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FUNCTIONAL ANALYSIS AND EXTINCTION OF DIFFERENT BEHAVIOR PROBLEMS EXHIBITED BY THE SAME INDIVIDUAL

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Specific extinction procedures were matched to the function of two target behaviors displayed by the same individual, with results indicating that the matched extinction procedure suppressed the behavior for which it was designed. One of the target behaviors was exposed to an irrelevant extinction procedure, which produced no beneficial effects. These results support previous research indicating the need to match extinction procedures to the function of problem behavior.

DESCRIPTORS: extinction, functional analysis, aberrant behavior, developmental disabilities

Iwata, Pace, Cowdery, and Miltenberger (1994) illustrated the effects of matching the function of aberrant behavior to the specific type of extinction procedure used to suppress self-injurious behavior (SIB). Each of 3 participants with mental retardation and SIB was exposed to at least two of three functional variations of extinction (i.e., for attention, escape, and sensory stimulation) within a reversal or multiple baseline design. Suppression of SIB occurred only when the extinction procedure was matched to function (i.e., when the maintaining reinforcement contingency was terminated). In this study, we conducted a similar analysis, but for two problematic behaviors exhibited by the same individual, to show that (a) extinction is an effective treatment when matched to the function of the behavior and (b) matching treatment to function is possible for two separate target behaviors maintained by different functions for the same individual.

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METHOD

Amy was 27 years old, ambulatory, nonverbal, and had been diagnosed with profound mental retardation and autism. The behaviors of concern were disruptive behavior (i.e., pushing task items away, pulling her hand back from the task, screaming, and throwing items) and finger picking (i.e., rubbing her thumb and a finger together or picking at her skin with her thumb and index finger). Finger picking (SIB) produced lacerations and scabs on several of her fingers.

Observations were conducted via video monitoring while Amy was on an inpatient unit during two separate 2-week admissions. Videotapes were later coded by two trained observers using a 6-s partial-interval recording system. Disruptive behavior and finger picking were calculated as the percentage of intervals in which the behaviors occurred for each 5-min assessment session or 10-min treatment probe. Interobserver agreement, assessed for 33% of sessions, was calculated on an interval-by-interval basis and averaged

91% (range, 71% to 98%) for participant behavior and 93% (range, 80% to 100%) for procedural integrity data (e.g., attention during free play).

A brief functional analysis of disruptive behavior was conducted as described by Northup et al. (1991). The free-play condition consisted of frequent adult attention and the absence of demands (all problem behavior was ignored). During the contingent attention condition, the therapist ignored Amy but provided a brief reprimand contingent on each occurrence of disruptive behavior. The demand condition consisted of the therapist prompting Amy to complete a sorting task using a three-step prompt hierarchy (i.e., verbal request, verbal plus model, guided compliance), and escape was provided contingent on disruptive behavior. During the alone condition, Amy was left in a room alone with a wide variety of toys sitting in front of her on a table. During the brief functional analysis of disruptive behavior, we also recorded finger picking, but contingencies were not provided contingent on finger picking because this behavior occurred continuously. To provide further support that finger picking was maintained by automatic reinforcement, we continued to probe alone sessions and observed that finger picking persisted.

Escape Extinction Evaluation

After the brief functional analysis, escape extinction was implemented during demand sessions for both disruptive behavior and finger picking. That is, task demands continued to be presented to Amy whether she engaged in finger picking or disruptive behavior. Escape extinction consisted of hand-over-hand guided compliance if Amy did not begin working on the task after one verbal prompt from the therapist. The purpose of this phase was to examine the effects of escape extinction on the two target behaviors. After escape extinction suppressed disruptive behavior to near-zero occurrences, we added a differential-reinforcement-of-alternative-behavior (DRA) component, which included mand training (microswitch activation) to request a 1-min break from demands and access to preferred tangible items contingent on independently completing one task.

Sensory Extinction Evaluation

After escape extinction (irrelevant extinction for finger picking) produced no decrease in finger picking, we implemented sensory extinction plus DRA for finger picking in the same demand context. That is, we continued escape extinction plus DRA for disruptive behavior and simultaneously implemented sensory extinction plus DRA for finger picking during the same demand sessions. Sensory extinction plus DRA for finger picking consisted of blocking finger picking (sensory extinction), redirecting Amy's hand to a toy, and providing praise contingent on independent toy play (DRA). Attempts to engage in finger picking were scored as an occurrence of finger picking during this phase of the study.

To isolate the effects of sensory extinction alone, we withdrew blocking and continued with the DRA procedure. This phase consisted of starting each session by placing a toy in Amy's hand and then providing praise for toy play (i.e., identical to the DRA component during the previous condition). This phase was followed by a return to the sensory extinction plus DRA procedure to form a reversal design.

