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# Assessing preferences for positive and negative reinforcement during treatment of destructive behavior with functional communication training

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## Abstract

Results of prior studies (e.g. [J. Appl. Behav. Anal. 32 (1999) 285]) showing that participants chose alternative behavior (compliance) over escape-reinforced destructive behavior when this latter response produced escape and the former response produced positive reinforcement may have been due to (a) the value of the positive reinforcer overriding the value of the negative reinforcer or (b) the presence of the positive reinforcer altering the value of the negative reinforcer (i.e., lessening the aversiveness of the demands). In this investigation we evaluated the relative contributions of these alternative mechanisms with two girls with autism. We compared the relative effects of positive and negative reinforcement using equivalent communication responses under both a restricted-choice condition (in which participants could choose positive or negative reinforcement, but not both) and an unrestricted-choice condition (in which participants could choose one or both reinforcers). Both participants often chose positive over negative reinforcement in the restricted-choice condition. However, in the unrestricted-choice condition (in which participants could choose one or both reinforcers), one participant consistently chose both reinforcers by the end of the analysis whereas the other primarily chose only positive reinforcement. Results suggested that for one participant the value of the positive reinforcer overrode the value of the negative reinforcer, whereas for the other participant, the presence of the positive reinforcer in the demand context lessened the aversiveness of the demands.

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**Keywords:** Autism; Choice; Functional analysis; Positive reinforcement; Negative reinforcement

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The approach to the treatment of aberrant behavior that is increasingly becoming the standard of care begins with a functional analysis to identify the reinforcer(s) for the response, which then leads to treatments that generally manipulate that reinforcer in ways that decrease the problem behavior. For example, a common approach to the treatment of aberrant behavior maintained by negative reinforcement is to eliminate the escape contingency that was shown to reinforce the response during the functional analysis, a treatment referred to as escape extinction (EE; Iwata, Pace, Kalsher, Cowdery, & Cataldo, 1990; Kelley, Piazza, Fisher, & Oberdorff, 2003). Although EE is generally effective as treatment for aberrant behavior maintained by escape, it is sometimes associated with negative side effects (e.g., bursts of the target behavior, induction of aggression or negative vocalizations; Goh & Iwata, 1994; Lerman & Iwata, 1996; Lovaas, Freitag, Gold, & Kassorla, 1965; Piazza, Patel, Gulotta, Sevin, & Layer, 2003). A variety of procedures have been combined with EE in order to lessen the negative side effects, including differential positive reinforcement of alternative behavior (DPRA; Patel, Piazza, Martinez, Volkert, & Santana, 2002), differential negative reinforcement of alternative behavior (DNRA; Marcus & Vollmer, 1995), noncontingent reinforcement (Fisher, DeLeon, Rodriguez-Catter, & Keeney, 2004; Vollmer, Marcus, & Ringdahl, 1995), or stimulus (or demand) fading (Pace, Ivancic, & Jefferson, 1994), but bursts may still occur (see Lerman & Iwata for a discussion).

Another promising approach to the treatment of aberrant behavior maintained by negative reinforcement involves the identification of potent positive reinforcers that are then placed in direct competition with the escape contingency for problem behavior through DPRA (without extinction; Adelinis, Piazza, & Goh, 2001; DeLeon, Neidert, Anders, & Rodriguez-Cater, 2001; Lalli, Casey, & Kates, 1995; Lalli et al., 1999; Piazza et al., 1997). If the individual consistently chooses the positive reinforcer associated with the alternative response over the negative reinforcer associated with problem behavior, then EE becomes unnecessary. But even if the individual chooses the positive reinforcer over the negative reinforcer some of the time (and the alternative response increases), then EE will generally be implemented less often. Using this approach, Piazza et al. showed that the destructive behavior displayed by three participants was reinforced by escape (as well as positive reinforcement). For one participant, providing the same escape contingency for alternative behavior (compliance) and destructive behavior increased the alternative response and decreased destructive behavior to near-zero levels. For the other two participants, destructive behavior maintained at high rates when both responses produced escape. However, destructive behavior decreased with these latter two participants when the alternative response produced a break with access to positive reinforcement whereas destructive behavior only produced escape.

A limitation of the Piazza et al. (1997) study was that it was unclear in these latter two cases whether it was necessary to provide escape for the alternative response or whether reinforcing this response only with positive reinforcement would have produced similar reductions in destructive behavior. Lalli et al. (1999) addressed this limitation with five participants who displayed escape-reinforced problem behavior. These investigators reinforced the alternative response (compliance) with positive reinforcement (food) while the escape contingency remained intact. That is, when participants displayed destructive behavior, they received a 30 s break, whereas when they displayed the alternative response,

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