



### Research Article

## Visual Cues for Persons with Dementia: Opinions of Dementia Caregivers & Occupational Therapists

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### Abstract

**Introduction:** There are gaps in the literature on the use of visual cues by persons with dementia, especially in regards to which type of visual cues dementia caregivers find to be the most useful for activities of daily living (ADLs) and how occupational therapists view the use of visual cues in the homes of their clients with dementia.

**Methods:** The study included a focus group of dementia caregivers (n=7) and a survey of occupational therapists (n=8). The primary aim of the focus group was to identify the opinions of dementia caregivers on the usefulness of the different types of visual cues for ADLs in the home environment. The secondary aim was to identify which type of visual cue caregivers deem to be the most useful type for completing ADLs. The survey aimed to gather occupational therapists' professional opinions on: 1) the usefulness of visual cues for both the safety and participation of persons with dementia, 2) caregiver implementation of visual cues, and 3) reasons for client inability to use visual cues.

**Results:** Three major themes emerged from the focus group: organizational cues are more useful for caregivers than care recipients, written cues are less helpful for more advanced stages of dementia, and environmental cues are the most helpful overall. The results of the survey indicate that visual cues improve safety and participation. The therapists were in agreement with the caregivers on environmental cues being the most helpful type of visual cue. The results of the survey also imply that cognition dysfunction is the main reason for client inability to use visual cues. The results of the focus group support this finding.

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**Citation:** Struckmeyer L, Killingsworth J, Hays S (2022) Visual Cues for Persons with Dementia: Opinions of Dementia Caregivers & Occupational Therapists. J Alzheimers Neurodegener Dis 8: 059.

**Received:** January 13, 2022; **Accepted:** January 25, 2022; **Published:** February 01, 2022

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**Discussion:** Visual cues are an important domain to consider in the evaluation of persons with dementia in their home.

**Keywords:** Dementia; Visual cues; Activities of daily living; Safety; Participation; Aging in place

### Introduction

Dementia is an age-related disorder that is associated with a decline in cognition and independence [1]. Alzheimer's disease is the most common type of dementia. Over 5 million Americans currently have Alzheimer's disease, and this number is projected to rise to almost 14 million by the year 2050 [2]. Maintaining independence in activities of daily living (ADLs) has been associated with a greater health-related quality of life in persons with dementia [1]. Thus, as more persons with dementia are electing to age in place, home modifications are becoming more pertinent. One home modification that can facilitate aging in place is visual cues, as they can be used to facilitate ADLs and to improve safety and participation in persons with dementia [3]. There are three different types of visual cues: environmental cues, written cues, and organizational cues [4].

Environmental cues include color-coding and the placement of items in view for task completion. Several studies suggest that they are an effective intervention for persons with dementia. For instance, Soilemezi et al. identified that dementia caregivers value the use of color-coding [5]. Wherton et al. identified that dementia caregivers and care recipients value the placement of medicine bottles and personal hygiene items in view for use [3]. Keller et al. identified that caregivers find several different environmental cues, such the placement of a measuring cup in view, to be useful for promoting cooking [6]. In line with that finding, Gitlin et al. found that an intervention involving the placement of items in view for task completion, such as the task of making a salad, to be effective [7]. Likewise, Nomura et al. found that an intervention that included placing kitchen utensils in view improved the proficiency of persons with dementia in the kitchen [8]. O'Connor et al. also found that placing ingredients in view aided in care recipient participation in cooking [9].

Written cues include labels, notes, signs, and lists. In relation to safety concerns, way signs along with environmental cues, such as unique pieces of art on walls, appear to aid persons with dementia in navigating through the home environment [10-12]. Several studies have also identified that care recipients find whiteboards, notes, and bulletin boards to be useful for carrying out ADLs [4,6,13-16]. As further evidence of the value of written cues, Judge et al. found that an intervention that included the use of labels and lists was useful for persons with dementia [17]. Similarly, Nomura et al. found that an intervention that included the use of ingredient labels and to do lists improved the proficiency of persons with dementia in the kitchen [8]. Taken together, these studies suggest that written cues are an effective intervention for persons with dementia.

Organizational cues include planners, pill organizers, and calendars. Studies have found that dementia caregivers and care recipients value the use of calendars [5,13]. Boger et al. identified that dementia

caregivers find medicine organizers to be useful for reminding care recipients to take medications [14]. Also, interventions that implemented the use of calendars for either scheduling or as reminders to take medications were found to be useful in several studies [17-20]. Notably, an intervention, which included the use of planners and notebooks, statistically improved ADLs and memory [21]. Taken together, these studies suggest that organizational cues are an effective intervention for persons with dementia.

