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THE EFFECTS OF FIXED-TIME REINFORCEMENT SCHEDULES ON PROBLEM BEHAVIOR OF CHILDREN WITH EMOTIONAL AND BEHAVIORAL DISORDERS IN A DAY-TREATMENT CLASSROOM SETTING

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The current study assessed the effects of fixed-time reinforcement schedules on problem behavior of students with emotional–behavioral disorders in a clinical day-treatment classroom setting. Three elementary-aged students with a variety of emotional and behavioral problems participated in the study. Initial functional assessments indicated that social attention was the maintaining reinforcer for their verbally disruptive behavior. Baseline phases were alternated with phases in which attention was provided on fixed-time schedules in the context of an ABAB design. The results indicated that the provision of attention on fixed-time schedules substantially reduced the participants' rate of verbal disruptions. These decreases were maintained during initial thinning of the schedules. The results provide one of the first examples that such an intervention can be successfully implemented in a classroom setting.

DESCRIPTORS: emotional–behavioral disorders, fixed-time schedules, noncontingent reinforcement

Many children with various psychiatric, emotional, or behavioral disorders display severe problem behaviors that can be very challenging to educators and other caregivers (Quay & Hogan, 1999). In some cases these behaviors lead to decisions that the children cannot be supported in typical regular and special education settings, and they are referred to various separate day-treatment or hospital programs to receive educational services (McConnell, 2001). For example, for the 2000–2001 school year it was reported that nearly 32,000 students with emotional or behavioral disorders in the U.S. received educational services in day-treatment and hospital-based programs (Office of Special Education Programs, 2003). Given that severe problem behavior is frequently the reason for such referrals, these behaviors and their effective management are clearly of concern when providing educational services for this population.

A substantial number of studies have documented the effectiveness of fixed-time (FT) reinforcement schedules (sometimes called noncontingent reinforcement) in reducing problem behaviors in various populations (Arntzen, Brekstad, & Holth, 2005). However, the majority of these studies have involved persons with more severe developmental disabilities who exhibited self-injurious, aggressive, or destructive behaviors (Carr et al., 2000). In addition, many of the studies were carried out in more controlled clinical settings (Boelens, 2005). The purpose of the present study was to build on previous work by implementing and assessing the effects of FT reinforcement in a less structured day-treatment

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classroom setting with a different clinical population (students diagnosed with emotional or behavioral disorders).

METHOD

Participants and Setting

Participants were 3 children who had been admitted to a short-term day-treatment program housed in a psychiatric hospital. Each child had been identified in public school settings as having emotional or behavioral disorders that led to their referral to the day-treatment program. Josh and Mike were 12 years old and had been diagnosed with bipolar disorder. Chad was an 8-year-old boy who had been diagnosed with an anxiety disorder. They all had been assessed as having at least average intellectual functioning and no history of learning disabilities. All sessions were conducted in a self-contained classroom that was part of the day-treatment program. During the participants' stays (which did not overlap), there were typically seven to nine other students, a certified special education teacher, and two psychiatric technicians in the classroom.

Measurement and Interobserver Agreement

The dependent variable for all 3 participants was the frequency of verbal disruptions. Verbal disruptions were defined as singing out loud, talking to a peer while the teacher was talking, or talking out without the participant first raising his hand. A 10-s partial-interval recording procedure was used. At the end of each interval the observer recorded the occurrence or nonoccurrence of verbal disruptions during that interval. A second observer independently collected data during at least 20% of the sessions for each participant distributed across all study phases. Interobserver agreement was calculated by dividing the number of intervals with agreements by the number of agreements plus disagreements and multiplying by 100%. Before beginning data collection, the two observers practiced observing the number of verbal disruptions of a nonparticipating student in the classroom until they reached an agreement level of at least 85% for two sessions. The mean agreement for Josh was 93% (range, 83% to 100%); mean agreement for Mike was 97% (range, 94% to 100%); and mean agreement for Chad was 93% (range, 88% to 97%).

