

The Use of Mood Boards to Study Housing Needs of Nursing Home Residents with Dementia

J. van Hoof

Fontys University of Applied Sciences, Fontys EGT - Centre for Healthcare and Technology, Dominee Theodor Fliednerstraat 2, 5631 BN Eindhoven, The Netherlands

M. R. Sprong

Fontys University of Applied Sciences, Fontys School of People and Health Studies, Dominee Theodor Fliednerstraat 2, 5631 BN Eindhoven, The Netherlands

H. R. Marston

Centre for Research Computing, Faculty of Mathematics, Computing and Technology, Open University, Milton Keynes, Buckinghamshire, MK6 7AA, United Kingdom

B. M. Janssen

Fontys University of Applied Sciences, Fontys School of People and Health Studies, Dominee Theodor Fliednerstraat 2, 5631 BN Eindhoven, The Netherlands

Abstract

Nursing home residents with dementia face challenges in adapting to a new living environment and feeling at home. Due to communicative limitations, people with dementia are often left out of design processes. The aim of this study is to investigate the housing needs in relation to the interior design on the object level and design level. Based on the principles of practice development, seven residents participated in a creative workshop in which they produced a mood board, followed by subsequent interviews. People with dementia value colours in the built environments, their own practical pieces of furniture, and personal belongings like pictures of relatives. Their sense of home turned out to depend more on the social environment than the built environment. We conclude that involving older people with dementia can lead to a better match between the needs and design solutions and can stimulate the dialogue between design stakeholders.

Keywords: communication, methodology, interactions, mood boards, interior design, psychogeriatrics

I. INTRODUCTION

About one sixth of the quarter of a million older people across The Netherlands, live with dementia and reside in nursing homes [1]. The number of people with dementia will see a sharp increase in the coming decades. When being institutionalized, their lives often change drastically. New residents of nursing homes are confronted with a number of challenges among which maintaining mastery over their lives and environment [2], as well as adapting to their new living environment and making it a place they feel “at home” [3,4]. Therefore, nursing homes should be attractive places in which residents can thrive and in which care professionals and other staff are supported in their professional roles [5-7].

An important question stakeholders working in the field of geriatric care facilities ask is: ‘How do residents with dementia experience the building in which they dwell?’ It is important to explore how people with dementia experience and use their environment to expand the understanding of how architectural environments can improve their well-being [8]. The need for creating a nursing home which is more than a place where care is provided to older people with a high demand for care, but rather a place where one feels at home, is a new goal for nursing home organizations [3,7-9].

In order to create a true nursing ‘home’, it is essential to address the experiences and views of the residents in studies, and empower these residents through passive inclusive design and active practice development [10,11]. Too often, residents are often overlooked and not included in design and development processes, especially when dealing with dementia syndrome.

Dementia impacts communication and cognition, which increases the complexity of studies with residents with dementia. To date, there is a limited perspective of how residents of psychogeriatric nursing homes prefer to live in terms of interior design and aesthetics [12,13]. Given the lack of perspectives for a cure and the ever increasing numbers of people with dementia [14], addressing the living environment that is familiar and meets personal preferences, is a necessary alternative for improving the quality of life [12,13,15]. The complexities of the needs of people with dementia leads to a design of living environments in which the actual housing-related needs of people with dementia remain unmet [5-7,13].

Therefore, this study investigated research how residents of psychogeriatric nursing homes prefer to live in relation to the interior design of the own room in terms of aspects as furniture, personal belongings, colour schemes and the experience of aesthetics. The study focuses on (1) the types of furniture and decoration that match the preferences of nursing home residents with dementia (object level), and (2) which colours, materials and patterns are appreciated (design level). This is executed on the basis of participatory design principles using experiential knowledge [16-19] and is used for the development of a whole range of new products, including assistive technologies and living environments. The goal of this study is to gain insight into the experiences and views of actual residents with dementia in order to understand their needs and preferences in relation to the design of their housing facilities and, subsequently, make these facilities more fitting.

