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A COMPARISON OF MULTIPLE REINFORCER ASSESSMENTS TO IDENTIFY THE FUNCTION OF MALADAPTIVE BEHAVIOR

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Functional analysis results indicated that maladaptive behaviors displayed by a 25-year-old man with profound mental retardation were maintained by attention from caregivers and possibly, to a lesser degree, by access to tangible items. A concurrent-schedules procedure was then used to study the relative reinforcing value for maladaptive behavior of attention versus tangible items. Results of the concurrent-schedules assessment and subsequent functional communication training indicated that preference for attention versus access to a tangible object varied.

DESCRIPTORS: functional analysis, reinforcer assessment, functional communication training, concurrent schedules of reinforcement, developmental disabilities

Functional analysis is an effective approach to identify environmental variables that contribute to the maintenance of maladaptive behavior (Iwata, Dorsey, Slifer, Bauman, & Richman, 1982/1994). During an analogue functional analysis, antecedents and consequences are systematically manipulated in an attempt to identify the conditions under which an individual is most and least likely to display maladaptive behavior. Conditions that result in higher rates of maladaptive behavior than a control condition are considered to be possible reinforcers for the behavior. However, because the functional analysis procedures described by Iwata et al. evaluate a single operant at a time, conclusions regarding the relative preference for concurrently available reinforcers cannot be determined.

Lalli and Kates (1998) used concurrent schedules to assess reinforcer preference during a functional analysis of maladaptive behavior. Functional reinforcers were paired with a specific topography of maladaptive behavior during the concurrent schedules. Participants displayed clear preferences for one reinforcer over another during this assessment. The purpose of the current study was to compare the results of a functional analysis, in which reinforcers for maladaptive behavior were available in a single-operant design, with the results of a concurrent-schedules procedure, in which reinforcers for maladaptive behavior were concurrently available.

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METHOD

Participant and Setting

Sam was a 25-year-old man with diagnoses of profound mental retardation, Lennox Gastaut syndrome, and autism. He was ambulatory and could communicate by pointing to objects. All sessions were 10 min in length and were conducted in Sam's bedroom at his group home.

Data Collection and Interobserver Agreement

Trained observers recorded all behavior on handheld computers. Self-injurious behavior (SIB) was defined as hitting his head, biting his hand, or banging his head on surfaces. Aggression was defined as any occurrence of hitting, scratching, or pinching a caregiver. During functional communication training, manding was defined as placing a communication card in the therapist's hand. Two observers independently scored target responses during 34.2% of sessions across all phases of the study. The mean exact agreement coefficient for maladaptive behavior collapsed across all experimental sessions was 98%. The mean exact agreement coefficient during the functional communication training sessions for communication was 95.4%.

Phase 1: Functional analysis. A functional analysis, with procedures similar to those described by Marcus, Vollmer, Swanson, Roane, and Ringdahl (2001), was conducted to evaluate the effects of attention, demands, ignore, tangible items, and free play (control) on Sam's maladaptive behavior. Reinforcement intervals during the tangible and demand conditions were 30 s, whereas the reinforcement interval during the attention condition was approximately 5 s.

Phase 2: Reinforcer assessment of maladaptive behavior. A concurrent-schedules procedure within an ABAB reversal design was used to identify the relative reinforcing effects of access to attention and access to a tangible object (a tape recorder). Throughout each condition of this phase, one topography of maladaptive behavior was paired with one type of social reinforcer. During the first condition, SIB resulted in access to the tangible object for 30 s, whereas aggression resulted in access to adult attention (verbal reprimands) for 30 s. The reinforcer associated with each occurrence of SIB or aggression was switched in the subsequent conditions. The phase was conducted using concurrent schedules; therefore, both reinforcers were concurrently available at the start of each session. The first behavior displayed resulted in Sam receiving access for 30 s to the reinforcer that was paired with the particular topography of maladaptive behavior. All other maladaptive behaviors were ignored during the reinforcement interval. At the conclusion of the reinforcement interval, the first instance of maladaptive behavior resulted in access to the paired reinforcer for 30 s.