Procedure and Experimental Design

Functional assessment interviews and systematic classroom observations (O'Neill et al., 1997) led to the hypothesis for all 3 students that social attention from adults was the primary maintaining consequence for their verbal disruptions (e.g., during the assessment the substantial majority of observed incidents of disruption were followed by adult social attention). Throughout the subsequent sessions, each student worked on independent academic activities involving a writing, social studies, or math assignment. During baseline, if students raised their hands and asked appropriate questions about their schoolwork, they were given answers by the teacher as quickly and succinctly as possible, and other verbal disruptions or verbal behavior were ignored. This procedure was followed during the FT treatment phases as well, along with the teacher providing verbal praise and pats on the arm according to the FT schedule in effect. The participants' initial FT schedules were determined by the mean latency to the first occurrence of problem behavior during baseline (Hagopian, Fisher, & Legacy, 1994). Initial FT intervals were 10 s for Josh and 20 s for Mike and Chad. The teacher was cued by a preset vibrating timer as to when to provide the social attention. If the participant engaged in problem behavior just prior to the scheduled delivery of social attention, the teacher delayed delivery for 10 s (Britton, Carr, Kellum, Dozier, & Weil, 2000). (Although formal data were not collected, the teacher reported that such a delay was implemented on no more than two occasions.) Following the second FT phase, attempts were made to thin the FT schedule for each participant in fixed increments.

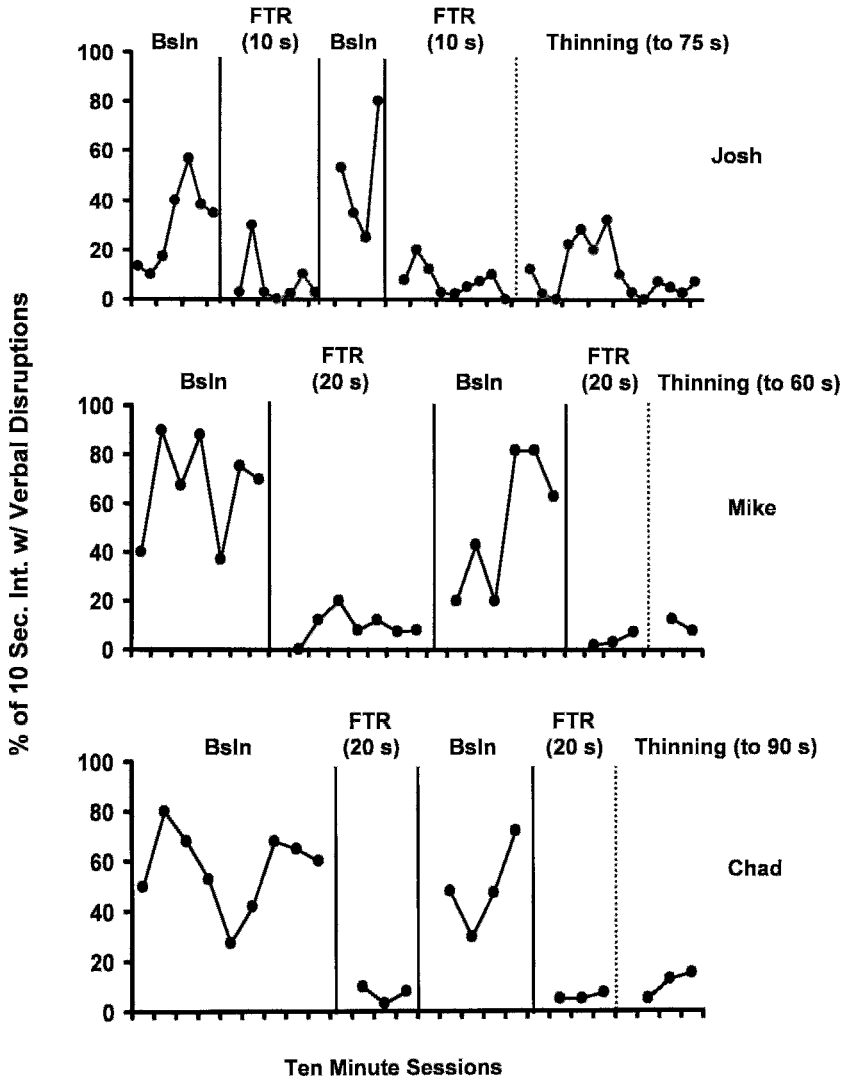

Figure 1. The percentage of 10-s intervals with verbal disruptions.