II. METHODOLOGY

This study is part of a larger programme which studies the design aspects of future nursing homes [5-7]. In this programme, a wide array of stakeholders is involved through innovative and inclusive methodologies. They are consulted on how they would like to see the design of the built environment and technologies optimized to meet others' and their own needs. This study focuses on the wishes and expectations of the home environment of older people with dementia living in nursing homes. A qualitative methodology, based on the practice development approach, was chosen for this study, comprising of a creative session and in depth interviews with psychogeriatric nursing home residents which is based on a practice development approach.

Slegers et al. [20] noted that involving people with dementia in the design process is very challenging, as they may have substantial problems with thought processes and communication, including understanding abstractions, sequencing thoughts and actions, understanding symbols, and interpreting social cues. In addition, the experiences of people with dementia might be very different from those of the researchers and designers, making it difficult to identify with or relate to them, and with making sense of and sharing experiences verbally with others [20]. Because of the complexity in working in research with people with dementia in a valid way, a combination of two approaches was chosen, in which a visual part (making mood boards) can support the spoken part (interviews). The Critical Appraisal Skills Programme's [21] checklists for qualitative research were used as a guide for this study. In the following sections we describe (1) the setting, ethics and participants, (2) practice development and creativity in dementia, (3) creative session, (4) interviews, and (5) data analysis.

A. Settings, Ethics and Participants

A creative session (29 May 2014) and subsequent interviews (5-6 June 2014) were conducted in a psychogeriatric nursing home in the city of Eindhoven, The Netherlands, with seven residents as participants (Table 1). The inclusion criteria for the research included: participants had to be at least 55 years of age, had to reside in a psychogeriatric nursing home based on a diagnosed form of dementia syndrome, be able to verbally communicate in Dutch, and be able to have an interview for at least 15 minutes. The main exclusion criterion was that residents were no longer able to adequately answer questions due to the state of their dementia syndrome. A care professional of the hosting nursing home made a pre-selection of potential participants based on the files of the residents of two closed wards. Seven potential participants and their relatives received an information letter which was approved by the hosting care organization. Informed consent was obtained from the initial family carer of the participants.

Table - 1
Characteristics of the participants

Participant	Sex [M/F]	Age [years]	Marital status	MMSE	Date of Admission [dd-mm-yyyy]
A	F	85	Widowed	16/30	15-04-2009
B	F	83	Married	Unknown*	27-06-2013
C	F	88	Widowed	19/30	15-04-2014
D	F	89	Unmarried	8/30	09-12-2011
E	F	94	Married	14/30	25-11-2011
F	F	90	Widowed	8/30	06-11-2013
G	F	90	Widowed	0/30	03-02-2014

*Participant B chose not to take the MMSE test.

The study population comprised of 7 females. The age of the participants ranged from 83 to 94 years. Two of the participants were married, four participants were widowed and one participant was unmarried. All participants were born in the Netherlands. The duration of residence ranged from several months to five years.

The severity of cognitive impairment of every participant was examined with a 30-point questionnaire test (Mini Mental State Examination – MMSE) [22]. The lower the score, the more the cognition and memory may be affected by dementia or another psychiatric problem. A score of ≤ 9 is considered to be severe, a score between 10 and 20 as moderate, and a score between 21 and 24 as mild. In this study, the scores ranged from 19 to 0. Every participant had a single-person room, with private sanitary facilities. The participants have the choice to bring a selection of furniture and personal belongings upon admission.