Phase 3: Functional communication training. Throughout all baseline sessions, SIB and aggression resulted in access to both attention (in the form of verbal reprimands) and the tangible object (the tape recorder) for 30 s. Occurrences of maladaptive behaviors during the reinforcement interval were ignored. After the conclusion of the reinforcement interval, the next maladaptive behavior resulted in access to both reinforcers. During treatment sessions, two communication cards (one paired with praise and one paired with the tangible object) were concurrently available and could be exchanged at any time; thus, manding with one card did not eliminate the ability to mand with the other card. When manding occurred, Sam immediately received access to the paired reinforcer for 30 s. The therapist kept the card that Sam exchanged for the duration of the 30-s reinforcement interval, at which time the card was replaced on the desk in front of Sam. Throughout all treat-

ment sessions, all maladaptive behaviors were ignored.

RESULTS AND DISCUSSION

Results of Sam's functional analysis are presented in the top panel of Figure 1. Sam consistently displayed the highest rates of maladaptive behavior in the social attention condition (M = 5.6 responses per minute), low rates of maladaptive behavior in both the tangible condition (M = 0.7) and the demand condition (M = 0.4), and the lowest rates of maladaptive behavior during the ignore condition (M = 0.3) and the toy play condition (M = 0.1). Results of the functional analysis suggested that Sam's maladaptive behavior appeared to be sensitive to attention; however, the effect of the tangible object was unclear given the intermittent behavior seen in the functional analysis. Therefore, it was not clear whether the difference in rates of maladaptive behavior observed during the attention and tangible conditions was due to differential preference for these reinforcers or to some other variable (e.g., differing reinforcement durations).

The results of the reinforcer assessment of maladaptive behaviors are presented in the middle panel of Figure 1. During the first phase of the assessment, Sam displayed higher rates of aggression (M = 0.8 responses per minute) than self-injury (M = 0.3), indicating a preference for attention. When paired reinforcers were alternated in the second phase of the assessment, Sam displayed higher rates of self-injury (M = 1.5) for attention than aggression (M = 0.1) for the tangible object. During the subsequent reversal, Sam once again displayed higher rates of aggression (M = 1.0) for attention than self-injurious behavior (M = 0.6) for the tangible object. During the final phase, Sam displayed higher rates of aggression (M = 1.4) than self-injury (M = 0.2), suggesting a change in preference from attention to tangible items. The overall trend during this phase suggested that preference for tangible items may have been decreasing while preference for attention may have been increasing.

Sam's rates of communication and maladaptive behavior are depicted in the bottom panel of Figure 1. During the first treatment phase, Sam communicated for the tangible object slightly more frequently (M = 1.1 responses per minute) than he communicated for attention (M = 0.7). During the second treatment phase, Sam communicated for both the tangible object (M = 0.9) and attention (M = 0.9) at equal rates, suggesting relatively equal preferences for the reinforcers. Sam displayed high rates of maladaptive behavior (Ms = 1.6 and 1.3) during the first and second baseline phases, respectively. Throughout both functional communication plus extinction phases, Sam displayed near-zero rates of maladaptive behavior (Ms = 0.03 and 0.07).

Results of the functional analysis suggested that maladaptive behavior was most sensitive to attention. However, the results of the reinforcer assessment of maladaptive behavior did not entirely support this result. Although attention was identified as a reinforcer for maladaptive behavior, it appeared that attention was not the only reinforcer for maladaptive behavior. The reinforcing value of the tangible object seemed to increase across this assessment. During functional communication training, Sam intermittently chose both reinforcers, suggesting that there was no clear preference for either reinforcer. In sum, the reinforcer assessment of maladaptive behavior and manding enhanced the results of the functional analysis by providing additional information regarding the relative preferences for each reinforcer. Functional analyses examine reinforcers for maladaptive behavior in single-operant procedures. Although this information can be of value, these situations may not represent

