JOURNAL OF APPLIED BEHAVIOR ANALYSIS 1999, **32,** 95–98 NUMBER 1 (SPRING 1999)

A CASE STUDY OF BEHAVIORAL ASSESSMENT AND TREATMENT OF INSECT PHOBIA

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We assessed the academic performance of a 14-year-old boy with insect phobia in the context of feared stimuli. The dependent measure was math calculation rate across three conditions that varied therapist statements about the presence of crickets and the actual presence of live crickets. Subsequent treatment consisted of graduated exposure and contingent rewards for math problem completion. Assessment results indicated that the boy's performance was consistently low in the presence of live crickets but not when he was spuriously informed that crickets were present (the primary referral concern). Treatment results indicated no effect from exposure alone and a dramatic effect when exposure was combined with contingent rewards.

DESCRIPTORS: behavioral assessment, anxiety, insect phobia, behavior disorders, clinical behavioral analysis

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Among the thousands of papers published on anxiety disorders, almost all report the use of traditional forms of assessment such as scales, checklists, and fear inventories (Friman, Hayes, & Wilson, 1998; King, 1993). A subset of anxiety disorders whose compositional responses seem to be appropriate for behavioral assessment is phobia, and a common example is insect phobia (entomophobia). For some persons avoidance of, or escape from, insects reinforces differentially composed classes of maladaptive behavior. Conventional treatment for insect phobia involves repeated exposure to hierarchically sequenced stimuli with formal properties resembling the cardinal members of the phobic class (e.g., crickets) and to formally arbitrary stimuli with equivalent functions (e.g., taunts about the presence of crickets) (Friman et al., 1998; King, 1993). When behavioral assessments are used to evaluate treatment, they primarily focus on approach to phobic stimuli. Yet, because diagnostic criteria for phobia include impaired performance, incorporating performance measures into the assessment would provide a more complete and clinically relevant behavioral analysis (Friman et al., 1998). We found no studies on the behavioral assessment and treatment of insect phobia that used performance as the dependent measure. The purpose of the current study was to evaluate behavioral assessment and treatment of insect phobia using academic responding as the dependent measure.

METHOD

Participant

Mike, a 14-year-old boy who was enrolled at the middle school at Boys' Town, was re-

A portion of these data are presented in Jones, Swearer, and Friman (1996). This research was funded in part by a grant from the Carmel Hill Foundation to the second author. We gratefully acknowledge the helpful assistance of Patty Flynn and Cathy DeSalvo.

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ferred by his school principal because the presence of insects in his classroom and taunts about insects seriously disrupted his academic performance. Mike reported that he had difficulty concentrating and working when he thought bugs might be present and that he was often teased by peers (e.g., "Mike, there is a bug under your chair!"). His response to seeing an insect was ignoring his work, pulling the hood of his jacket over his head, or yelling. Mike identified crickets, spiders, and ladybugs as the insects he feared most.

Measurement

Although phobic stimuli may influence behavior in various ways, we focused on academic performance because it was the primary referral concern reported by his school principal. The dependent measure was Mike's work completion rate in the presence of crickets purchased from a local pet store. Two or three 4-min math probes were administered each session, during which Mike sat at a desk in a workroom (7 m by 7 m) with one of 30 alternate-form third-grade math sheets on the desk. Mike was instructed to complete as many problems as possible and his response rate was the mean number of correct digits per 4-min probe. Twenty math sheets (26%) were independently scored by the therapist and another person. Interscorer agreement, which was computed by dividing the lower estimate by the higher and multiplying by 100%, ranged from 83% to 100% (M = 98%).

Assessment

We assessed the effects of bugs present, bugs absent, and verbal statements about bugs on Mike's academic response rates. Between administration of math probes, Mike and the therapist engaged in 15 to 20 min of casual conversation (e.g., sports, grades, friends).

Bugs. Following instructions, the therapist released three live crickets in the center of the floor and left the room.

Say bugs. With Mike just outside, the therapist removed the crickets and examined the room to make certain there were no insects. Then he brought Mike back in and said, "There are bugs somewhere in this room."

No bugs. This condition was identical to the say bugs condition except that the therapist told Mike, "There are no bugs anywhere in this room."

Table 1
Steps in Graduated Exposure Hierarchy

1.	Holding a jar of crickets.
2.	Touching a cricket with foot.
3.	Close eyes for 60 s while standing in a room with crickets.
4.	Picking up a cricket with a sheet of paper.
5.	Picking up a cricket with a gloved hand.
6.	Holding a cricket for 20 s in bare hand.
7.	Allowing cricket to crawl on pants leg.
8.	Allowing cricket to crawl on bare arm.
9.	Holding a cricket in each hand for 20 s.

Treatment

Two treatment conditions were implemented: (a) graduated exposure and (b) graduated exposure plus reinforcement.