B. Practice Development and Creativity in Dementia

This study builds upon the principles of practice development (PD), and is based on the work by Hannemann [22], Munten et al. [10], and McCormack et al. [11]. PD is frequently used to describe activities that professionals use to develop practice and to improve patient care by focusing on the improvement of patient care through emancipatory approaches [24] and is described as “a continuous process of developing person-centred cultures. It is enabled by facilitators who authentically engage with individuals and teams to blend personal qualities and creative imagination with practice skills and practice wisdom. The learning that occurs brings about transformations of individual and team practices. This is sustained by embedding both processes and outcomes in corporate strategy [13]. This process is supported by facilitators who involve individuals with certain developments and call upon individual qualities, creativity and professional knowledge and skills of as many people as possible. The mutual

learning process changes and improves the practice of individuals and teams with a positive effect on all people being involved [10]. PD consists of nine core principles.

The core principles of PD have come to the forefront of this study, including the active participation, creativity and dialogue, and the dynamics and non-linearity of the study [10]. Although PD has been applied to improve dementia care [26], the creative component in research with participants with dementia is rather new. Therefore, this study focusses on the exploration of the potential of PD in combination with creative approaches.

The executive process of being creative is linked with memory and personal competence. Creativity in older age is focused on increase of divergent thinking, and analytical thinking is not favoured [23]. Hannemann [23] noted that owing to their usually more extensive experiences in life, older people have the ability to improvise and facilitate their imagination to a higher degree than younger people.

For older people, creative expression might play a major role in illustrating their unspoken emotions. Creativity is a way to provide a means of expression in an evaluation study to persons who have limited powers of speech in our society. Therefore diverse research projects with people with dementia successfully use creative methods to achieve their goals, for instance, Baur and Abma [27], Zoutwelle [28], and Hendriks et al. [29]. Art and creativity offer a path to identifying and highlighting the emotional interiors of people with dementia. Participants can take the initiative to combine creativity with art and to define their feeling for aesthetical facets. One of the rules followed in this study is that there is no focus on the final product (results), but on the process of creation itself. Another rule was that we provided an opportunity for the participants to get into contact with their inner self and current living place. Finally, Hannemann [23] contends that creative activity has been shown to reduce depression and isolation, offering the power of choice and decisions. There are two aspects that people with dementia may feel they are losing.

C. Creative Session

The creative session took place on May 29th 2014. During this session, the participants made mood boards, which were a visual expression of their housing-related needs, in relation to the interior design of their private room in terms of furniture, colours and decoration. In this study, mood boards were used for the subsequent interviews with the participants. Making mood boards of architectural features by professional designers is a common approach in the practice of architecture and interior design. Making mood boards by nursing home residents is an activity that can be conducted as part of an activity session, but has not been described as a research methodology in the literature. The methodology of the creative sessions had been tried out in three regional nursing homes in spring 2013 by six research assistants with a background in activity therapy and nursing. (Figure 1)



Fig. 1: Overview of trials of the creative session. Taken with permission of the residents and the hosting care organizations.

Prior to the creative session, the principal investigator collected materials and samples at DIY stores, hobby stores and old magazines from students and colleagues. The materials were evenly distributed and made available to the participants during the session. For instance, pieces of fabric and cloth were already cut down into smaller pieces by the investigator. The investigator also instructed the cares and the fellow research assistant in the procedures and roles. The principal investigator was responsible for the course of the session, and helped in the creation of the mood boards. The primary role of the investigator was to serve as a critical friend / coach throughout the creative session [30]. During the session she asked participants to clarify their choices and evaluated thoroughly what the participants were doing and how the session evolved. She kept the aim of the research in mind but also made sure the participants remained in charge of their own creative process. Through the outsider position, the principal investigator was able to approach the residents as persons with a rich background. The carers (professional and informal) facilitated the session through helping participants in selecting and gluing objects/materials.

The session started in the morning, in the common living room. The session lasted for 3 hours. At the start of the research, the participants received instructions and a short explanation of the goal of the session. These were printed and placed onto the walls and tables as reminders. An example of a mood board was shown to the group. The principal investigator (MRS) and research assistant put the materials on the table, including paint colour fan decks, wall paper samples, pieces of fabric, cloth and floor covering, and various magazines, as well as glue, pencils and felt-tip pens. Thereafter, the participants were provided with a blank canvas (0.40 x 0.50 m²) on which to place the elements chosen in order to express their preferences and wishes. During the session, participants were repeatedly reminded about the goal of the assignment.