Three to four 10-min sessions were conducted each day, 5 days per week, for each participant throughout all phases. The study employed an ABAB withdrawal design, alternating between baseline and FT conditions, with a final brief schedule-thinning phase for each participant.

RESULTS AND DISCUSSION

Figure 1 presents the percentage of 10-s intervals in which verbal disruptions occurred for the 3 participants. All participants exhibited variable but relatively high rates during baseline. Implementation of FT schedules resulted in immediate, substantial, and stable decreases for all participants. During initial schedule thinning, Josh maintained low rates of problem behavior while the rate of attention decreased from every 10 s to every 60 s (Sessions 28 to 30). However, when attention was decreased to every 75 s in Session 31, talking out increased and continued to increase as the FT intervals were lengthened from 75 s to 90 s. Beginning with Session 35,

the FT interval was shortened from 90 s to 45 s for the next three sessions. Low rates of problem behavior were maintained in Sessions 38 to 40 as the FT interval was again lengthened to 60 s. During the final session, the FT interval was lengthened to 75 s, and Josh maintained low rates of verbal disruptions.

Only two schedule-thinning sessions were completed for Mike due to his unexpected discharge from the hospital program. The FT interval during the first thinning session was 45 s and was lengthened to 60 s during the final session, during which Mike's rate of problem behavior remained low and stable. Three thinning sessions were completed with Chad. The FT interval during the first session was 45 s, and the FT intervals during the last two sessions were 60 s and 90 s, respectively. During these final sessions Chad continued to exhibit low rates of behavior, although the data appeared to demonstrate the beginning of a potential increasing trend.

At the conclusion of the study, the participants were informally interviewed about whether they felt that the intervention had been helpful to them. All 3 indicated that they liked the intervention and felt that it was helpful to them in their work in the classroom; none of them expressed any reservations or concerns. To facilitate their successful transition back to their home schools, the participants' parents and teachers were provided with written summaries of the results of the functional assessments and FT intervention, along with suggestions on how to implement similar procedures in home and classroom settings.

This study extends the existing literature on the use of FT schedules by demonstrating their implementation in a day-treatment classroom setting with children with clinically diagnosed emotional or behavioral disorders. These procedures were effective in reducing disruptive verbal behavior, and these reductions were usually maintained while the FT schedules underwent initial thinning. The participants indicated that they liked the intervention and found it helpful.

These positive results notwithstanding, there are some limitations to consider. For example, experimental functional analyses were not conducted; however, the results of the functional assessment activities together with the results from the FT intervention lend credence to the hypothesis that social attention was the maintaining reinforcer for the participants' problem behavior. In addition, the FT procedure incorporated a planned brief delay in providing FT attention if the participant was engaging in problem behavior (Britton et al., 2000). Although this was rarely implemented, this could have functioned as a type of extinction procedure, the potential effects of which should be controlled and evaluated in future research.

Also, the study was conducted in a classroom environment in a clinical psychiatric setting, which involved relatively atypical staffing levels and resources. It would be more challenging to implement similar procedures in typical regular and special education classrooms, especially given the relatively dense initial FT intervals. However, this provides continued impetus for research on how to implement FT procedures effectively and practically in such settings with various populations of students. Continued research in more applied settings should also address issues such as the relative effectiveness of different approaches to schedule thinning and the effects of including procedures to support alternative appropriate behaviors (Vollmer & Sloman, 2005).

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