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FUNCTIONAL ANALYSIS AND TREATMENT OF PROBLEM BEHAVIOR OF ELDERLY ADULTS IN LONG-TERM CARE

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Functional analyses were conducted for the problem behavior of 3 older adults in a long-term care setting. Two of the problem behaviors were maintained by attention, and a third was maintained by escape from demands. Function-based interventions were implemented that resulted in decreases in problem behavior in each case. Implications for the use of functional analysis and function-based interventions in the field of gerontology are discussed.

DESCRIPTORS: functional analysis, behavioral gerontology, elderly, nursing home, long-term care

Elderly individuals in long-term care settings represent a growing population of individuals in need of effective behavioral supports. According to the Administration on Aging (2000), the population of elderly individuals in the United States will double from 35 million to 70 million in the next 30 years. Approximately 1.6 million (5%) of those older adults live in long-term care facilities (Aiken, 2001). Problem behaviors are the most common precipitating factor for institutionalization (O'Donnell et al., 1992; Plaud, Moberg, & Ferraro, 1998), and up to 80% of nursing home residents exhibit problem behaviors such as physical aggression, wandering, and repetitive vocalizations (Allen-Burge, Stevens, & Burgio, 1999; Meeks, 1996).

In spite of the common occurrence of problem behavior in nursing homes, only three studies have experimentally examined the functional determinants of these problem behaviors and intervened with function-based treatments. Buchanan and Fisher (2002) demonstrated that disruptive vocalizations of 2 elderly individuals were sensitive to attention, with a secondary function of sensory stimulation for 1 participant. Noncontingent reinforcement interventions resulted in reductions in disruptive vocalizations. Heard and Watson (1999) examined problematic wandering of 4 elderly individuals using a descriptive assessment and subsequently used function-based differential reinforcement of other behavior to decrease wandering. Most recently Baker, Hanley, and Mathews (2006) demonstrated that the aggression of an elder with dementia was maintained by escape from tasks such as toileting and that noncontingent escape effectively reduced aggression.

The experimental literature on functional assessment and treatment of problem behaviors of older adults in long-term care settings is small but growing. The purpose of the current study was to add to that literature in two ways. First, we replicated aspects of the previous studies by examining the behavioral functions of problem behavior for 3 participants with dementia in long-term care. Second, we evaluated the effects of various function-based treatments, including ones that have not been previously applied to the problem behaviors of elders with dementia.

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METHOD

Setting and Participants

The study was conducted in a 159-bed long-term care facility that was organized into four "neighborhoods" of approximately 39 beds each. All sessions were conducted in the family visiting room. Residents of all levels of care, ranging from minimal mobility issues to severe dementia, were integrated in each neighborhood.

Administrative and nursing staff referred 3 residents who displayed problematic behaviors. Alice was a 90-year-old woman who had been diagnosed with dementia of the Alzheimer's type and who engaged in disruptive vocalizations (e.g., loud vulgarities, utterances irrelevant to the immediate environment, repetitive statements). Derek was a 70-year-old man who had been diagnosed with dementia of the Alzheimer's type; he had been referred for wandering and attempting to exit the locked facility. Wandering was defined as walking from room to room without staying in the second room for more than 1 min or walking a specific route more than once. Staff found Derek's wandering to be problematic because they could not locate him quickly or effectively supervise his safety. Carmen was an 89-year-old woman who had been diagnosed with vascular dementia with mood disturbance; she had been referred for high rates of disruptive vocalizations (e.g., obscenities).

Experimental Design

A multielement design was used for the functional analyses with rapid alternation of four conditions (attention, demand, alone, and control). Individualized function-based treatments were evaluated using an ABAB reversal design with the A phase consisting of the differentiated condition from the functional analysis.

Dependent Measures and Interobserver Agreement

Frequency data were collected on the participant's target behaviors during all functional analysis and treatment sessions and were later converted to responses per minute. A second observer was present and simultaneously but independently collected frequency data during 30% of all functional analysis and treatment sessions. Interobserver agreement was calculated by dividing the larger number of occurrences into the smaller number of occurrences and multiplying by 100%. Agreement for functional analysis sessions ranged from 90% to 100% (M = 94%) for all participants. Agreement during treatment sessions was similar, with a range of 92% to 100% (M = 97%).

Procedure

Functional analysis. Functional analyses were conducted using procedures similar to those employed by Iwata, Dorsey, Slifer, Bauman, and Richman (1982/1994). Four experimental conditions were conducted in 10-min sessions with 5-min breaks between sessions. The order of conditions was determined by random drawing.