The participants were free to select whatever material they wanted to choose as a way to reflect their preferences. Some of the participants were able to make the mood boards completely independently, whereas others needed some assistance. Participants summoned the principal investigator as soon as they thought they were done with making the mood board. The principal investigator and research assistant checked the mood board to see if it provided a sufficient answer to the research question. If not, the participant was asked to continue improving the mood board with the help of the principal investigator and research assistant. For example, participants were asked questions and materials were suggested. With this help, participants still had the final say, and before the materials were adhered to the canvas, a final check was done to see if a participant really liked it. This questioning helped the investigators to steer the creative process. Participants, who were finished, were free to leave the activity, as their mood boards were ready and the attention span was no longer optimal. After the time period, the mood boards were collected by the principal investigator.

D. Interviews

About one week after the creative session, on June 5th and 6th, semi-structured interviews were conducted. These interviews lasted between 15 and 50 minutes, depending on the mental and physical possibilities of each individual participant. All interviews were conducted within the private rooms of the residents, and only the principal investigator was present. The interviews had the character of an open conversation and started with the MMSE test (Table 1, Participant B did not consent in conducting the test). During the interviews, a link was made between the topic list questions and the mood board.

Personal, methodological and theoretical notes were taken, which were used for further analysis. During the interviews, participants were encouraged to explain their personal stories, without too much steering in order to create an atmosphere which was suitable for interviewing people with dementia. Van Steenwinkel et al. [8] conducted a case study in which they executed three in-depth interviews with a woman living with dementia.

Throughout these interviews open questions were utilized to obtain an insider's perspective and a rich account of the changes in her life, including her lived experiences and interventions in her home environment [8]. Therefore, this study also makes use of open questions, based on a topic list, which is an overview of research themes and accompanying questions. The topic list contained items relating to the design of the living environment, including (1) the used fabrics and wall papers (appreciation, rationale for choice, positioning in the room), (2) the current living situation and points of improvement, (3) the design of the living environment (being involved), (4) pictures and photos (their meaning), (5) colours (experiences, rationale for choice, appreciation and positioning in the room).

Of all participants, participants D and G had the lowest MMSE scores and had the most difficulty in answering the questions. After discussing the mood boards, the principal investigator talked about the private room, and made a link to the mood board in order to see if the present room met the needs and preferences of the resident. Data saturation was reached during the interviews. The principal investigator summarized all she heard, and shared her findings with the participants as a form of member check. After the session, participants were thanked for their cooperation.

E. Data Analysis

All interviews were recorded, and were transcribed verbatim on the same day as the interviews took place. The data were analyzed using the six phases by Braun and Clarke [31]. First, all transcripts were read in their entirety twice. Thereafter, codes were added to the transcripts. Similar codes and quotes were clustered, and themes emerged from this clustering. Thereafter, themes were reviewed, and then defined and named. In the final phase, data were reported by using quotes to illustrate the various themes. In addition, the mood boards were analyzed in terms of comparability to the results of the interviews. Both the results of the interviews and the mood boards are presented in terms of differences and similarities. This is a way of method triangulation [21].

III. RESULTS

The mood boards (Figure 2) and their meanings are described in the following sections. Figure 2 shows the end results of the creative sessions. Participants came up with relatively developed mood boards, consisting of pieces of the colour fan decks and pieces of wall paper. Yet, utilizing PD as a mythology focuses more on the (creative) process than on the actual end-results of a session, a perfectly designed mood board was the major aim. In some mood boards, some cut-outs from magazines were added. The participants added these materials to the mood boards in a rather structured manner, i.e., there are no overlaps in the clippings and samples. A total of four themes emerged from the research. These are: (1) (use of) colours; (2) furniture and function; (3) the importance of decoration in the own room; and (4) sense of home.

