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EFFECTS OF A FIXED-TIME SCHEDULE ON ABERRANT AND ADAPTIVE BEHAVIOR

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Fixed-time (FT) schedules of reinforcement have been used to decrease destructive behavior. However, the effects of FT schedules on acquisition and maintenance of appropriate behavior remain unclear. In this study, we present a case in which an FT schedule produced an increase in adaptive behavior and resulted in a significant decrease in destructive behavior.

DESCRIPTORS: adaptive behavior, destructive behavior, fixed-time schedules, pervasive developmental disorder

Fixed-time (FT) schedules of reinforcement involve the response-independent (time-based) delivery of a reinforcer, and are sometimes used to reduce destructive behavior. Vollmer, Iwata, Zarcone, Smith, and Mazaleski (1993), for example, provided access to a functional reinforcer (i.e., attention) using various FT schedules to decrease the occurrence of self-injury. Fixed-time schedules may also suppress behavior maintained by ambiguous sources of reinforcement. For example, following unclear functional analyses for 3 participants, Vollmer, Marcus, and LeBlanc (1994) decreased the occurrence of self-injury by providing continuous access to highly preferred stimuli.

Although FT schedules often reduce destructive behavior, the explicit effects of FT schedules on adaptive behavior are less certain (Vollmer et al., 1993). Data on both inappropriate and appropriate responses may be useful in evaluating the effectiveness of FT schedules. In the current study, we describe a case in which an FT schedule was associated with a decrease in aberrant behavior and an increase in appropriate responding.

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METHOD

June, a 12-year-old girl who had been diagnosed with pervasive developmental disorder and traumatic brain injury, was enrolled in an intensive day-treatment program for the assessment and treatment of destructive behavior consisting of aggression (pinching, biting, or sitting on others) and disruption (throwing objects, banging on objects). Sessions were conducted in a padded room that contained two chairs and a table. All sessions were 10 min in length, and two to four sessions were conducted daily.

Observers who were seated in unobtrusive positions within the room collected data on destructive behavior, compliance (defined as completion of a task following a verbal or gestural prompt), and in-seat behavior (defined as contact between June's buttocks and her chair). Exact agreement coefficients for destructive behavior and compliance were calculated by dividing the number of agreements (two observers recording the same number of occurrences) by the number of agreements plus disagreements and multiplying by 100%. Agreement for in-seat behav-

ior was calculated by dividing the smaller duration (in seconds) by the larger duration and multiplying by 100%. Reliability data were collected on 32% of sessions, and agreement averaged 92.2% (range, 57.4% to 100%) for destructive behavior, 86.9% (range, 45.9% to 100%) for compliance, and 94.5% (range, 77.5% to 99.8%) for in-seat behavior.

A functional analysis (based on Iwata, Dorsey, Slifer, Bauman, & Richman, 1982/1994) was conducted to identify the reinforcer maintaining June's destructive behavior. The functional analysis consisted of the following conditions: demand (i.e., instructions were removed contingent on destructive behavior), attention (i.e., a brief verbal reprimand was delivered contingent on destructive behavior), tangible (i.e., access to a highly preferred stimulus was provided contingent on destructive behavior), ignore (i.e., a therapist ignored all occurrences of destructive behavior), and toy play (i.e., June had continuous access to preferred stimuli and social interaction).

June consistently displayed low levels of in-seat behavior and compliance as well as variable rates of destructive behavior during academic activities. Thus, following an inconclusive functional analysis, two conditions were developed to assess the occurrence of appropriate and inappropriate behavior in an academic context. In the control condition, continuous tasks were presented to June using a least-to-most prompt hierarchy (verbal, gestural, and physical prompts). Tasks were chosen from her ongoing educational program. Identical tasks were presented in both conditions. Examples of the tasks included buttoning a sweater, brushing hair, and matching shapes and colors. If June stood up from her chair, left the table, or engaged in destructive behavior, the therapist continued with the prompting sequence. Compliance with verbal or gestural prompts resulted in brief praise (e.g., "That's nice working") and immediate presentation of another instruction. In the FT condition, June received access to a preferred edible item (as identified via a stimulus choice preference assessment; Fisher et al., 1992) on an FT 20-s schedule. The edible item was placed on the table by the therapist without comment, and the instructional sequence continued as described above. With the exception of the FT schedule of reinforcement, the FT condition was identical to the control condition (i.e., contingent praise, least-to-most prompt hierarchy, no escape). The conditions were randomly presented in a multielement design.

RESULTS AND DISCUSSION

Results of the functional analysis were inconclusive in that downward trends ended in zero rates of destructive behavior in all conditions. The mean rates of destructive responses (per minute) were 0.6 (range, 0 to 1.5) in the demand condition, 0.5 (range, 0 to 2.4) in the attention condition, 0.3 (range, 0 to 1.7) in the tangible condition, 0.2 (range, 0 to 0.9) in the ignore condition, and 0 in the toy play condition.

As can be seen in Figure 1, the FT condition was associated with high and stable levels of in-seat behavior (M = 97.6%; top panel) and compliance (M = 88.6%; middle panel), whereas lower levels of both responses were observed in the control condition (in seat, M = 42.9%; compliance, M = 45.1%). It should be noted that slightly more instructions were presented in the FT condition (M = 2.9 per minute) relative to the control condition (M = 2.1 per minute), which appeared to be due to the fact that June stayed in her seat more when the FT schedule was in effect. As shown in Figure 1, the FT condition yielded low rates of destructive behavior (M = 0.01), compared to high and variable rates of destructive behavior in the control condition (M = 1.2).