In the attention condition, the participant was told that the experimenter had work to do and would be sitting across the room. No consequences were provided for any behavior other than the identified target behavior, which resulted in the experimenter approaching and providing approximately 5 to 10 s of social attention. Attention was modeled on naturalistic observations of staff–resident interactions (e.g., "It's OK, you're fine," "Grandma, don't say that," "Derek, tell me about the priesthood," "How are you doing today?").

In the demand condition, the experimenter presented demands in the form of questions or gross motor tasks. Alice and Carmen were given demands such as clapping, raising their arms in the air, and knocking and lifting their legs; these were similar to the gross motor tasks used in the facility's occupational therapy program. Derek's motor abilities were intact but memory was problematic; thus, his tasks were basic academic tasks including arithmetic problems and geography questions. Staff reported that he could

complete such tasks with prompting, and his therapist encouraged these tasks to slow down memory degeneration. Compliance resulted in approximately 3 to 5 s of praise and presentation of the next demand. No response or incorrect responses resulted in least-to-most prompts. Problem behavior resulted in removal of the demand for 30 s.

In the control condition, various leisure items (e.g., magazines, puzzles, music, television) were continuously available. The experimenter also provided 5 to 10 s of social attention on a fixed-time (FT) 30-s schedule. In the alone condition, the participant was alone in the family room while the experimenter observed unobtrusively through a 2.5-cm gap in the door. No social consequences were provided, and no leisure items were available.

Preference assessment. A preference assessment was conducted with Derek to identify items to include in his function-based intervention. The Reinforcer Assessment for Individuals with Severe Disabilities (RAISD) was conducted with Derek's guardian, and six of the nominated items were included in a multiple-stimulus without replacement (MSWO) preference assessment. The stimuli were arranged approximately 5 cm apart on a table, and Derek was instructed to "choose one." The order of his selections was noted, and access to the selected item was allowed for approximately 30 s. After the access period, the experimenter retrieved the item, removed it from sight, rotated the placement of the remaining items, and presented the instruction again until all items had been selected or the participant ceased selecting. The entire process was repeated five times.

Function-based intervention. Individualized function-based treatments were implemented for each participant during sessions that were 10 min in duration and were conducted in the family room of the facility. Intervention phases were compared to baseline phases consisting of the differentiated functional analysis condition. The attention condition served as the baseline condition for Alice and Derek, and the demand condition served as a baseline condition for Carmen.

Alice's intervention consisted of differential reinforcement of appropriate vocalizations (DRA). During DRA, 3 to 5 s of relevant social attention was provided contingent on any appropriate vocalization. For example, if the participant stated, "I am tired," the experimenter replied, "Maybe you can lie down after lunch," or "You must not have slept very well last night." No attention was provided contingent on disruptive vocalizations.

Derek's intervention consisted noncontingent access to attention (NCA) and his top five most preferred leisure items. The top five preferred items identified in the preference assessment were puzzles, playing dominos, drawing, playing checkers, and watching television. The experimenter provided 3 to 5 s of social attention in the form of questions about his life (e.g., "Where did you go to college?"; "How long were you a priest?") on an FT 30-s schedule. In addition, leisure items were presented at the beginning of each session and remained continuously available if Derek remained in the area. If he wandered out of the room, the experimenter waited until he was appropriately engaged and redirected him back to the family room to resume the treatment. Thus, no consequences were provided while he engaged in wandering.

Carmen's intervention consisted of functional communication training (FCT) with extinction in demand contexts. This procedure was selected because Carmen exhibited no functional communication repertoire (i.e., only repetitive vocal responses and swearing). During the intervention, continuous demands were presented and precursor behaviors (e.g., waving away with her hand) resulted in a prompt for Carmen to hand a break card to the experimenter. Both prompted and independent FCT responses of handing the break card resulted in a 30-s break from tasks and proximity of the