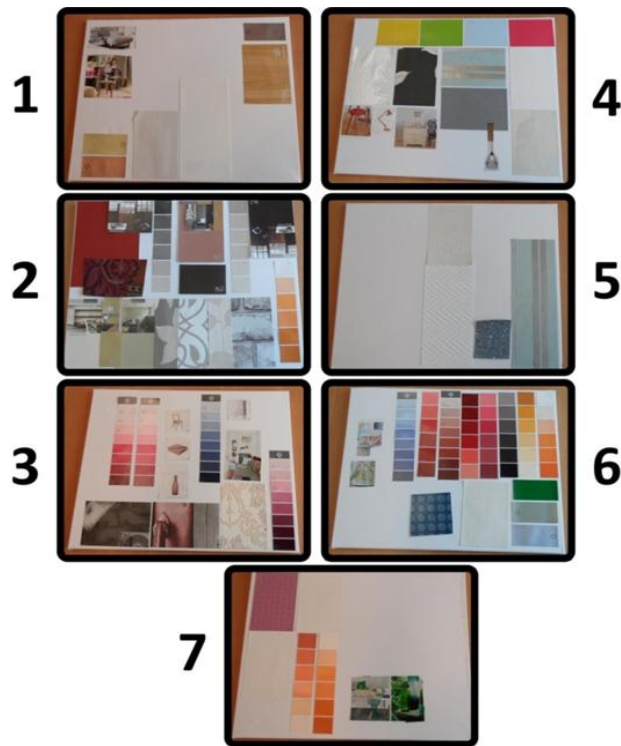


Fig. 2: Overview of the seven mood boards.

A. Theme: (Use of) colours

Colours are found in curtains, on walls, in paintings, upholstery, and all other features of the private room. As some colours are more dominantly applied in a room, they can be a defining aspect of how a room is perceived. The participants preferred a wide array of colours which they liked to see applied in their rooms. The colours green and blue were perceived positive by five out of seven participants. Some participants stated that particular colours do not go together well. All participants expressed a preference for a certain colour, and this also displayed in their mood boards. All colours were available for choosing, and were actually offered to the participants during the creative session, but still, a small selection was chosen. Another aspect related to colours is the way they are used and applied in the room. All participants stated that light hues are preferred over darker hues of the same colour.

“The blue and red things I like a lot, but maybe in another room. But blue and red do not go together because it is too much.” (F)
“I’d rather have a lighter colour as a wall paint.” (E)

According to one of the participants, darker colours have a negative effect on her mood. The use of too many colours and pale colours was not appreciated. The impact on one’s mood is mentioned a number of times. For instance, participant B added a limited number of colours (orange, red and grey hues) to their mood board. She explicitly stated she liked the bright orange and that the grey hues were restful. Participant C liked the colours pink and purple, and this also shows in the pictures on the mood board. There are a light pink vase and blanket on the pictures, and the preference also showed in the choice of wallpaper. Bright and light colours were appreciated, dark colours not so as those colours made participant C feel dismal.

Sections of their own room that needed colour were the walls, the floor, curtains and a number of pieces of furniture including the sofa. Additionally, participants mentioned that they often missed attractive colours in their rooms. This was also observed by the principal investigator, who noticed that the rooms were not brightly decorated. The walls are white and the floors and curtains have a standard colour for all rooms, in which residents did not have a say. One of the participants (F) particularly liked the red colour of the floor and that was one of the reasons why she liked to live in her room. The other participants took the colour of the floor for granted and had no particular opinion about it.

”Well, the floor, how should the floor be? Well, I guess just as normal as anyone else got.” (D)

Participant A stated that the colours added to the mood boards were not liked much, and she did not want these colours to be applied in her room. Her room would be too small for these colours, and they would be more fitting in a larger room.