## Study Aims

Although studies have implied that visual cues are an effective intervention, there are several research gaps that this study aimed to address through the use of a focus group of caregivers of persons with dementia and a survey of home health occupational therapists. The primary aim of the focus group was to identify the opinions of caregivers of persons with dementia on the usefulness of the different types of visual cues for ADLs in the home environment. The secondary aim of the focus group was to identify which type of visual cue caregivers deem to be the most useful type for completing ADLs. The survey aimed to gather occupational therapists' professional opinions on: 1) the usefulness of visual cues for both the safety and participation of persons with dementia, 2) caregiver implementation of visual cues, and 3) reasons for client inability to use visual cues.

## Methods

Institutional review board approval was obtained for both the focus group and the survey. All participants consented prior to participation.

## Participants

For the focus group, the goal was to have seven to nine participants. The inclusion criteria included that all of the participants must be between the ages of 18 and 89 and serve as a caregiver of a person with dementia who lives at home. The participants were recruited by handing out and posting flyers at a clinic that offers day care services to persons with dementia.

For the survey, the goal was to have 20 participants. The inclusion criteria was that the participants must be registered and licensed occupational therapists practicing in the United States who work with persons with dementia living in the home or home-like environments. Participants were recruited through a secure email by the principal investigator (PI) of the study. They were professional contacts of the PI who had previously indicated interest in this type of study or had previously agreed to be contacted for research.

## Data Collection

For the focus group, a demographics information form was used to collect information on the stage and type of dementia of each participant's care recipient. Then, five questions concerning the different types of visual cues were discussed. Detailed notes were taken during the focus group and were later de-identified by referring to each participant by a participant number. The group discussion was recorded using a portable digital audio recorder.

The survey consisted of 13 questions, including Likert-scale, multiple selection, and open-ended questions. The first six survey questions served to establish that the participants met the inclusion criteria and to collect demographic information on the participants. The next six questions focused on the use of visual cues for safety and

participation. The last question was an open-ended question that requested the participants to respond with any other comments or suggestions on the use of visual cues in the home environment. The survey was available to participants for six weeks. Data was collected through Qualtrics™ [22] which has a secure server that utilizes Transport Layer Security (TLS) encryption technology to ensure protection of all data transactions. Survey responses were anonymous and not linked to any individual respondent email. Stored data was accessible only to the research team and contained no personal identifiers.

## Data Analysis

For the focus group, the demographic data was analyzed using descriptive analysis. The audio recording was transcribed by one member of the research team and reviewed by the other members. Then, the audio recording was destroyed. A thematic coding approach was used. Two members of the research team independently used the transcript to code the data and to identify any possible themes. They then discussed their codes and themes before presenting a finalized version to the PI for review and feedback. The themes were then presented to a qualitative research group for additional feedback. Based on the feedback, two of the proposed major themes were combined into one major theme.

For the survey, the demographic information was categorized. Descriptive statistics were used to analyze the close-ended questions. The answers from the open-ended question were analyzed for content and coded by the research team members independently. The research team members read over each other's themes and discussed any differences. This information was then presented to a qualitative research group for verification.

## Results

### Focus group

The focus group had seven participants. One participant was a caregiver of a person with mild dementia, two were caregivers of persons with moderate dementia, and four were caregivers of persons with more advanced dementia. Six participants were females, and one was a male.

### Major themes

Three major themes, as illustrated by Figure 1, were identified. The themes were 1) organizational cues were more useful for caregivers than for persons with dementia, 2) environmental cues were most useful for persons with dementia, 3) written cues were less useful during the more advanced stages of dementia.

The first theme was that organizational cues were more useful for caregivers than for persons with dementia. Four participants shared that organizational cues are more useful for caregivers than for care recipients. For instance, according to one participant, "The pill container is really for me... Calendars, no forget it, that's for me."

The second theme was that environmental cues were most useful for persons with dementia. Six participants had implemented the use of environmental cues in the home environment. Also, when asked which type of visual cues they felt was the most useful, five participants affirmed that environmental cues are the most useful type. Unexpectedly, the participants mentioned placing items out of view, in addition to the placement of items in view. For instance, one participant stated, "I made sure there was nothing toxic on the counter

because she would go in and just you know mix all kinds of weird stuff that was inedible.”

The third theme was that written cues were less useful during the more advanced stages of dementia. Four participants discussed written cues being less useful for more advanced stages, due to the language loss associated with dementia. For example, one participant stated, “She’s really at the point to where I really don’t know if she’s understanding any letter or words that she’s reading. . . In recent times, we’ve had the names of her cats and family members as well, on the dry erase board. But, she’s not really reading those anymore” (Figure 1).

