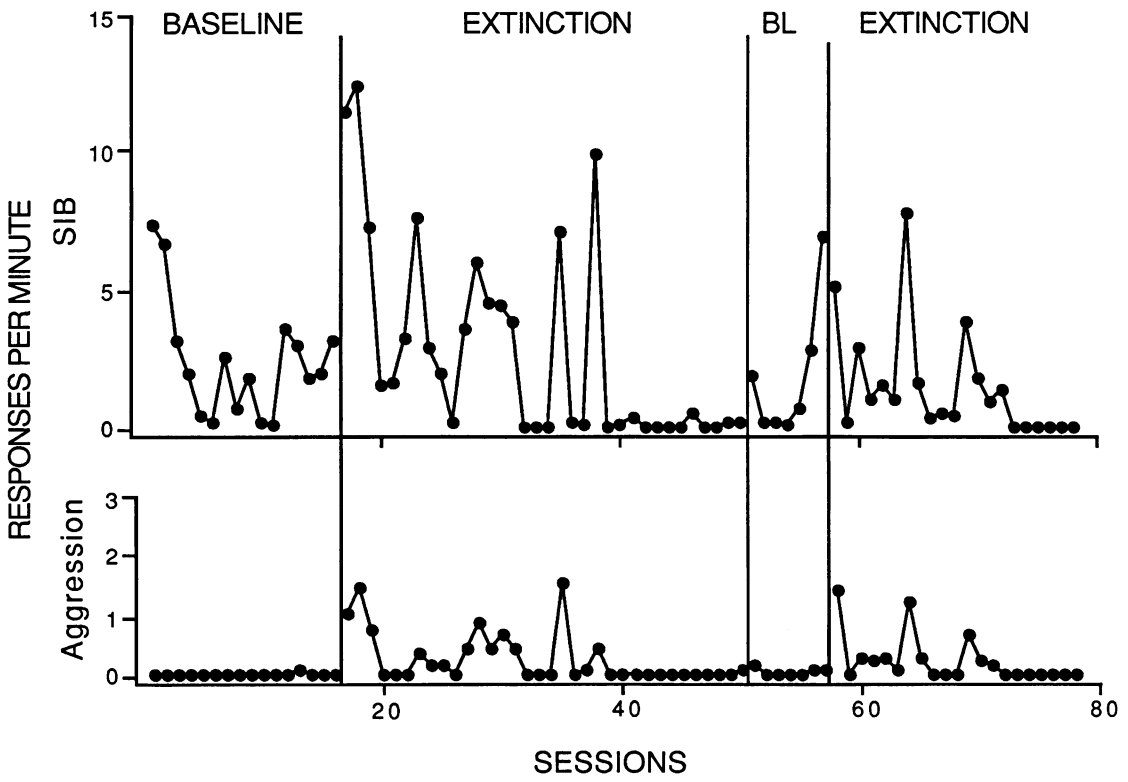
During baseline, an experimenter initiated learning trials on a fixed-time (FT) 30-s schedule using a three-prompt sequence (vocal instruction → modeling → physical guidance). Verbal praise and pats on the arm or shoulder were delivered contingent on correct responses. When SIB occurred, the experimenter terminated the trial, removed task materials, and ignored Steve until the next trial was scheduled to begin. In essence, a brief time-out or escape was provided contingent on the occurrence of SIB. Aggression was blocked to prevent physical injury to the experimenter but was otherwise ignored (i.e., it produced no consequences).

During extinction, the delivery of instructions, the three-prompt sequence, and praise and pats contingent on correct responses were unchanged. However, escape that was provided contingent on SIB during baseline was discontinued. When SIB occurred during a trial, the experimenter physically guided Steve to perform the task to completion. Aggression was blocked and ignored.

RESULTS AND DISCUSSION: The figure shows the rate of Steve's SIB (upper panel) and aggression (lower panel) across experimental conditions. During the initial baseline, the rate of SIB was variable. When extinction was first implemented, there was an initial burst of SIB, followed by a variable and elevated rate of responding for 22 sessions. A treatment effect was observed during the last 12 sessions, as the rate of SIB decreased and stabilized at 0.6 responses per minute. An increasing trend in SIB was observed during the second baseline. When extinction was implemented a second time, the rate of SIB remained variable and elevated for 15 sessions before decreasing to zero.

Aggression, a nontarget behavior, occurred rarely during both baseline conditions. However, aggression increased when extinction was implemented for SIB. Initial bursts of aggression were followed by variable and elevated rates for some time (22 and 14 sessions during the first and second extinction conditions, respectively). At the end of each extinction condition, when SIB was stable and low, there was little or no aggression.

Most of the research to date on extinction of self-injurious escape behavior has focused on the treatment of children and adolescents. By contrast, this study examined the effects of escape extinction with an adult, one who had a long history of SIB, aggression, and a variety of other inappropriate social behaviors. We replicated the effects of extinction as described by Iwata et al. (1990) and found three additional noteworthy results. First, there was an extended burst of SIB when extinction was initially implemented. Iwata et al. and others have discussed the possibility that the procedures described



here could represent either extinction (prevention of escape from learning trials, which included physical guidance) or punishment (contingent physical guidance per se). The demonstration of a consistent bursting pattern in Steve's SIB was similar to but much more protracted than that seen in previous studies, and is more consistent with an extinction interpretation. Second, extinction was also associated with increased variability in response topography. Aggression, the nontarget behavior, occurred rarely during baseline but increased at the beginning of both extinction conditions. Third, the similar data trends in both SIB and aggression only during treatment conditions and when extinction was applied only to SIB suggest several possibilities that should be explored in future research: (a) SIB and aggression may have been members of the same functional response class, with SIB predominating during baseline due to its greater efficiency (i.e., mild forms of SIB were sufficient to produce escape); or (b) aggression may have been an extinction-induced phenomenon (Azrin, Hutchinson, & Hake, 1966).

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