B. Theme: Furniture and function

The furniture present in the private rooms had a clear function, and some of the pieces contributed to a homelike atmosphere. Common pieces were small cabinets, chairs and the bed. A number of participants would prefer the pieces of furniture that were found on the mood boards over the current furniture. If the residents had a say in the interior decoration, they would choose furniture with a different colour, preferably a colour of choice. For instance, participant B chose an austere style and modern interior design on the images, and she repeatedly stated she liked that style.

All participants stated that having personal pieces of furniture around them is important, particularly the old pieces that have been owned for many years. These pieces are not necessarily considered as pieces of beauty, but are just part of life after all those years – a sentimental attachment.

“In the old days after the war, I did not have a sofa. Once we had a sofa with pillows, I was so happy with it, you need to know. This is what makes a sofa with pillows so nice for me.” (C)

The fact that nowadays, too many people buy new pieces of furniture after a number of years of using the old pieces is disliked by the participants. Furniture should last a long time and that owners treat these pieces with care. When asked how participant A felt about the mood board, she indicated that she liked the image of the sofa, because of its austere design. Another picture of a sofa with a lilac pillow was not liked much. A clipping showing pieces of furniture and a vase were liked by participant G, as they all had the colour green.

“Yes, the furniture is fit. When I bought it I liked it. And that’s all there was to it.” (A)

Participants could choose from all types of pieces of furniture from the magazines during the creative session. These pieces were both traditional and modern. The mood boards hardly contain images of furniture. The participants said that choosing colours and patterns was more important. Participant B mood board showed she particularly liked patterned wall papers. She stated that she would like to have one particular pattern on her wall. Participant D liked the wallpaper she selected, because she very much wanted a wall paper on her walls with a small pattern. Participant E would like to have the wallpaper with silver stripes in her private room. Apart from colours, textures and patterns are important features of wall papers.

The interviews showed that participants were satisfied overall with their furniture. There was hardly a need for new pieces of furniture, and, therefore, there was no priority in looking for pictures of furniture during the creative session. The furniture that was supplied by the nursing home (including the bed) were less popular than the own pieces. These pieces were accepted by the participants as they thought they did not have a say in the choice. Further, participants preferred ease of use of furniture over the design and appearance of these pieces. There were many wooden pieces of furniture in the rooms, which were valued in a positive way. The participants both liked wood as a material and they were used to its use. They could not indicate whether they really liked wood as a material, or whether it was a matter of being used to it. One of the participants could not live without a television.

“I cannot live without my television. I watch television every single day. Because, you know, all the news is brought to me through television, and this is how I keep ‘up to date’.” (A)

One of the participants indicated not to have a specific opinion about the bed and nightstand as these objects were ‘just a part of the room’ for her. The bed itself can be a point of discussion for some, and it plays in a role of how residents experienced the private room. No one would place the bed in a living room. The fact the bed was in the centre of the private room gave participants the sense that they were in a bedroom, instead of a living room. A separate bedroom was a wish of many. When the bed is in view, it negatively impacted the sense of homelikeness, and it was not considered inviting to do activities. One of the participants consented in the fact the bed was there, but she would never choose to have a bed placed in a living room.

“A bed belongs in a bedroom. You would not put your bed in the living room either?” (E)

C. Theme: The Importance of Decoration in the Own Room

The most important and most appreciated type of decoration was the paintings on the walls of the private rooms. These paintings were often in possession for decades. There were many figurines, and other items which represented a sentimental value. The figurines were bought during holidays, made by grandchildren, or had been given by a loved-one. An empty wall without paintings was disliked by the participants, and one of them called it chilly. In the rooms of five of the participants there were paintings on the wall. The financial and emotional value, as well as the colours, is among the reasons for liking the paintings and making them important to the residents. Decorative items contributed to an overall feeling of well-being. The type of object itself did not matter as much as the emotion or memory that was attached to it.

All seven participants positively appreciated having flowers and plants in their rooms, as plants provide a sense of home likeness. One of the participants got a sense of safety and security from the plants, particularly at night, as plants decreased her feelings of fear in the dark.