RESULTS AND DISCUSSION

Escape Extinction Evaluation

As shown in Figure 1, the brief functional analysis indicated that disruptive behavior was sensitive to negative reinforcement in the form of escape from demands. Finger picking occurred continuously during the

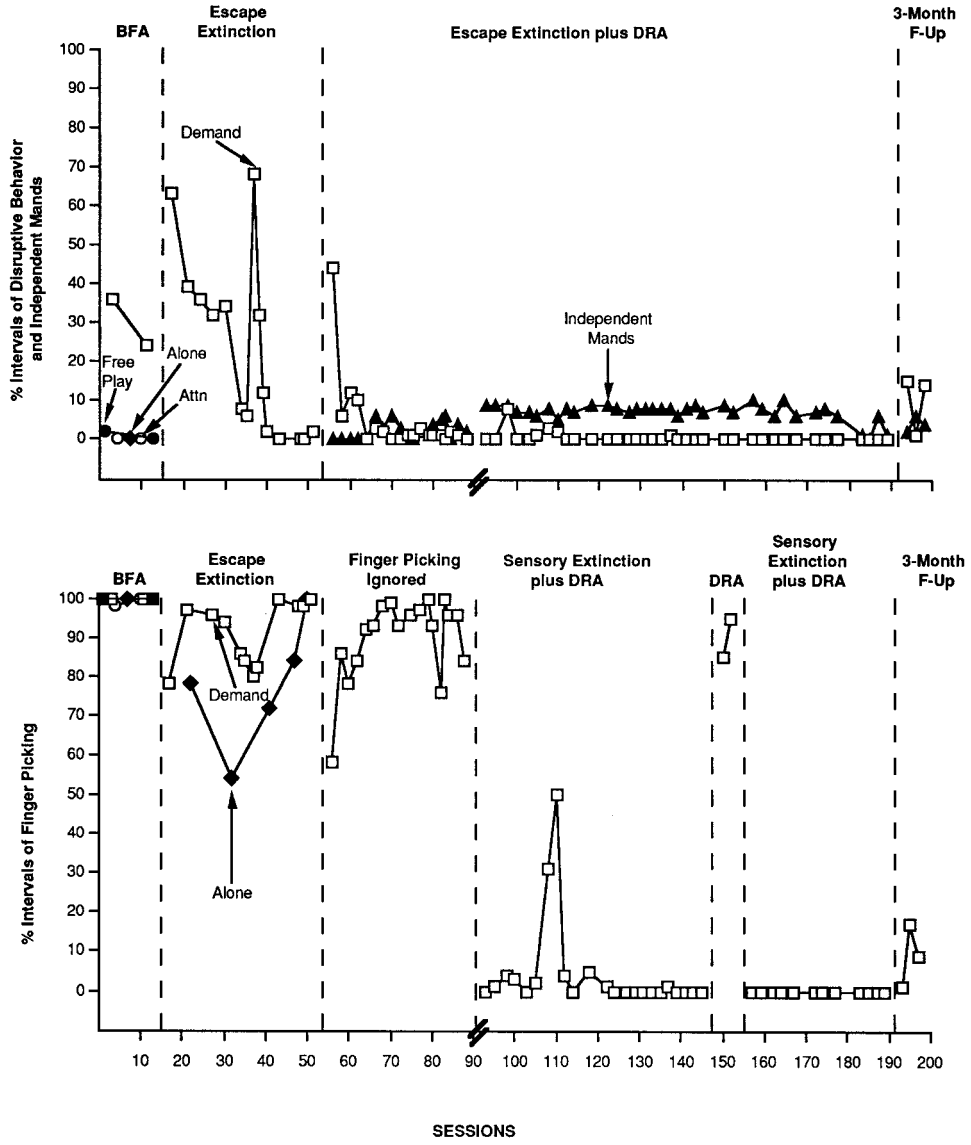

Figure 1. Top panel: percentage of 6-s intervals of disruptive behavior and mands during the brief functional analysis (BFA), escape extinction, escape extinction plus DRA, and 3-month follow-up. Bottom panel: percentage of 6-s intervals of finger picking during the brief functional analysis, escape extinction, sensory extinction plus DRA, and DRA. The break in the ordinate axis denotes the beginning of April's second admission (Attn = attention).

brief functional analysis of disruptive behavior and then persisted during several subsequent alone sessions, suggesting that it was maintained by automatic reinforcement. Disruptive behavior, when exposed to escape extinction, was suppressed to near-zero occurrences. However, no reductions were observed in finger picking when it was exposed to the same (but irrelevant) extinction procedure. When the DRA component (mand training) was added to the escape extinction treatment, disruptive behavior remained low and independent manding occurred. Maintenance of treatment effects for disruptive

behavior was observed during a 3-month follow-up probe.

Sensory Extinction Evaluation

After escape extinction had been shown to be ineffective in reducing finger picking (Figure 1), sensory extinction plus DRA was implemented for finger picking and resulted in immediate suppression of finger picking. When sensory extinction was discontinued (DRA only), finger picking immediately returned to levels observed during previous conditions. This was followed by a replication of complete suppression of finger picking when sensory extinction was reimplemented.

These results replicate those reported by Iwata et al. (1994) by demonstrating the need to match the type of extinction procedures with the function of problem behavior. We hypothesized that different reinforcers maintained two behavior problems displayed by the same individual in the same context. Different extinction procedures were then used to reduce each behavior in a staggered fashion across sessions. Escape extinction suppressed disruptive behavior maintained by negative reinforcement but produced no beneficial effects for finger picking maintained by automatic reinforcement. These results underscore the importance of identifying the maintaining contingencies for behavior problems before attempting to design an extinction procedure.

One limitation of this study was that the irrelevant extinction procedure was applied only to finger picking. Ideally, to demonstrate the need to match the extinction procedure to disruptive behavior, the irrelevant extinction procedure (sensory extinction) should have been applied to disruptive behavior. Other limitations include the absence of contingencies for finger picking during the functional analysis and the absence of data on compliance and toy contact during the escape extinction and sensory extinction treatments.

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