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FURTHER EVALUATION OF ANTECEDENT SOCIAL EVENTS DURING FUNCTIONAL ANALYSIS

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The value of a reinforcer may change based on antecedent events, specifically the behavior of others (Bruzek & Thompson, 2007). In the current study, we examined the effects of manipulating the behavior of the therapist on problem behavior while all dimensions of reinforcement were held constant. Both participants' levels of problem behaviors increased as a function of the altered behavior of the therapist without direct manipulation of states of satiation or deprivation.

DESCRIPTORS: antecedent events, contingency modeling, functional analysis, motivating operations

The functional analysis described by Iwata, Dorsey, Slifer, Bauman, and Richman (1982/1994) provided procedures for identifying variables that occasion, evoke, and reinforce problem behavior. When initial attempts to identify events that maintain inappropriate behavior are unsuccessful, modifications to the antecedent and consequent events may be necessary to approximate more closely the naturally occurring contingencies (Fisher, Ninness, Piazza, & Owen-DeSchryver, 1996; McComas, Hoch, Paone, & El-Roy, 2000; Northup et al., 1995; Richman & Hagopian, 1999). Few studies have modified antecedent events by changing only a specific variable in the physical environment without directly manipulating states of deprivation (Bruzek & Thompson, 2007; Fisher, Kuhn, & Thompson, 1998). Bruzek and Thompson found that the value of preschoolers' low-preference stimuli changed as a function of observing peers interact with those items. Similarly, Northup, Kodak, Grow, Lee, and Coyne (2004) showed that the value of the putative reinforcer was altered based on antecedent verbal instructions and not by direct manipulation of the antecedent condition (i.e., presentation of demands) or the consequences. Rates of problem behavior were higher when the participants were told that "a break" would be delivered contingent on problem behavior than when the consequences were described as "time-out," despite the fact that the consequences were topographically identical.

In the present study, results of initial functional analyses were inconclusive for 2 participants (low levels of problem behavior; data available from the first author). Anecdotal observations suggested that their target behaviors were reinforced by access to social positive reinforcers. The purpose of this study was to evaluate the effects of manipulating environmental events during mod-

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ified functional analyses without altering levels of satiation and deprivation or dimensions of the prescribed consequences.

METHOD

Participants and Setting

Lucy, a 32-year-old woman who had been diagnosed with moderate mental retardation, disruptive behavior disorder (not otherwise specified), and mood disorder (not otherwise specified), and Ayden, a 9-year-old boy who had been diagnosed with disruptive behavior disorder (not otherwise specified), stereotypic movement disorder with self-injury, and mental retardation (severity unspecified), participated in this study. Lucy had a limited repertoire of vocal speech and sign language. Ayden did not engage in vocal speech but used a limited number of picture cards to communicate with caregivers. Both participants had been admitted to an inpatient facility for the assessment and treatment of severe problem behavior.

Data Collection and Interobserver Agreement

Target problem behaviors for Lucy and Ayden included aggression (e.g., hair pulling, hitting, kicking, scratching, grabbing, and throwing objects at a person), disruption (e.g., property destruction, throwing or pushing objects, hitting or kicking walls and objects, swiping objects off surfaces, and knocking over furniture), self-injurious behavior (e.g., hand-to-face and hand-to-head hitting), and disrobing (Lucy only). Data were collected on laptop computers by trained observers who watched through a one-way window. A second observer independently collected data during 55% (Lucy) and 43% (Ayden) of sessions. Interobserver agreement was calculated by dividing each session into 10-s intervals, dividing the smaller number of responses by the larger number within each 10-s interval, averaging across all intervals, and converting the quotient to a percentage. For both participants, mean agreements were 99.6% (range, 99% to 100%).

Experimental Analyses and Designs

Preference assessments were completed with Lucy using a paired-choice format (Fisher et al., 1992). Magazines and crackers were identified as highly preferred items, and playing cards and an animal puzzle were identified as moderately preferred items. Across the following analyses, either multielement (Ayden) or combined multielement and reversal (Lucy) designs were used to demonstrate experimental control.

Edible analysis (Lucy). Reports from staff suggested that Lucy's problem behavior was more likely to occur when staff blocked her attempts to take other people's food. Therefore, an edible analysis was conducted to test whether an antecedent manipulation (therapist consuming food) increased the likelihood of problem behavior. All sessions were 15 min in duration and were conducted in the main living area of the inpatient facility.