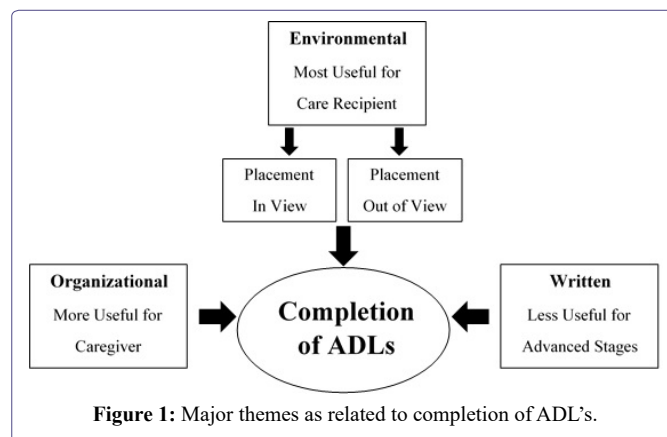


Figure 1: Major themes as related to completion of ADL's.

### Secondary themes

Four secondary themes, not directly related to the aims of this study were identified. These were 1) the importance of maintaining a sense of independence, 2) concerns about the person with dementia becoming lost in their home environment, 3) concerns about language loss, and 4) concerns about dressing challenges.

The first secondary theme was about the importance of maintaining a sense of independence. Three participants discussed how their care recipients value maintaining a sense of independence. For example, one participant shared, “She knows where the bathroom is, but I don’t think she wants me to tell her, you know what I’m saying. I think that still, independence is still in there.”

The next secondary theme was concerns about the person with dementia becoming lost in their home environment. Four participants discussed their care recipients becoming lost in the home environment. For example, one participant stated, “Sometimes, she can find the bathroom. Other times, she can’t.”

The third secondary theme was concerns about language loss. Five participants discussed loss of language. For example, one participant shared, “My mother has lost a lot of her language. I mean some of her words, a lot of her words don’t make sense. But she’ll do hand motions.”

The last secondary theme was concerns about dressing challenges. Four participants discussed how challenging the ADL of dressing had become. These challenges included the care recipients not wanting to change into pajamas before bed, not being able to independently dress, and wanting to wear similar outfits each day. For example, one participant stated, “She has like a uniform she wants to wear. I pull out a blue shirt and a pair of jeans, but always the same clothes because she doesn’t want to wear anything else.”

### Survey

The survey consisted of 13 questions that included demographic information, four Likert scale questions with a four point scale, two questions about specific types of visual cues, and one open ended question for comments or suggestions related to visual cues. During the six weeks of the survey distribution, 24 contacts were sent emails requesting participation. 14 responses were collected, yet only eight participants met the inclusion criteria. Table 1 summarizes the eight participants’ demographic information. The majority of the participants had been practicing for over 16 years. All but one participant worked with persons with dementia in the home environment. They practiced occupational therapy in four different states (Table 1).

Characteristic	N	%
State		
California	1	22.22
Connecticut	1	11.11
Florida	5	55.56
Missouri	1	11.11
Years Practicing		
0-5	1	12.50
6-10	0	0.00
11-15	2	25.00
16+	5	62.50
Setting		
Home	7	87.50
Nursing Home	1	12.50

Table 1: Demographic Information of Survey Participants.

Note. N=8.

The first Likert-scale question regarded the importance of visual cues for safety of persons with dementia. The second question regarded the importance of visual cues for participation of persons with dementia. The third question regarded the overall benefit of visual cues to clients, while the fourth question regarded the level of caregiver implementation of visual cues. The participants felt that visual cues were important for safety, with half of the participants selecting “important” and the other half selecting “very important”. The participants also felt that visual cues were important for participation, with five participants selecting “important” and three selecting “very important”. A majority of the survey participants also agreed that clients frequently benefit from visual cues. However, in regards to caregiver implementation of visual cues, there was a split in opinion. Five participants selected “rarely” while three selected “frequently”. Table 2 summarizes the responses to the four Likert-Scale survey questions (Table 2).

Overall, the most helpful visual cue proved to be environmental cues (item grouping, familiar objects, and color contrast). The most useful environmental cue was found to be item grouping (placement of items in view for task completion), with seven of the participants selecting it. The participants also considered written cues (labels, way signs, and written instructions) to be helpful. The most useful written cue was found to be labels, with six of the participants selecting it. The survey also sought opinions on visual assistive technology. High- and low-tech visual assistive technology were found to be less helpful than the environmental and written cues. As for reasons for client inability to implement visual cues, cognitive dysfunction was the highest recorded reason, with six participants listing it. Table 3 summarizes the specific types of cues that the participants considered to be the most helpful and the reasons the participants provided for client inability to implement the cues (Table 3).