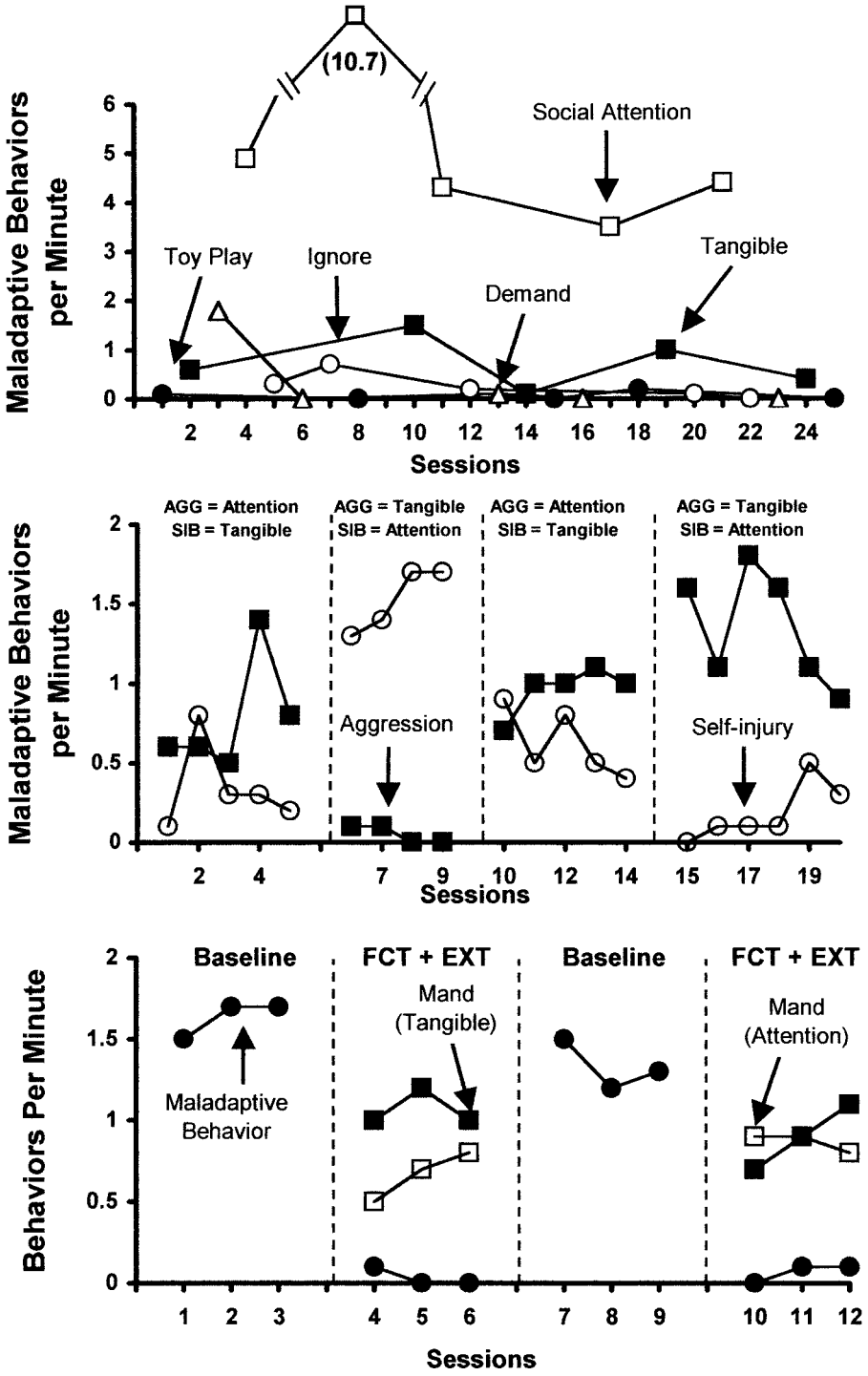

Figure 1. Rate of Sam's maladaptive behavior during the functional analysis (top panel) and the reinforcer assessment (middle panel), and rates of communication and maladaptive behavior during functional communication training (bottom panel). FCT + EXT = functional communication training plus extinction.

typical situations in which multiple reinforcers may be concurrently available for an individual's maladaptive or appropriate behavior.

Several limitations may affect the conclusions of this study. First, only 1 individual participated. A replication of the current study with multiple participants would assess the generalizability of these results. A second limitation of the study is that we assessed only behavior that was maintained by positive reinforcement. Future research should examine the relative preference of reinforcers concurrently available to participants over longer periods (DeLeon et al., 2001). This added information may be useful in designing treatments that directly manipulate the most preferred reinforcers for both appropriate and maladaptive behavior.

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