
Orientation behaviors in residents relocated to a redesigned dementia care unit

Margaret C. Gibson, PhD
Jill MacLean, RN
Michael Borrie, MBChB, FRCP(C)
Julia Geiger, BA

Abstract

This descriptive study took advantage of a scheduled environmental renovation in a secured dementia care unit. A convenience sample of 19 residents who were relocated to the unit completed a performance-based orientation task involving locating their own room. The study included a brief structured interview and tests of psychological function (cognition, depression, and visual-spatial ability) two months after admission. Intrusions (uninvited entry into another resident's room) were tracked for one week. Eighty-four percent of participants were able to find their own rooms during the orientation task. The majority of participants reported use of color (n = 13) and structure (n = 12) as cues for locating their rooms. Thirty-eight percent of those who could find their own rooms also intruded into others' rooms; these intrusions were most commonly related to seeking social interaction. The results attest to the importance of understanding the multiple factors that determine environmental use in this population.

Key words: dementia, environmental design, orientation, behavior

Maggie Gibson, PhD, Psychologist, Veterans Care Program, Parkwood Hospital, St. Joseph's Health Care London, London, Ontario, Canada.

Jill MacLean, RN, Veterans Care Program, Parkwood Hospital, St. Joseph's Health Care London, London, Ontario, Canada.

Michael Borrie, MBChB, FRCP(C), Geriatric Care Program, Parkwood Hospital, St. Joseph's Health Care London, London, Ontario, Canada.

Julia Geiger, BA, Geriatric Care Program, Parkwood Hospital, St. Joseph's Health Care London, London, Ontario, Canada.

Introduction

Disorientation with regard to place is a characteristic feature of dementia.¹ In residential care facilities, disorientation frequently underlies problematic behaviors such as agitation and aggression. Residents become distressed when they cannot locate their own rooms, frustrated when their personal space is invaded, and are at risk of confrontation when they unwittingly invade the space of others.

Designing environments with dementia patients in mind has increasingly become the focus of providers involved in developing high-quality residential care facilities for people with dementia.² Research is limited by the difficulties (financial, administrative, political, and ethical) inherent in building complete environments for the purposes of comparing different architectural designs. However, insights have been gained through clinical case studies and issue-focused research comparing the impact of specific design elements (e.g., color preferences, surface textures) on selected aspects of behavior (e.g., exit-seeking behavior).³

The secured dementia care unit serving Canadian veterans at a chronic care hospital was redesigned to include numerous architectural features. These features were intended to reduce the disorientation commonly experienced by residents in more traditional "institutional" environments.⁴ For example, the entrance to each room was made visually distinct through the use of color, texture, and cosmetic architectural structure. Also, in keeping with recommended best practices in dementia care, nursing staff were trained to make consistent use of cueing, redirection, and rehearsal strategies to reinforce the residents' orientation to their own rooms when they were relocating to their new environment.⁵

This descriptive study takes advantage of the scheduled environmental renovation to generate valuable data that can be used in designing residential care facilities for people with dementia. The study capitalized on an emerging clinical opportunity using systematic qualitative observational techniques, as recommended by authorities in this field.³ Environmental features (e.g., color, structure) are associated with behavioral outcomes that can be observed directly (e.g., room-finding, intrusions). The study tested the expectation that the majority of residents would be oriented to the location of their own rooms in the new environment, and as a corollary, would intrude unintentionally into other rooms less frequently.

Objectives

The objectives of the study were to document the prevalence of specific orientation-related behaviors following admission to the redesigned unit, and to explore relationships among orientation-related behaviors and environmental and psychological variables. The research questions were:

1. What percentage of residents can find their own room two months post-admission?
2. Are environmental variables and psychological variables associated with locating one's room?
3. Do residents who can find their own rooms intrude less into others' rooms?
4. What factors contribute to intrusions?

Method

Sample

Participants represented a convenience sample. All veterans residing in the 30-bed dementia care unit had been relocated to another unit in the hospital approximately one year prior to the completion of renovations. Ten were relocated back to the unit once renovations were complete. These residents, along with new residents admitted to the unit during the first month after reopening, were eligible for participation in the study. Informed consent was obtained for 21 residents; two residents refused to participate, resulting in a study sample of 19 male residents with a mean age of 84.3 (SD = 4.1).

Procedure

Ethics: The study received approval from the ethics

review board of its affiliated university and the hospital's research review committee. The social worker on the healthcare team informed the substitute decision-maker on record for each resident admitted to the unit about the study and obtained informed consent for the resident's participation. The research assistant (RA) obtained consent from the resident at the point of contact.

Preparation: Members of the healthcare team oriented residents to the redesigned unit over an eight-week interval (standard clinical practice). Staff adherence to best practices for orientation (e.g., use of consistent cueing) was a performance expectation with appropriate administrative support. The standardized protocol for orientation is shown on the following page.