“Flowers contribute to a sense of festivity.” (A)

Pictures of relatives were found in five out of seven rooms. When asked if these pictures were important to them, participants had different answers. Some of the participants with the lower MMSE scores could no longer tell who was on the pictures, and had no opinion about the pictures. To them, pictures could even be a disturbing item, which contributed to a sense of restlessness. One of the participants repeatedly asked who were on the pictures and became distressed. The participants who did recognize the people of the pictures liked them to be around or hanging on the wall.

D. Theme: Sense of Home

The sense of home is a broad term which was hard to grasp by the participants. Some of the factors that contributed to a sense of home included: having people around, and having personal items in the own room. Although the study did not focus on the social living environment (contact with fellow residents and care professionals), this was the main facet among participants when asked about their sense of home. These are the people that residents have to interact with on a daily basis without having a clear

choice in whom to interact with. One of the participants indicated that she thought other people were more important than stuff. She felt lonely, and this resulted in a lack of a sense of home. Moreover, her room was rather empty, which was also disliked.

“You know, my children brought me here, because they probably thought that I was lonely. Even with the people around me, I feel even lonelier.”(C)

“Yes, that gives a sense of home. When you enter, and then you think ‘Oh yes I live here and that is something I bought and it is my taste and I live here.’ And that is home!” (C)

As mentioned before, having a bed in the middle of the private room is a large obstacle for four of the participants in developing a sense of home, as it makes them feel like living in a bedroom. A sense of home, to them, is experienced in the common living room where people sit together. Five out of seven participants stated that having a sense of home is something that is forced upon them involuntarily, by the fact that they actually live in a nursing home.

“You ask me if I feel at home in here. I have to, because I live here.” (E)

IV. DISCUSSION

A. Reflection on Methodology

PD and creativity are two foundations for inclusive design with dementia, in which the process of inclusion and engagement is more important than the actual end-results. Being included in the design of the own home environment, in particular the private room or the common living area of a nursing home, which is one’s final place of residence, is in line with the principles of PD. Being part of their own living environment and the society as a whole is important for all citizens, including older nursing home residents with dementia. Spending numerous hours with engagement can lead to the display of behavioral symptoms in dementia. Being stimulated to participate in activities may, in turn, lead to positive behavioral outcomes.

At the start of the creative session, it took a while for all participants to be fully engaged in the activity. Apart from the frail health status of the participants, a reason may be found in the lack of stimulation in the daily lives of these participants. Some of the participants were somewhat apathic during the session. In hindsight, the principal investigator would change the set-up of the creative session, and start with an introduction to the participants in order to get acquainted to their character and background. The creative session needs to take place in peace and quiet, and too many external stimuli should be avoided. Therefore, the room should be free of care professionals walking in and out, which hamper the levels of concentration of participants. Every participant needs sufficient (or continuous) personal attention during a session. During the current session, there was a continuous change between assistance and working independently. With help of an assistant, the results were more elaborate and participants worked more thoroughly.

Some of the participants did not remember they made a mood board during the creative session. During the interview, some of the participants had a somewhat different opinion on the elements of the mood boards during the sessions and the interviews. Using family cares as an additional source of information could help in finding a solution to some of these discrepancies. Asking additional questions repeatedly could also help the investigators to find the true views of the participants. Moreover, there was a one-week interval between the creative session and the interviews. This was very challenging to the episodic memory of the participants, and in future studies, this interval should perhaps be as short as feasibly possible. The episodic memory concerns the storage of conscious memories of events one has been through [32]. The MMSE is a helpful tool. The three participants with the highest scores remembered or vaguely remembered that they had made a mood board and had similar thoughts about the mood boards and were less able to communicate during the interviews. Future research should take the MMSE test prior to the creative session, and rule out participants with low scores. The MMSE score would then be part of the inclusion criteria.

