

*REDUCING WANDERING BY PERSONS WITH
DEMENTIA USING DIFFERENTIAL REINFORCEMENT*

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Wandering behavior of 4 geriatric patients with dementia residing in a long-term care facility was assessed using direct behavioral observations. The consequences identified during the observations as maintaining wandering for each patient were then applied for the absence of wandering using differential reinforcement of other behavior (DRO). The effectiveness of the DRO procedure was evaluated using an ABAB design. Results indicated significant reductions in wandering during treatment.

DESCRIPTORS: dementia, geriatric patients, wandering, differential reinforcement

Wandering, a common behavior of persons with dementia, was identified as one of the primary causes of institutionalization for older persons residing in long-term care facilities and one of the most time-consuming and difficult behaviors to manage (Chenoweth & Spencer, 1986; Groene, 1993). Wandering has been managed through the use of physical restraints, sedative medication, or both (Dickinson, McLain-Kark, & Marshall-Baker, 1995). Several studies found that environmental manipulations such as visual barriers (Namazi, Rosner, & Calkins, 1989), cloth barriers (Dickinson et al., 1995), and access to stimulus objects (Ross-wurm, Zimmerman, Schwartz-Fulton, & Norman, 1986) reduced wandering. The purpose of this study was to evaluate the effectiveness of manipulating social contingencies in the treatment of wandering.

METHOD

Participants and response definitions. The 4 participants (Anna, Bonnie, Claudia, and

Diane) were residents of a nursing home who had been referred for evaluation and treatment of wandering. Anna, age 82, ambulated without assistance, had normal hearing and vision, and responded to simple verbal requests. Bonnie, age 80, although capable of assisted ambulation, used a wheelchair because of her unsteady gait. Her vision and hearing were within normal limits, and she communicated through sounds and gestures and was able to follow simple verbal requests. Claudia, age 79, was independently ambulatory and responded to simple verbal requests. She had normal vision and hearing and communicated primarily through sounds, gestures, and signs. Diane, age 83, ambulated independently although she was unsteady at times. Her vision and hearing were normal, and she responded to simple requests. Although she sometimes completed sentences, her speech was often disorganized. *Wandering* was defined as aimless, disoriented, continuous ambulation that occurred when the individual moved from their immediate, specifically assigned area to another area within the facility's physical structure (Namazi et al., 1989).

Data collection. Direct behavioral observations were used to generate information regarding the consequences of wandering. During six observations, an ABC log was completed for each participant. Logs were

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then reviewed to determine the situation most frequently associated with wandering. Simultaneous with the direct behavioral observations, baseline data were collected on wandering using either a 15- or 30-s partial-interval recording procedure. Each data-collection period lasted approximately 30 to 45 min. The data-collection procedure used in baseline was used throughout the remaining phases of the study. Interobserver agreement data were collected during 31% of the sessions across all participants. Within each session, the number of intervals in which both observers indicated the occurrence of wandering was divided by the total number of intervals and multiplied by 100%. Agreement averaged 92% (range, 81% to 96%) for Anna, 90% (range, 77% to 94%) for Bonnie, 96% (range, 89% to 98%) for Claudia, and 88% (range, 72% to 94%) for Diane.

Design. The consequences for wandering identified during the observations were delivered for the absence of wandering in an ABAB design. Treatment sessions were divided into either 15-s (Anna and Diane) or 30-s (Bonnie and Claudia) intervals and lasted approximately 30 to 45 min per session. During the B phase, the consequence that was hypothesized to maintain wandering was delivered for the absence of wandering at the end of each interval (differential reinforcement of other behavior, DRO) and was unavailable for wandering (extinction). If wandering occurred at any time during the interval, the interval was reset. In the second A phase, the consequence was delivered for wandering, and in the second B phase the DRO contingency was reinstated.

RESULTS AND DISCUSSION

Data from the direct observations indicated that attention was the most likely consequence that maintained Anna's and Diane's wandering (see Figure 1). For Bonnie, the

most likely consequence was access to tangible items (sweet food) and for Claudia it was sensory stimulation (e.g., touching items to her face or tongue and tracing patterns of the lobby furniture with her hands). When attention was provided to Anna contingent upon the absence of wandering, wandering decreased by 50% to 60%. Wandering returned to baseline levels when attention was contingent on wandering and again decreased by 65% when attention was made contingent on the absence of wandering. When tangible consequences were applied contingent on the absence of wandering, the percentage of intervals in which Bonnie wandered decreased by about 80%. When tangible items were contingent on wandering, her wandering increased to baseline levels, although there was a decreasing trend during this phase. Tangible items were then reinstated for the absence of wandering, and wandering was again reduced by 65%. When access to sensory consequences was provided contingent upon the absence of wandering, Claudia's wandering decreased by approximately 75%. When sensory consequences were contingent on wandering, wandering increased to levels slightly lower than the first baseline phase. Reapplication of DRO with sensory consequences reduced wandering by about 75%. When attention was provided to Diane contingent on the absence of wandering, wandering decreased by about 65%. Withdrawal of the DRO contingency resulted in increased wandering. Reapplication of attention for the absence of wandering resulted in a 70% reduction in wandering.