Orientation task: Residents participated in an orientation task two months post-admission. The RA approached each participant, introduced herself, and asked the participant to show her to his room. Approaches were made from a central location on the unit. If attempts were unsuccessful, the task was repeated up to two varying times throughout the week. The RA interviewed participants who completed the task successfully, asking them:

1. How did you know that this was your room?
2. Was there anything about the entrance that helped you to know that this was your room?
3. Can you describe the entrance to your room for me?
4. How is the entrance to your room different from the other rooms?
5. Do you ever have trouble finding your own room? Why?

Participants who were not successful in locating their rooms were thanked for their time, but not interviewed about environmental cues.

Standardized testing: Following the orientation task, the RA administered the Standardized Mini-Mental State Exam (SMMSE).⁶ The SMMSE is a standardized test of cognitive functioning that includes 20 questions and yields a score of up to 30 points. SMMSE scores from 24 to 30 are considered normal. Mild, moderate, and severe cognitive impairment are indicated by scores in the ranges of 20-23, 10-19, and 0-9, respectively.

The RA also administered the Constructional Praxis subtest (PRAXIS) from the Alzheimer's Disease Assessment Scale (ADAS).⁷ The ADAS is a global rating scale used to determine whether an individual has cognitive impairments consistent with Alzheimer's disease.

Orientation Protocol

Upon admission to the unit, residents and their families will receive an orientation to their rooms and to the unit. A designated member of the care team will provide the orientation and will take the special needs of the resident into consideration. The orientation will help residents to adjust to their environment and feel comfortable.

The following guidelines will assist team members with the orientation of residents and their family.

Initial orientation:

1. Prior to admission, a member of the interdisciplinary team (IDT) will be identified to provide the residents with an orientation to their rooms and to the unit.
2. Upon arrival, the IDT member will show the residents their rooms. This will include orienting them to the room number, the color of the door, porch design, the type of surface panel beside the door (brick, stucco, siding), and their memory box with their name included.

Examples:

- “Mr. Smith, this is your room. It is the room with the “red” door and porch. What do you think of this? The number for your room is 73 and this is located on the “brick” siding right here. I also know that this is your room because your name is located here and this tells me a bit about yourself.”
 - “I see you are in room 73. It is the nice one with the “purple” colored door.”
3. Each resident will be given as much time as necessary to become comfortable with the visual cues located around the room.
 4. The resident should be oriented to bathrooms using door color, floor color (blue), and universal symbol (male/female). This is for all washrooms located on the unit, including those in each resident’s room.
 5. Once the resident has been oriented to the room, direct the resident to the activity room using the appropriate cues (end of the street, bright windows, “green” awning above the door).

Ongoing orientation:

As the residents become more comfortable with the area and their rooms, IDT members will begin to orient residents to the other areas on the unit.

Follow resident cues; if they look like they would like to see all the areas on the unit (activity room, “public library” lounge, “Restaurant” dining area), use the visual cues (signage, door trim, awning) as appropriate, to orient them to these areas.

The PRAXIS measures the respondent’s ability to copy four geometric forms (circle, diamond, intersecting rectangles, and cube). Figures are scored correct (0) or incorrect (1) for a potential total of four, with higher scores indicating more dysfunction. A score of two or more would raise concerns about dementia.

A familiar nursing staff member completed The Cornell Scale for Depression in Dementia (CSDD)⁸ for each participant. The CSDD includes 19 symptoms related to depression, each scored on a three-point scale, with higher ratings indicating greater severity. Item scores are summed to yield a total of up to 38 points. Suggested cutoffs for the CSDD are eight for mild depression and 12 for moderate depression.

Intrusion monitoring: Intrusions, defined as uninvited entry into another resident’s room, were tracked for one week following the orientation task. A reporting form was posted in the nursing station, with the following

questions (the reporting time frame was one week):

1. Has (resident) entered any rooms other than his own?
2. Which rooms?
3. Why do you think (resident) went in these rooms?
4. Did (resident) say anything when he entered or was found in these rooms?

Data analysis

Question 1: What percentage of residents can find their own rooms two months post-admission?

Eighty-four percent of participants (n = 16) were able to find their own rooms, all on the first trial of the orientation

Table 1. Psychological test performance as a function of ability to find own room

Measure	Able to find own room (n = 16)*		Unable to find own room (n = 3)**	
	Mean	SD	Mean	SD
SMMSE	18.2	6.2	9.7	3.1
PRAXIS	1.9	1.2	3.0	–
CSDD	4.4	3.6	7.3	2.9

* Two respondents refused to complete the SMMSE and PRAXIS.

** Two respondents refused to complete the PRAXIS.

task. Only three of the 19 participants (16 percent) were unable to find their own rooms with three repetitions of the orientation task.

Question 2: Are environmental variables and psychological variables associated with locating one's room?

Environmental variables were color, texture (e.g., wood, brick), structure (e.g., number, nameplate, lights), and location (e.g., "end of hall"). Psychological variables were scored on the SMMSE, CSDD, and PRAXIS standardized tests.

The majority of participants reported using color (n = 13) and structure (n = 12) as cues to locate their rooms. Six participants reported using location. Only one participant referred to texture. On average, participants who were able to find their own rooms reported cues from two of the four environmental categories.