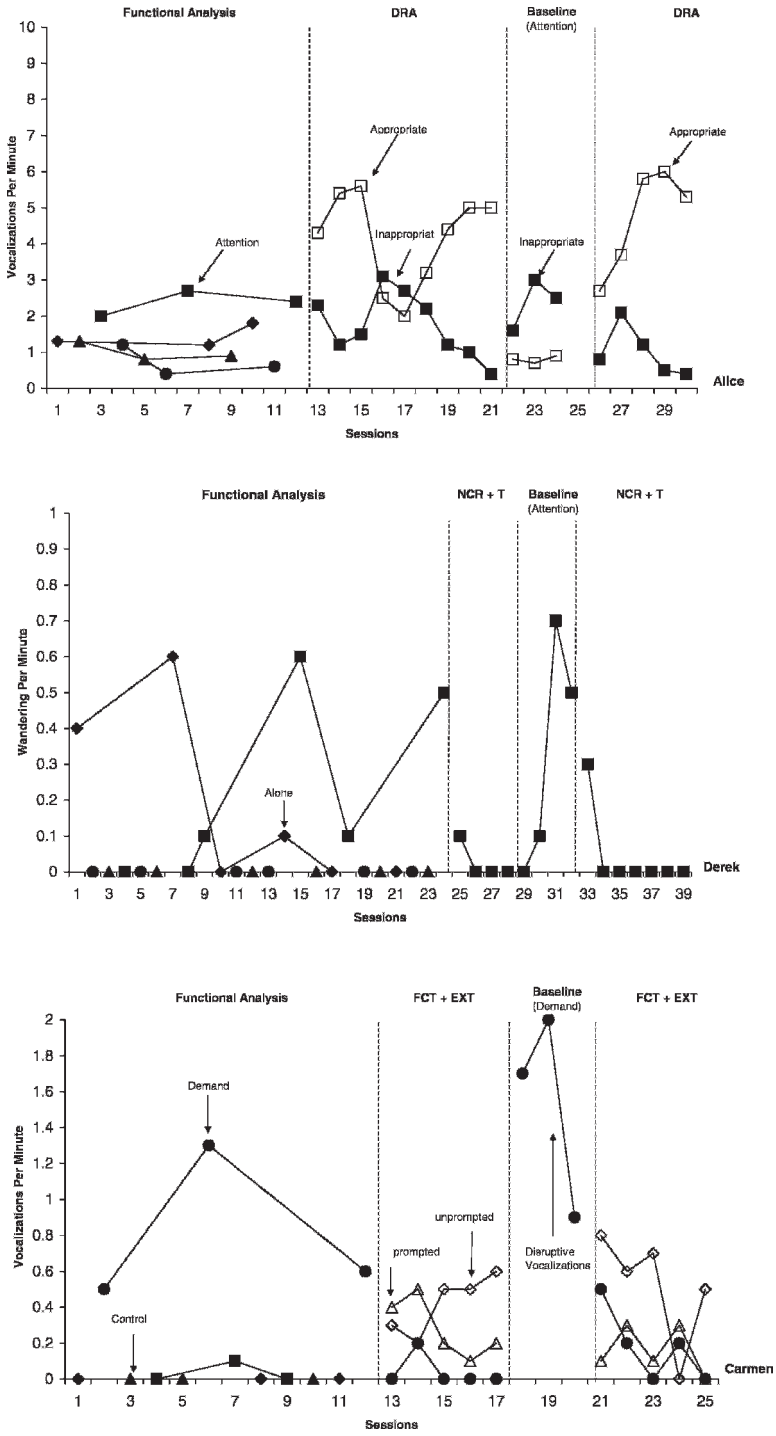

Figure 1. The number of problem behaviors per minute during the analogue functional analyses and interventions for Alice (vocalizations, top), Derek (wandering, middle), and Carmen (vocalizations, bottom). Alternative appropriate behaviors in the intervention phases are designated by open squares (Alice) and open diamonds and triangles (Carmen).

experimenter. Disruptive vocalizations resulted in no differential response from the experimenter (i.e., continued demands) and a prompt to communicate after a 5-s interval with no vocalizations. Prompts consisted of picking the card up from her tray and handing it to Carmen. Carmen did not have access to the break card during the baseline reversal.

RESULTS AND DISCUSSION

The functional analyses and treatment results are displayed in Figure 1. Alice's disruptive vocalizations were maintained by attention. DRA was effective in reducing Alice's rate of disruptive vocalizations (40% below baseline levels) with a concurrent increase in appropriate vocalizations (400% increase). Derek's wandering was maintained by access to attention. His treatment package produced substantial reductions (85% decrease) in wandering, with no instances of wandering during the last five treatment sessions. Carmen's disruptive vocalizations occurred almost exclusively during the demand condition. FCT with extinction resulted in immediate reductions in disruptive vocalizations (overall 82% reduction) and gradual increases in unprompted appropriate communication via a break card (0.5 per minute).

These results support previous studies that demonstrate the utility of functional analyses with older adults with dementia (Baker et al., 2006; Buchanan & Fisher, 2002). Effective reductions in problem behavior were noted for each participant, and increases in more appropriate functionally equivalent behaviors were observed for both Alice and Carmen. Finally, the incorporation of an ABAB withdrawal design allowed demonstration of clear experimental control that was not possible in some previous functional assessment studies with elders. Future research might incorporate preexperimental assessments of cognitive impairment, target transfer of intervention implementation responsibilities to direct-care professionals, and directly assess social validity in the form of treatment acceptability and functional importance of outcomes.

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