

*BRIEF FUNCTIONAL ANALYSIS AND  
TREATMENT OF BIZARRE VOCALIZATIONS IN  
AN ADULT WITH SCHIZOPHRENIA*

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Variables responsible for the maintenance of bizarre vocalizations emitted by an adult diagnosed with schizophrenia were examined via a brief functional analysis, and results suggested that the behavior was maintained by attention. A treatment consisting of extinction and differential reinforcement of appropriate vocalizations was effective in reducing bizarre vocalizations and increasing appropriate vocalizations. The use of functional analysis methodology to examine variables that maintain problem behavior in this population is discussed.

DESCRIPTORS: bizarre vocalizations, brief functional analysis, schizophrenia

Hallucinatory speech (i.e., verbal responses to unobservable stimuli), delusional speech (i.e., obviously false statements), and perseverative speech (i.e., frequently repeated phrases) are common features of the psychiatric diagnosis of schizophrenia. Although traditional accounts of these behaviors posit that they are symptoms of an underlying disorder, behavior analysts view these behaviors as a class of operants that are influenced by environmental contingencies (Wong, 1996).

In several studies, bizarre vocalizations in individuals with schizophrenia and related diagnoses have been successfully treated with differential reinforcement (e.g., Ayllon & Michael, 1959; Liberman, Teigen, Patterson, & Baker, 1973). These results suggest that these vocalizations in some individuals with schizophrenia may be maintained by, or at least are sensitive to, social consequences such as attention and escape. Therefore, pre-

treatment functional analyses should be beneficial when developing behavioral interventions for this population. Although the use of a functional analysis to treat bizarre vocalizations in an adult with schizophrenia was demonstrated in one study (Mace, Webb, Sharkey, Mattson, & Rosen, 1988), the participant also had a diagnosis of mental retardation. The present study extends the literature by assessing and treating bizarre vocalizations of an adult with schizophrenia who did not have an accompanying diagnosis of mental retardation.

## METHOD

### *Participant and Setting*

Jay was a 43-year-old man who had been diagnosed with chronic undifferentiated schizophrenia and personality disorder not otherwise specified. He engaged in bizarre vocalizations that included unusual statements unrelated to the topic being discussed (e.g., "Bruce Lee has a black belt in karate"; "I'm not going back to Margaret"). Jay resided in a board-and-care home and received Prolixin (25 mg per week), Loxapine (100 mg per day), and Seroquel (600 mg per day) throughout the course of the study. He had

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This investigation was supported by a grant from the Community Re-entry Program at the University of the Pacific. The authors thank Cris Clay and Keven Schock for their assistance with participant recruitment, Julie Patalano for her assistance with data collection, and James E. Carr for his comments on an earlier draft of the manuscript.

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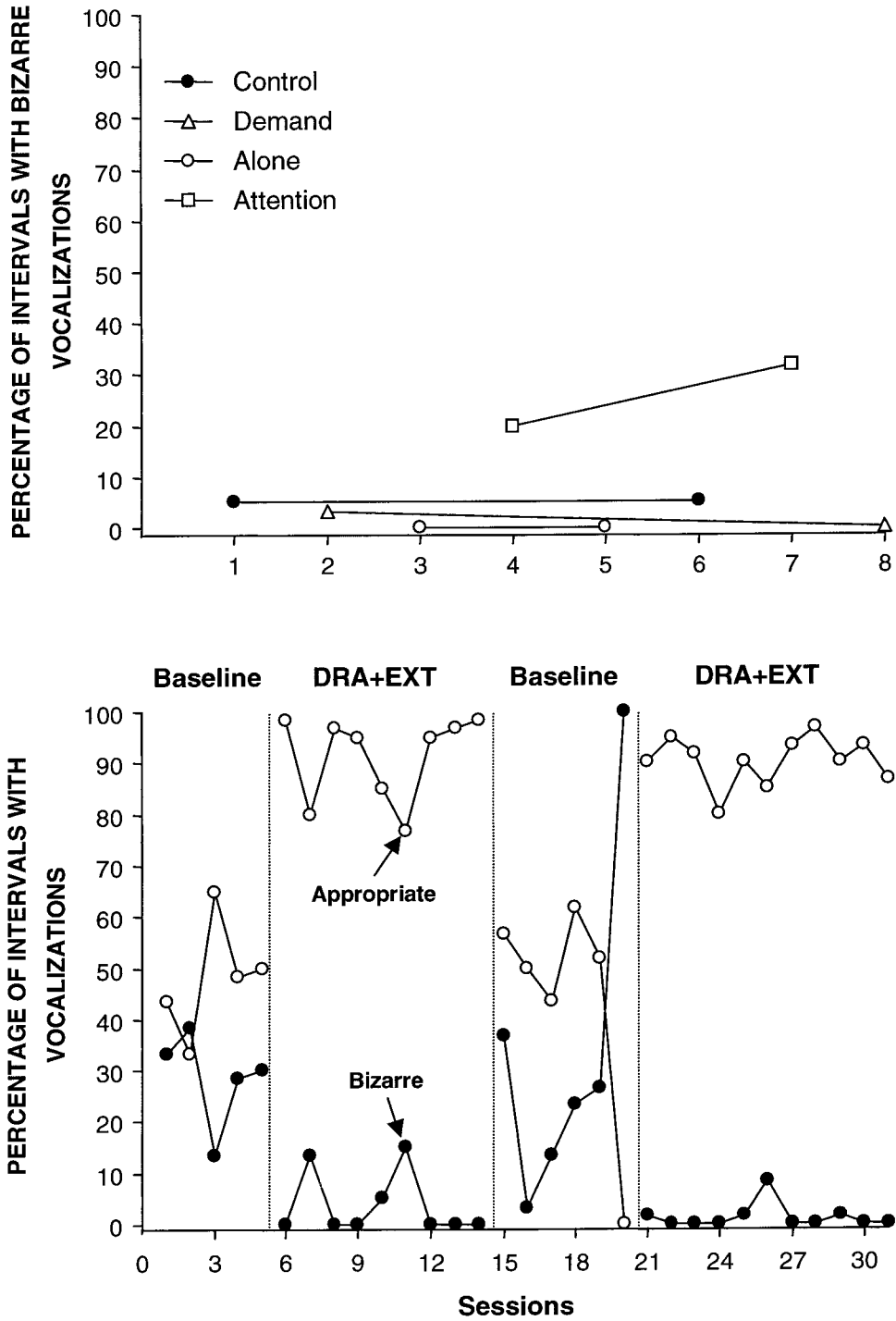


