

MOMENTUM VERSUS EXTINCTION EFFECTS IN THE TREATMENT
OF SELF-INJURIOUS ESCAPE BEHAVIOR

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An individual's self-injurious escape behavior was treated using a high-probability instructional sequence with and without extinction. When presented alone, the high-probability sequence did not reduce self-injurious behavior. When escape extinction was implemented either alone or in combination with the high-probability sequence, self-injury decreased and compliance increased, suggesting that extinction may be a necessary component of the treatment for behavior problems maintained by escape.

DESCRIPTORS: behavioral momentum, escape, extinction, negative reinforcement, self-injurious behavior

Mace et al. (1988) described a treatment for noncompliance that involved presenting a series of instructions for which there was a high probability of compliance immediately preceding an instruction for which there was a low probability of compliance. The procedure was effective in increasing compliance to the low-probability instructions, presumably as a result of behavioral momentum established by the high-probability instructional sequence. Mace and Belfiore (1990) extended this research by using the high-probability (high- p) sequence to increase compliance and decrease escape-maintained stereotypy. Although the high- p sequence directly alters the contingency for compliance by increasing the density of positive reinforcement, the sequence contains no explicit provision for interrupting the escape contingency maintaining inappropriate behavior. The authors noted, however, that concurrent with implementation of the high- p sequence, the subject was no longer permitted to escape from the task if stereotypy occurred. Thus, it is likely that the reduction in escape behavior was at least partially a result of escape extinction (Iwata, Pace, Kalsher, Cowdery, & Cataldo, 1990). In this study, the separate and combined effects of the high- p instructional sequence and extinction were assessed as treatment for self-injurious behavior (SIB) maintained by escape.

METHOD: A 33-year-old profoundly retarded female named Ethel participated. Her primary topography of SIB consisted of head banging against hard surfaces. During continuous 10-s intervals, observers recorded on a hand-held computer instances of SIB, experimenter-presented low- and high-probability instructions, and compliance to low- and high-probability instructions. Interobserver agreement, assessed during 32% of the sessions, was calculated based on interval-by-interval comparison of observers' records and ranged from 92% to 100%.

Prior to treatment, a functional analysis of Ethel's SIB indicated that it was maintained by escape from instructions. Further assessment of Ethel's responses to a variety of instructions permitted identification of low-probability instructions (with which she complied during less than 50% of the trials and were followed by SIB during at least 25% of the trials) and high-probability instructions (with which Ethel complied during at least 70% of the trials and were followed by SIB during at most 10% of the trials).

Baseline. Randomly selected low-probability instructions were presented to Ethel on a fixed time (FT) 1-min schedule. The experimenter delivered praise following compliance and an additional prompt or physical guidance following noncompliance. Sessions lasted 15 min or until SIB occurred, whichever occurred first. As a result of this escape contingency, the dependent variable was latency (minutes) to the first occurrence of SIB.

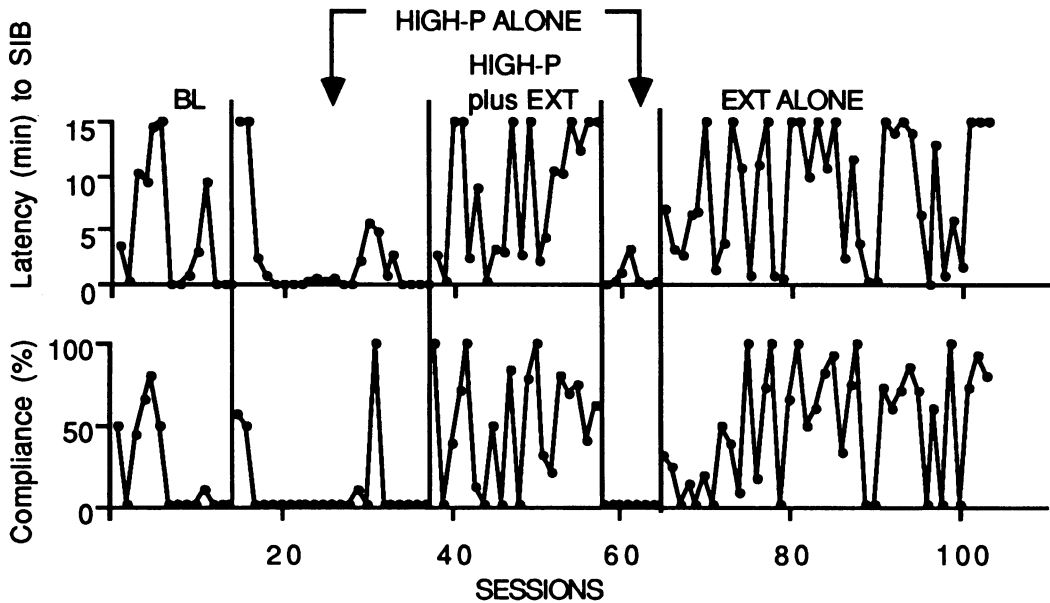
High-probability instructional sequence. On an FT 1-min schedule, the experimenter issued three high-probability instructions followed by a randomly selected low-probability instruction. The contingencies in effect were the same as those during baseline: praise following compliance to any of the instructions, prompts and guidance following noncompliance, and session termination following SIB. If no SIB occurred, sessions lasted 15 min. Due to a decrease in compliance to the first set of high-probability instructions, a second set of high-probability instructions was substituted after 10 sessions.