Means and standard deviation on the standardized tests of psychological functioning (as a function of room location) are presented in Table 1. Means differed significantly on the SMMSE, with those who were able to find their own rooms performing at the high end of the moderate range (mean = 18.14), and those who were unable to find their own rooms performing at the low end of the moderate range (mean = 9.7); $t(15) = -2.258$; $p = 0.039$. Both groups made errors on the PRAXIS, and scores on the CDSS did not indicate depression.

Question 3: Do residents who can find their own rooms intrude less into others' rooms?

Six of the 16 participants who could find their rooms intruded into others' rooms (38 percent). Two of the three participants (67 percent) who were unable to find their own rooms intruded into others' rooms. The small number of the second group precluded chi-square testing to determine the statistical significance of this difference.

Question 4: Which factors contribute to intrusions?

Based on thematic analysis of nursing interpretations and residents' comments as reported by nursing staff, factors contributing to intrusion behaviors were categorized

as: social interaction (e.g., following staff, looking for a resident to talk to), goal directed (e.g., asking for money, looking for washroom), and confusion (e.g., lost).

The majority of participants who could find their own rooms but also intruded into others' rooms were seeking social interaction (n = 5), with overlapping attributions due to confusion (n = 4) and goal-directed behavior (n = 3). The two participants who could not find their own rooms and intruded into others' rooms were either seeking social interaction (n = 1), or were confused (n = 1).

Participants who could find their own rooms and did not intrude (n = 10) were compared to those who could find their own rooms and did intrude (n = 6) in terms of responsiveness to environmental cues, as shown in Figure 1. Differences were not significant.

Means and standard deviation on the standardized tests of psychological functioning (as a function of intrusions for respondents who were oriented to their own room locations) are presented in Table 2. For both groups, SMMSE scores indicated moderate impairment. Scores on the CSDD did not indicate depression, and

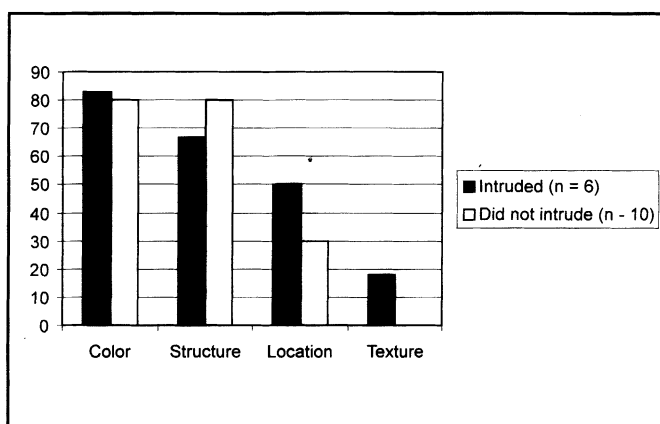


Figure 1. Environmental cues used in room-finding, as a function of intrusions for participants who could find their own rooms (n = 16).

Table 2. Psychological test performance as a function of intrusions for respondents who were able to find own room

Measure	Intruded (n = 6)*		Did not intrude (n = 10)	
	Mean	SD	Mean	SD
SMMSE	16.5	3.0	18.8	7.2
PRAXIS	2.8	0.5	1.6	1.3
CSDD	6.3	3.4	3.3	3.0

* Two respondents refused to complete the MMSE and PRAXIS.

errors were made on the PRAXIS. Although no significant differences were obtained, it is noteworthy that the trends were towards greater dysfunction for those who could find their own rooms, but still intruded.

Discussion

The redesign of the secured dementia care unit in a chronic care hospital presented a unique opportunity to study the impact of the environment on orientation (room-finding and intrusions). The ability to generalize the study results is limited by the small sample, which was composed of a nonrepresentative group of long-term care residents, and by the lack of experimental manipulation of the variables of interest.

Nonetheless, the findings do add information of value for dementia literature. On the orientation task, most participants were able to find their rooms on request. It is important to note that participants identified more than one environmental cue when asked how they accomplished this task, and that reliance on color and distinctive structural details (e.g., room number, name plate) predominated. Thus, the study results support the established convention that environmental cueing is helpful in orienting residents with dementia.

Of particular interest in the present study is that more than one-third (38 percent) of residents who were oriented to the location of their own rooms still intruded into the rooms of other residents. This behavior was predominantly directed towards social interaction. This observation speaks to the complex interplay among spatial and social aspects of the environment in the institutional care setting. Orientation is one factor that determines use of the environment by an individual; others include affective aspects of functioning, such as the need for stimulation and interpersonal contact. Care planning that responds to potentially disruptive behaviors should be individualized.⁹ This

study illustrates an empirical method for identifying the factors that are contributing to intrusion behaviors, so that individualized care planning can proceed.

Further research is needed to replicate and extend these findings with a larger representative sample of long-term care residents with dementia, and to examine how orientation and intrusion behaviors vary as a function of social stimulation available in the communal spaces of the environment.

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