Across all conditions, Lucy had continuous access to moderately preferred stimuli. Phase 1 of the analysis included a test condition—contingent edible item (CE) with therapist consumption—and a control condition—noncontingent edible items (NCE)—conducted in a multielement design. Prior to each test condition (in Phases 1 and 3), a therapist provided Lucy with noncontingent access to edible items for 2 min. During the CE with therapist consumption condition, the therapist consumed approximately one bite of cracker per minute from a plate of food on the table. The therapist gave Lucy one piece of cracker following each occurrence of problem behavior and blocked and ignored all other attempts by Lucy to obtain the crackers. In the NCE condition, the therapist gave crackers to Lucy independent of appropriate or problem behavior. The amount of crackers provided in this condition was yoked to the quantity consumed in the previous test condition (in the first NCE condition, the therapist made a total of five pieces of cracker available based on previous observations of Lucy's rate of food consump-

tion). During Phases 2 and 4 in the CE condition, the edible item remained visible throughout the session, the therapist did not interact with or consume the food, and the therapist delivered one piece of the food following each occurrence of problem behavior to isolate the effects of therapist behavior (consumption) on problem behavior.

Tangible analysis (Lucy). Staff also reported that Lucy was likely to engage in problem behavior when access to her personal possessions was restricted. Therefore, an analysis was conducted to determine whether the manipulation of a social event (i.e., the assignment of stimulus ownership) would alter the value of the leisure items. All sessions were 15 min long and were conducted on the main living area of the inpatient facility. In the contingent leisure items (CLI) condition (Phases 1 and 3), Lucy received 2 min of presession access to magazines (highly preferred item). The therapist restricted access to magazines at the start of session and delivered 1-min access to magazines following problem behavior. In the CLI with ownership condition (Phases 2 and 4), sessions were identical to the CLI condition except that personal labels with Lucy's printed name and address were displayed on the magazines, and the therapist stated, "Lucy, these are your magazines to look at." A free-play condition (Phase 2 only) was compared to the CLI with ownership condition in which the same magazines were freely available throughout the session, the therapist delivered brief vocal attention to Lucy every 30 s and following appropriate requests (e.g., "Talk to me, please"), and the therapist blocked and ignored problem behavior.

Attention analysis (Ayden). Ayden's caregivers' reports and anecdotal observation suggested that he was more likely to engage in problem behavior during periods of low attention, particularly when his brother (also diagnosed with developmental disabilities) engaged in undesirable behavior. All sessions were 10 min in duration and were conducted in a therapy room. During all conditions, Ayden did not have access to toys or other materials, and two therapists (A and B) were always present. In the noncontingent attention (NCA) condition (i.e., control condition), Therapist A delivered vocal attention approximately every 30 s and following appropriate requests, and problem behaviors produced no programmed consequences. In the contingent attention (CA) condition, two therapists engaged in conversation with one another. Following problem behavior, therapist A delivered a reprimand (e.g., "Ayden, stop that!"). The CA plus contingency modeling (CM) condition was identical to the CA condition except that Therapist B engaged in disruptive behaviors (e.g., ripping paper, writing on walls or table) approximately every 15 s while Therapist A also delivered reprimands to Therapist B contingent on his or her behavior.

RESULTS AND DISCUSSION

The rates of combined problem behaviors for Lucy's edible analysis are shown in Figure 1 (top). No problem behaviors were observed during the NCE or CE sessions. Problem behavior occurred during the CE with therapist consumption sessions (Phases 1 and 3; both *M*s = 0.3 responses per minute), suggesting that motivation to access preferred edible items increased when the therapist consumed them. Figure 1 (middle) depicts the rates of combined problem behavior displayed by Lucy during the tangible analysis. No problem behavior was observed during the CLI or free-play sessions. During the CLI with ownership sessions (Phases 2 and 4), Lucy reliably engaged in problem behavior (M = 3.3 responses per minute). These analyses isolated the effects of the therapist's behavior and assigned ownership on evoking problem behavior. Based on the results of the analyses described above, individualized treatments were developed and evaluated.

Figure 1 (bottom) depicts Ayden's combined rates of problem behaviors during the attention analysis. Ayden engaged in higher rates of problem