High-probability sequence plus escape extinction. The high- p sequence was implemented as during the previous condition. In addition, however, occurrences of SIB were followed by guidance to comply with the instruction and continuation of the session; that is, SIB no longer produced escape.

Escape extinction. Low-probability instructions were given on an FT 1-min schedule, compliance was followed by praise, and extinction (session continuation) was in effect for SIB.

RESULTS AND DISCUSSION: The figure shows latency to the first occurrence of SIB (upper panel) and compliance with low-probability instructions (lower panel). Ethel's mean latency to SIB during baseline was 4.7 min. When the high- p sequence was implemented for compliance, latency to SIB increased initially but decreased and remained low for both sets of high-probability instructions (M latency = 3.4 and 1.3 min for instruction Sets 1 and 2, respectively). When escape extinction was added to the high- p sequence, latency to SIB increased (M = 8.4 min). A return to the high- p sequence alone (without extinction) was associated with a decrease in latency (M = 0.8 min). Finally, when escape extinction was the only treatment condition in effect, Ethel's mean latency to SIB increased to 8.2 min.

Ethel's mean percentage of compliance to low-probability instructions was 22% during baseline, and little improvement was observed during either of the high- p sequence alone conditions (M = 6%). Compliance to low-probability instructions was highest during the high- p sequence plus extinction condition (M = 51%) and during extinction alone (M = 48%).



Compliance to high-probability instructions (not shown in the figure) was maintained only when the high- p sequence was combined with extinction ($M = 56\%$) and not when the high- p sequence was presented alone ($M = 14\%$).

Mace and Belfiore (1990) suggested that the high- p instructional sequence may be effective in increasing compliance and reducing escape behavior. However, concurrent implementation of the high- p procedure with escape extinction supports two alternative interpretations of their data: (a) The high- p sequence increased compliance while the prevention of escape produced extinction of escape behavior, or (b) the extinction procedure decreased escape, and compliance increased as a collateral behavior.

In the present study, systematic replication of the Mace and Belfiore (1990) procedures (combining the high- p sequence with escape extinction) produced similar results—increased compliance and reduced escape behavior. Further clarification of the separate effects of both procedures on both behaviors was provided through the use of additional control conditions. The reinforcement component alone produced little change in either compliance or SIB, suggesting that the high- p sequence may not be sufficient to override the effects of an ongoing escape contingency (i.e., strengthening compliance alone may not compete with the opportunity to terminate instructional sessions). In fact, two sets of instructions associated with a high probability of compliance prior to treatment did not remain so when the high- p sequence was implemented alone, suggesting that high-probability instructions may acquire aversive properties when paired with low-probability instructions. During the final condition of this study, extinction without the high- p sequence was associated with a decrease in SIB and an increase in compliance, although the effects were somewhat more variable than when extinction was combined with the high- p sequence.

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This research was supported in part by a grant from the Developmental Disabilities Planning Council. Reprints may be obtained from Brian Iwata, Department of Psychology, University of Florida, Gainesville, Florida 32611. Received November 2, 1991; final acceptance November 18, 1992; Action Editor, Nancy A. Neef.