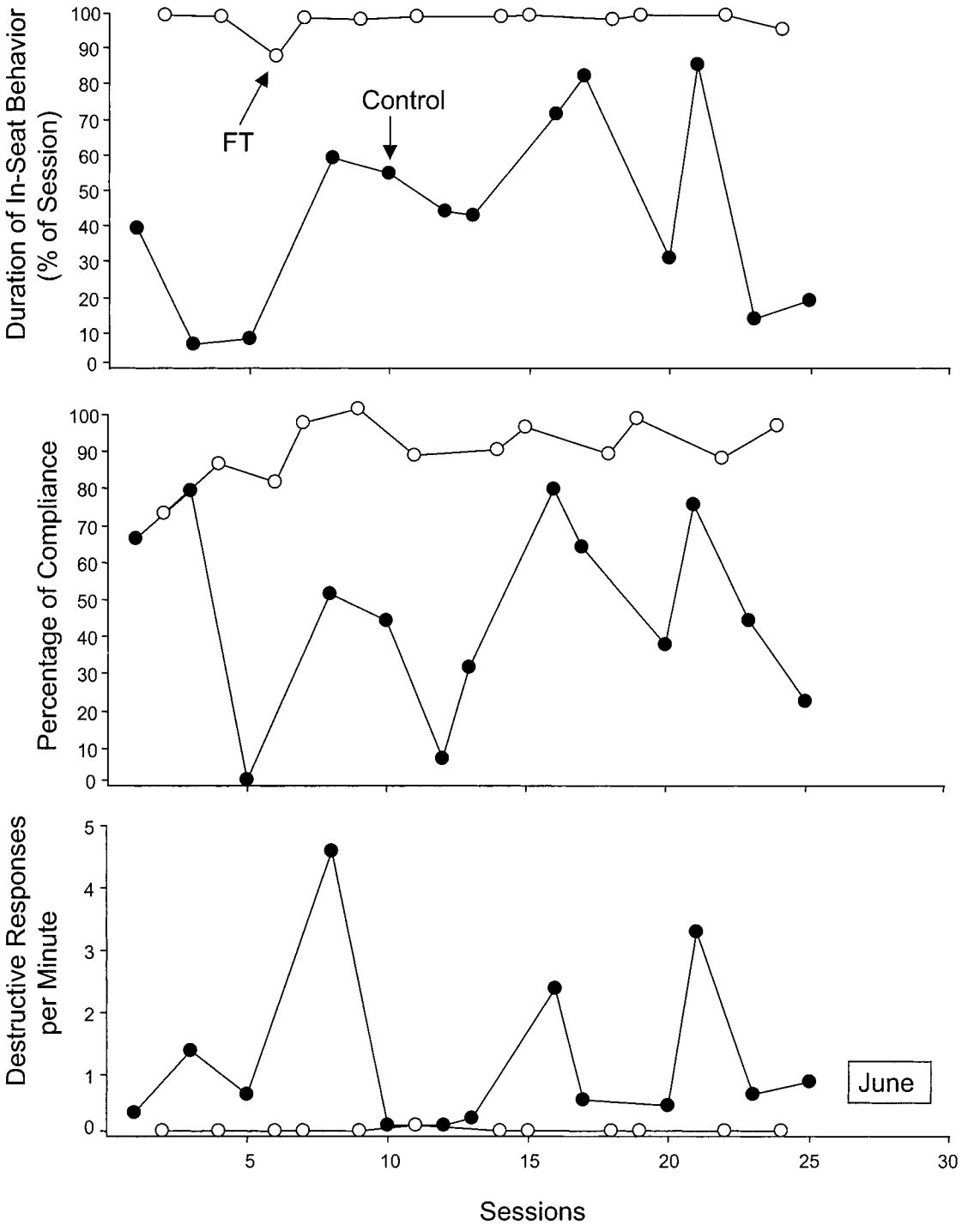

Figure 1. Duration of in-seat behavior (upper panel), percentage of compliance (middle panel), and rate of destructive behavior (lower panel) in the FT and control conditions.

During the FT condition, increases in two adaptive responses were observed, even though neither response was reinforced through direct contingencies. Similarly, decreases in destructive behavior were obtained under the FT schedule. These results suggest that, in addition to suppressing inappropriate behavior, FT schedules may also increase and stabilize adaptive behavior. The ease of implementation of FT schedules may be preferable to contingent reinforcement treatments in certain applied settings (Vollmer et al., 1993).

A limitation of these data concerns the inability to identify the function of June's destructive behavior. In addition, the FT schedule was not thinned from its initial value, which may limit the generality of these results. Finally, the current study involved only 1 subject; therefore, the findings should be interpreted as preliminary.

Future investigators may wish to determine the mechanism responsible for this phenomenon under FT schedules. It is possible that appropriate behavior was incidentally reinforced during the FT condition. It is also possible that the time-based presentation of a highly preferred stimulus altered the establishing operation for destructive behavior (e.g., the academic context was less aversive).

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