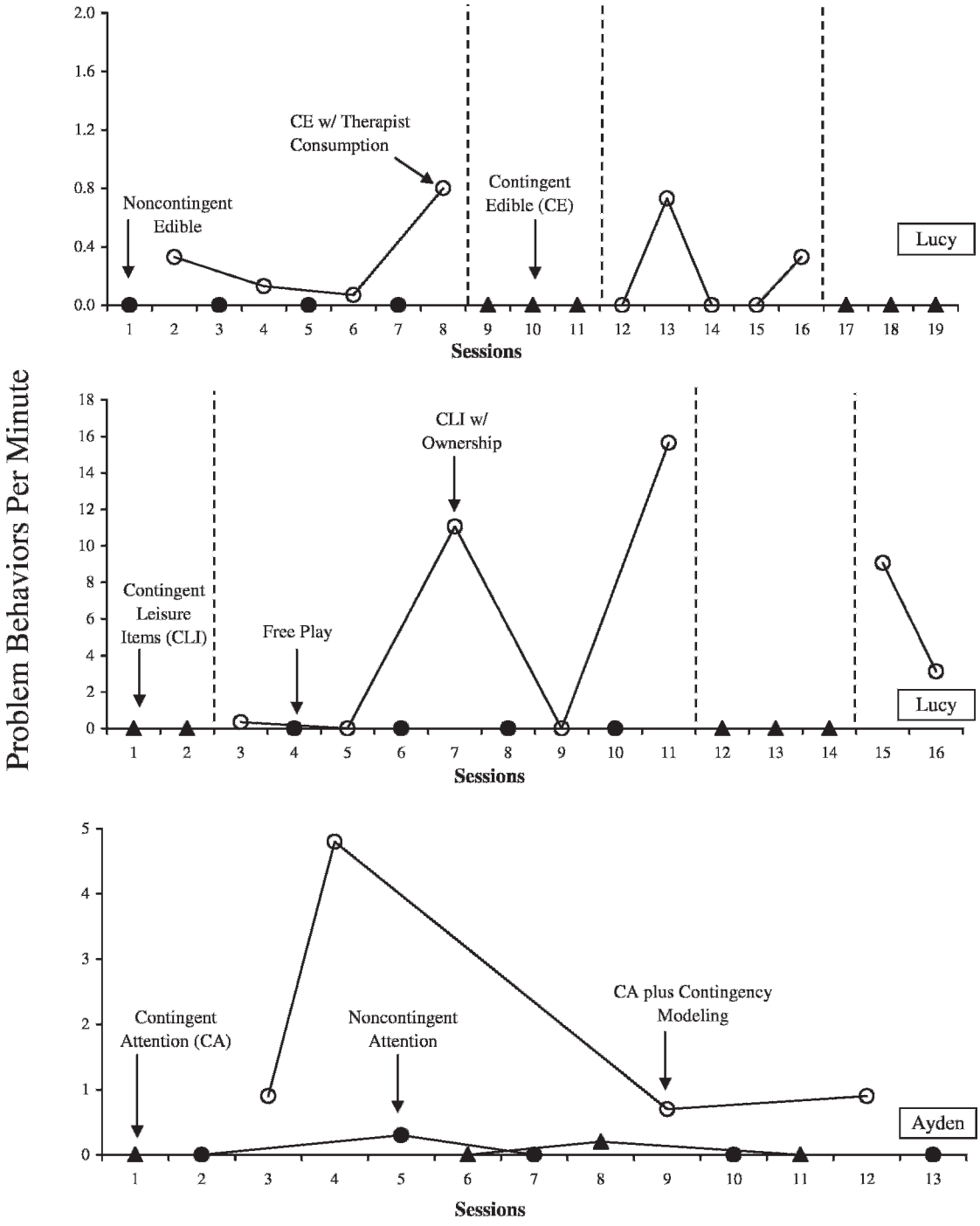

Figure 1. Problem behaviors per minute across all conditions of the edible (top) and tangible (middle) analyses for Lucy. Problem behaviors per minute across all conditions of the attention analysis for Ayden (bottom).

behavior during the CA plus CM condition (M = 1.8 responses per minute) than in the NCA and CA conditions (both Ms = 0.1 responses per minute). Thus, Ayden engaged in higher levels of problem behaviors to access attention when the therapist also delivered attention for problem behavior to other individuals.

Results from all three analyses suggested that problem behaviors were maintained at least in part by access to social reinforcers despite inconclusive initial functional analyses. In each case, neither states of satiation or deprivation nor the consequences were altered. Rather, the participants' motivation to engage in behavior to obtain the putative reinforcers was influenced by the manipulation of idiosyncratic social events. For example, motivation to access a specific stimulus was not a function of deprivation of that stimulus for Lucy (edible analysis) and Ayden. Rather, similar to the results of Bruzek and Thompson (2007), behavior changed once the reinforcer appeared to be of value to someone else. Lucy's tangible analysis demonstrated the effects of personal labels on motivation to access the reinforcer, which were similar to the findings described by Northup et al. (2004). These results have some important implications. Although standard functional analyses (e.g., Iwata et al., 1982/1994) continue to represent best practice for identification of maintaining variables for problem behavior, it may be worthwhile to attempt to account for and measure idiosyncratic, uncontrolled variables that may affect the results. One limitation to the current study is that in both the edible and attention analyses, conditions were not conducted in which the reinforcer was available noncontingently to the participant in addition to being consumed by the staff, which may have provided additional support for the derived functions. Future research could better control for this variable by introducing a condition in which both the participant and the therapist have noncontingent access to the putative reinforcer. Also, Lucy's problem behaviors may have historically been reinforced in the presence of edible items only when other people were consuming them, suggesting a potential alternative interpretation (i.e., discriminative control over responding). Finally, the current study was not designed to supplant the use of current functional analysis technologies but rather to help clinicians recognize the need to account for variables that are not typically evaluated.

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