Figure 1. Percentage of intervals in which bizarre vocalizations occurred across all conditions of the brief functional analysis (top panel) and percentage of intervals in which bizarre and appropriate vocalizations occurred during baseline and treatment phases of the treatment evaluation (bottom panel).

successfully completed the 10th grade. All sessions were conducted in a therapy room equipped with a one-way mirror at a psychology clinic affiliated with a university.

#### *Data Collection and*

#### *Interobserver Agreement*

Bizarre vocalizations, identified through informal observations and interviews with the home staff, were defined as phrases or sentences that satisfied one or both of the following criteria: (a) They referred to stimuli not present or being discussed, or (b) they referred to one of five specific topics that Jay repeatedly discussed (i.e., karate, God, former girlfriends, drugs, and the FBI). Appropriate vocalizations, defined as statements or questions that did not meet the definition of bizarre vocalizations, were measured during the treatment evaluation. Responses were recorded on laptop computers by trained observers using 10-s partial-interval recording. To assess interobserver agreement, a second observer independently collected data during 69% of all sessions. Total, occurrence, and nonoccurrence agreement were assessed by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100%. Mean total, occurrence, and nonoccurrence agreement values were 93%, 85%, and 90% for bizarre vocalizations and 94%, 88%, and 83% for appropriate vocalizations.

#### *Procedure*

A psychology professor and a masters level graduate student (first and second authors, respectively) served as therapists. The specific therapist for each session was randomly determined. All sessions lasted 10 min. Two to four sessions were conducted per day, 2 to 3 days per week.

Four functional analysis conditions were randomly alternated in a multielement design. During the demand condition, the therapist asked Jay to perform a variety of

simple daily living and vocational tasks (e.g., counting and sorting objects) on a continuous basis. To reduce the artificiality of this condition, the participant was told that his work skills were being assessed. The therapist responded to appropriate vocalizations with brief (i.e., one- to three-word) answers or statements. When bizarre vocalizations occurred, the therapist said, "OK, this may be too stressful for you. Take a break," and provided a 30-s break from work. During the attention condition, the therapist sat across from Jay at a table but did not make eye contact with him. The therapist responded to appropriate questions or statements with a one-word answer. Contingent on the target behavior, the therapist made eye contact with the participant, leaned forward in his chair, and made a statement related to the bizarre vocalization (e.g., "You shouldn't talk about Bruce Lee so much"). During the alone condition, Jay was in the therapy room by himself. No programmed consequences were delivered for either bizarre or appropriate vocalizations. This condition was designed to determine if bizarre vocalizations occurred in the absence of social consequences. During the control condition, the therapist sat across from Jay at a table and asked him questions about appropriate topics. The therapist responded to appropriate vocalizations with complete sentences and eye contact. Contingent on bizarre vocalizations, the therapist withdrew eye contact and did not speak to Jay until bizarre vocalizations had ceased for 10 s. Each condition was conducted twice.

A reversal design was used to evaluate a treatment consisting of differential reinforcement of alternative (i.e., appropriate) vocalizations (DRA) and extinction of bizarre vocalizations. The baseline condition was identical to the attention condition of the brief functional analysis. During treatment, the therapist verbally responded to and made eye contact with Jay contingent on appro-

priate vocalizations. When Jay exhibited a bizarre vocalization, the therapist looked away and made no verbal statements until bizarre vocalizations had ceased for 10 s.

## RESULTS AND DISCUSSION

The top panel of Figure 1 depicts the percentage of intervals in which bizarre vocalizations occurred during the brief functional analysis. The highest levels of bizarre vocalizations occurred during the attention condition ( $M = 26\%$ ) relative to the demand ( $M = 2\%$ ), control ( $M = 5\%$ ), and alone ( $M = 0\%$ ) conditions. The bottom panel of Figure 1 shows the levels of bizarre and appropriate vocalizations across all baseline and treatment (DRA plus extinction) sessions. The treatment produced substantial decreases in bizarre vocalizations and increases in appropriate vocalizations each time it was implemented. At the conclusion of this evaluation, the intervention was found to be effective at Jay's board-and-care facility.

Results indicated that bizarre vocalizations exhibited by an adult with schizophrenia were sensitive to contingent attention. A treatment based on this assessment was successful in reducing bizarre vocalizations and increasing appropriate vocalizations. These results highlight the utility of a preinterven-

tion functional analysis and replicate previous findings (e.g., Ayllon & Michael, 1959; Liberman *et al.*, 1973) indicating that differential reinforcement may be effective in reducing bizarre vocalizations in this population. It is possible that the identification of effective function-based treatments may permit the reduction or elimination of psychotropic medication in some individuals. Future research is warranted on environmental variables that influence other problem behaviors in this population, such as bizarre body posturing and inappropriate affect.

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- Received July 11, 2000*  
*Final acceptance November 19, 2000*  
*Action Editor, Dorothea C. Lerman*