Question	Response	%	Response	%	Response	%	Response	%
	not important		somewhat important		important		very important	
Importance to safety	0	0.00	0	0.00	4	50.00	4	50.00
Importance to participation	0	0.00	0	0.00	5	62.50	3	37.50
	never		rarely		frequently		always	
Benefit to client	0	0.00	0	0.00	7	87.50	1	12.50
Caregiver implementation	0	0.00	5	62.50	3	37.50	0	0.00

**Table 2:** Frequency of Responses for Likert Scale Questions.

Note. N=8.

Question	Response	%
Type of cue		
low-tech visual assistive technology	2	6.06
contrasting colors	5	15.15
way signs	3	9.09
labels	6	18.18
familiar images	6	18.18
posted instructions	4	12.12
item grouping	7	21.21
Reasons for inability to implement		
impaired vision	4	28.57
reluctance to use	2	14.29
cognitive dysfunction	6	42.86
accessibility of cue	1	7.14
motor planning	0	0.00
“other”	1	7.14

**Table 3:** Frequency of Responses for “type of cue” and “inability to implement” Questions.

Note. N=8.

Four responses were collected for the open-ended question that requested the participants to respond with any other comments or suggestions on the use of visual cues in the home environment. Although the data was limited, three initial recurring themes were found: 1) visual accessibility, 2) placing objects out of sight, and 3) keeping the cues personally relevant to the client.

## Discussion

This pilot study was limited in that it only included one focus group of seven participants and one survey of eight participants. Thus, the findings are preliminary and will require further inquiry. However, the results do add to the current knowledge of the efficacy of the use of visual cues in the homes of persons with dementia. Notably, this study was the first to the researcher team’s knowledge to ask dementia caregivers to compare the usefulness of the three types of visual cues for completing ADLs in the home environment. Overall, three major themes and four secondary themes were identified from the focus group. The results indicate that environmental cues are the most helpful visual cue for completing ADLs. The results of the survey indicate that occupational therapists find visual cues to be helpful for both safety and participation in the home environment of persons with dementia, with environment cues being the most helpful.

A strength of the study was that there was consensus between the focus group and the survey results. Both the caregivers and the therapists valued environmental cues and placing dangerous items out of view. Also, the results of the survey suggest that cognitive dysfunction is the main reason that visual cues are misused. The results of the focus group support this idea, as the caregivers viewed written cues to be less beneficial for more advanced stages of dementia. The caregivers also discussed their family members becoming lost in their own homes and experiencing language loss. This finding on cognitive dysfunction is consistent with the current literature, as dementia is a progressive neurological disease. Thus, the stage of dementia should be considered when implementing visual cues.

Additionally, visual impairments were selected by half of the survey participants as a reason for not implementing visual cues. Although none of the focus group participants expressed concerns over visual impairments, this finding is consistent with the literature. According to Armstrong et al., it is important to consider visual impairments when assessing the practicality of visual cues [23]. Nonetheless, visual cues cannot be ignored in regards to persons with dementia who also have visual impairments. Lawrence et al. found that this can lead to further distress and disorientation in both caregivers and care recipients [24]. In addition to impaired vision and cognitive dysfunction, studies have also identified distrust, accessibility, and motor planning as other reasons for not implementing visual cues [10,25-27]. Thus, a client-centered approach to implementing visual cues appears to be the most effective way to improve safety and participation in persons with dementia who elect to age in place.

There was one major area in which the survey and the focus group had conflicting results: caregiver implementation of visual cues. The therapists had a remarkable split in opinion on this area. While three therapists felt that caregivers frequently implement the use of visual cues, the other five therapists felt that caregivers rarely implement the use of visual cues. In contrast, the caregivers of the focus group had all utilized visual cues. The methods of the study could account for this. The participants of the focus group were given background information on visual cues, as well as provided examples of the different visual cues. Yet, the therapists were expected to be familiar with visual cues and thus were not given any background information.

## Conclusion

This study examined the opinions of caregivers of persons with dementia on the usefulness of visual cues for completing ADLs and the opinions of occupational therapists on the use of visual cues in the homes of their clients with dementia. Overall, the findings of this



study were supported by the current literature and contribute to the current knowledge of the benefits of using visual cues in the homes of persons with dementia. The findings of this study also suggest several areas for future research. One such area is addressing caregiver implementation of visual cues, as the survey and the focus group had conflicting results. Another area is clarifying whether the usefulness of each type of visual cue is dependent upon the stage of dementia. Research on auditory and tactile cues has indicated that the usefulness of these cues is dependent on the stage of dementia [26]. Based on the results of the focus group, it seems likely that the types of visual cues will follow a similar pattern. Overall, further research on visual cues will benefit the growing population of persons with dementia choosing to age in place by enhancing safety and participation in ADLs.

## Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

## Acknowledgments

The authors would like to thank everyone who participated in the focus group and the survey, as well as the members of the qualitative research group. Margaret Bird, research assistant, is acknowledged for her assistance in editing this manuscript.

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