Graduated exposure. Mike engaged in 15 to 20 min of graduated exposure exercises immediately before each math probe. These exercises included a hierarchy of behavioral approach tasks, ranging from holding a jar of crickets to holding a cricket in each hand for 1 min (see Table 1). Mike selected the initial exposure level for each session and continued until he refused to proceed with the next step. Mike completed six steps with assistance during the first session, and independently completed nine steps by the final session of the exposure alone phase. Thereafter, time requirements were increased (e.g., holding a cricket for 40 s or 60 s).

Graduated exposure plus reinforcement.

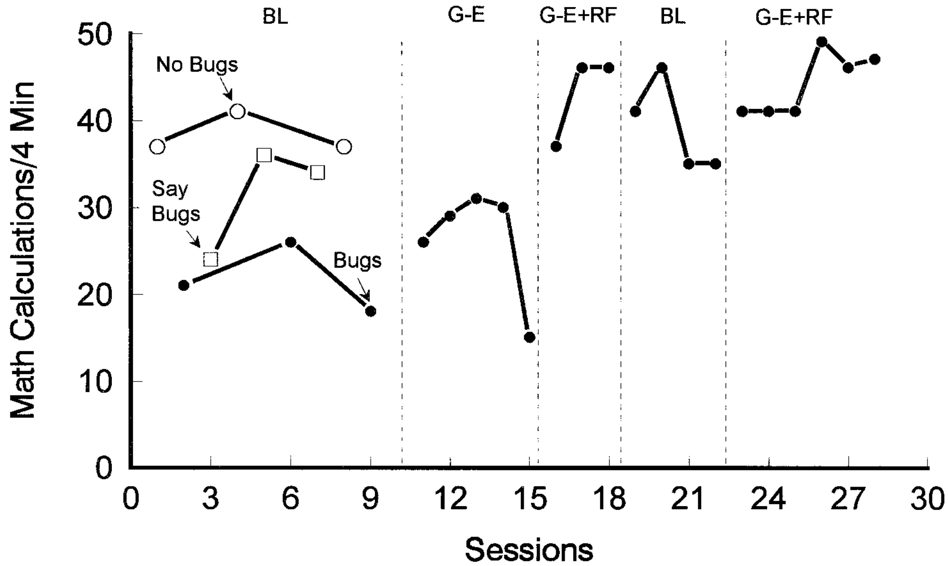

Figure 1. Mean number of correct problems per 4-min probe across assessment (BL), graduated exposure (G-E), and exposure plus reinforcement (G-E+RF) conditions.

This phase was identical to the exposure condition except that Mike earned points for each correct digit. These points were exchanged at the end of each week for items from a reinforcement menu, including Blockbuster gift certificates, videos, candy, and Legos®.

Experimental Design

A multielement design was used to evaluate the effects of the three assessment conditions. An A-B-BC-A-BC design was used to compare the effects of the experimental conditions. Mike's performance during the initial bugs condition served as the initial baseline phase.

RESULTS AND DISCUSSION

Assessment data in the first panel of Figure 1 show higher rates of correct digits in the no-bugs condition relative to the other conditions, initially low but increasing rates in the say bugs condition, and low rates in the bugs condition. Treatment data indicate no improvement in the exposure condition and increasing trends within both exposure plus reinforcement phases. A reversal phase resulted in a modest decline in scores, with the last two sessions yielding lower numbers of problems correct than any single session of either combined treatment phase.

These results demonstrate the value of a pretreatment behavioral assessment for treating insect phobia. Although teachers reported taunts as the primary concern, assessment results indicated that performance deficits were sustained only in the presence of actual crickets. Performance problems in the say bugs condition were resolved during assessment when this verbal stimulus was repeatedly presented in the absence of actual insects. The results also demonstrate the value of targeting adaptive behavior that is directly affected by the phobic stimuli rather than mere approach or indirect measures of fear or anxiety (Friman et al., 1998). Lastly, the results suggest that programmed rewards, contingent on adaptive responding, may sometimes be needed to surmount the presumed negative reinforcement from escape or avoidance of phobic stimuli.

We consider this study to be preliminary because the treatment reversal effects were not conclusive. Math calculation rates during the second baseline phase were much higher than the original baseline, possibly due to practice effects and repeated exposure to the insects. A second issue concerns the design, which replicated the effects of the combined treatment but did not allow a direct comparison (B-BC) between the two treatment components. A third limitation is that we did not formally assess generalization. Anecdotal information suggested that generalization to other insects, settings, and adaptive behaviors may have occurred. Mike's teachers reported that peer taunts have decreased substantially and that Mike is unresponsive when they occur. In addition, the first author observed Mike exterminate a spider using tissue paper shortly after the study ended. Despite its limitations, we hope this study stimulates more research on behavioral assessment and treatment of phobias.

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Received May 6, 1998
Initial editorial decision June 27, 1998
Final acceptance September 7, 1998
Action Editor, Timothy R. Vollmer