Perhaps the most important and novel contribution of this study is the demonstration that a behavior previously attributed to neurological impairment may be sensitive to socially mediated consequences. For all 4 participants, wandering decreased when the maintaining consequence derived from the direct observations was contingently applied

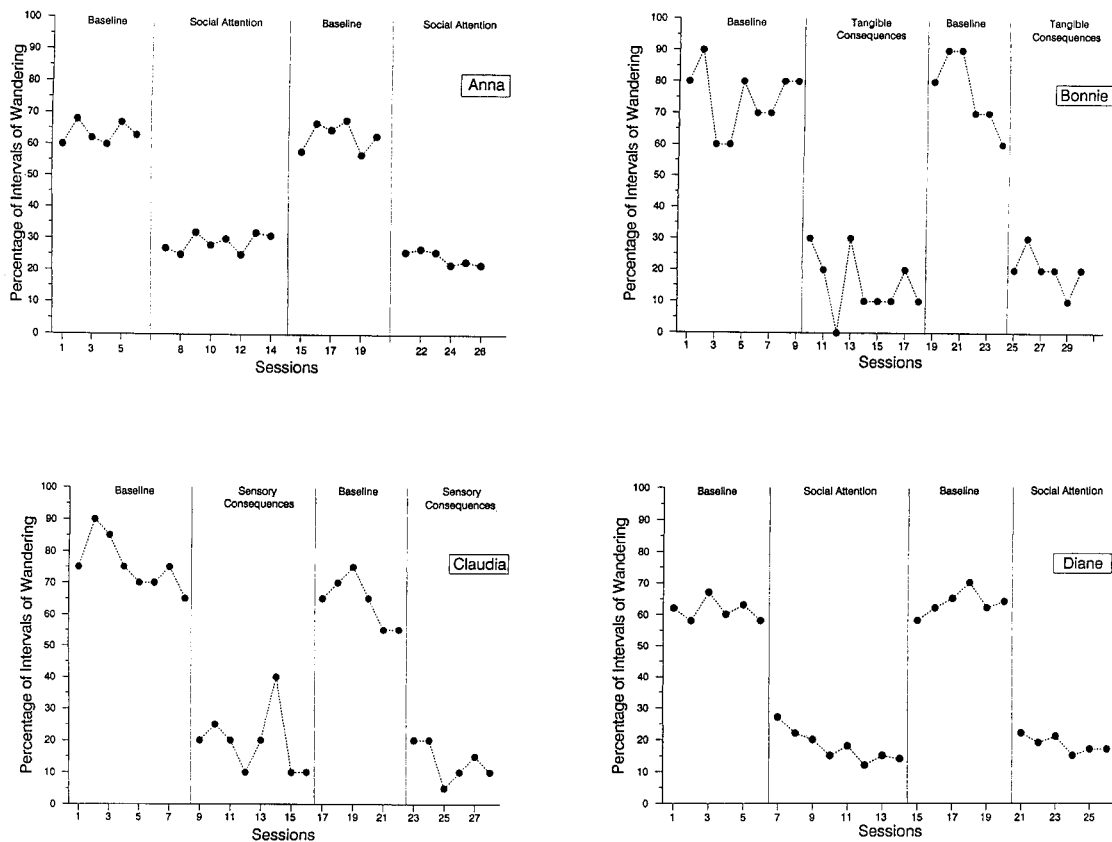


Figure 1. The percentage of intervals of wandering for Anna, Bonnie, Claudia, and Diane during baseline, treatment, contingency withdrawal (baseline), and treatment phases.

to the absence of wandering and increased when the contingency was withdrawn. However, due to the assessment procedures used, it is unclear whether the identified consequence was the only one related to wandering. Future work in this area should utilize experimental functional analyses to determine more precisely the function of wandering. Another limitation of this study was the time-consuming nature of the treatment (i.e., providing the consequence every 15 to 30 s), which may be unrealistic for most residential settings. Thus, examination of more socially valid applications of differential reinforcement for wandering is needed. It was beyond the scope of this study to conduct research with individuals residing in the community; thus, generalization of the re-

sults is limited to long-term care facilities. The methodology could be replicated in a community setting that is typically the individual's own home or the home of a family member. The results of these replications might address the concerns of family members who report that wandering behavior is too difficult to manage and requires care above what they can offer and increase the ecological validity of behavior-analytic procedures for persons with dementia. A final limitation is the definition of wandering, derived from previous studies on patients with dementia and wandering. The terms *aimless* and *disoriented* require observers to make inferences that could affect the reliability of the data. Although the interobserver agreement in this study was quite high, future

research should seek to provide a more operational, less inferential definition of wandering.

REFERENCES

- Chenoweth, B., & Spencer, B. (1986). Dementia: The experience of family care givers. *The Gerontologist, 26*, 267-272.
- Dickinson, J. I., McLain-Kark, J., & Marshall-Baker, A. (1995). The effects of visual barriers on exiting behavior in a dementia care unit. *The Gerontologist, 15*, 127-130.
- Groene, R. W. (1993). Effectiveness of music therapy 1:1 intervention with individuals having senile dementia of the Alzheimer's type. *Journal of Music Therapy, 3*, 138-157.
- Namazi, K. H., Rosner, T. T., & Calkins, M. P. (1989). Visual barriers to prevent ambulatory Alzheimer's patients from exiting through an emergency door. *The Gerontologist, 29*, 699-702.
- Rosswurm, M. A., Zimmerman, S. L., Schwartz-Fulton, J., & Norman, G. A. (1986). Can we manage wandering behavior? *The Journal of Long-Term Care Administration, 14*, 5-8.

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