The methodology applied can also be useful for applying to other study populations, such as somatic nursing home residents, people with autism and other mental impairments, and older people ageing in place. The creative session, as part of the two-phased approach, has a low threshold for participation, and helps people to express themselves without the use of words. This helps in identifying points of view, preferences, and so on which else remain unknown or untouched. The group session helps people interact and exchange ideas, without influencing each other in choices, but more as a stimulus to complete the canvas.

Research assistants and cares can help to offer concrete choices for materials to the participants during a session. For the improvement of housing conditions of people with dementia, we propose a creative co-design process which is based on the principles of PD (Figure 3). Architects and technical staff of nursing homes (as well as relatives) can base their design and construction work on the outcomes of creative sessions with people with dementia who receive the support of cares during these sessions. The results should lead to a better fit between demand and supply in terms of interior design and housing facilities. This is one of the goals of the programme which studies the design aspects of future nursing homes [4-7].

The current study fits in with the large number of creative methodologies applied and developed within the programme, including brain storm sessions, photo voice studies, mind mapping sessions, and participatory action research. Future research should focus on certain gaps within the framework of PD [10] that are not sufficiently addressed in the current study, including spreading the results within the hosting care organization and having a dialogue with other stakeholders like informal cares, volunteers and care professionals about the results.

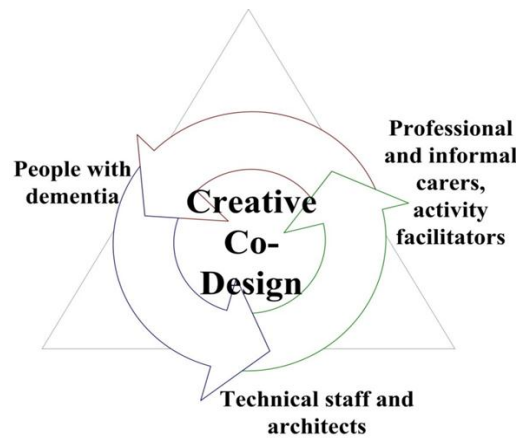


Fig. 3: Creative co-design cycle for housing of older people with dementia.

B. Reflection on Results

The results of this study show that the use of light colours is important in the rooms of people with dementia. According to the professionals, colours can affect one's mood and can provide a homelike atmosphere. There are numerous architectural guides describing colour schemes for nursing homes, which take both the atmosphere and low vision into consideration. For living rooms and rooms where leisure activities take place, a warm pallet with soft colours is essential [33]. In activity rooms, saturated colours are appropriate. In a restaurant or a common living room where residents eat, red and orange colours are suitable, in combination with adequate lighting [33]. The use of contrasts in colour schemes is essential, but in the case of dementia, can cause visual perception deficits [34]. Marx et al. [35] made suggestions for light, pastel colours in nursing homes, but their findings are not shared by the views of the participants of this study.

Having one's own furniture around is important for older people in nursing homes, as the pieces of furniture contribute to familiarity and a sense of belonging and sense of home. These pieces of furniture should help older people with dementia to find a balance between security and autonomy [9]. Furniture that contributes to a sense of home should be preferred over modern and new furniture, even if it is more practical or hygienic. According to Rommel et al. [36], a varied selection of furniture is more pleasant than a uniform interior design. In this study, participants were attached to their own pieces of furniture, particularly practical pieces, which were preferred over nicely designed pieces.

Items that are used for the decoration of rooms are other important factors in the housing needs of older people with dementia. Empty walls were considered as unattractive and not homelike. Flower arrangements and plants are indispensable, and positively impact mood and sense of home. Van Hoof et al. [34] further noted that in practice, flowers and plants are often selected for being of the non-poisonous type, and that silk flowers collect dust and should thus be avoided from the perspective of cleaning. Pieces of art in the room include paintings and figurines, which contribute to a homelike atmosphere and familiarity.

Participants had difficulty in defining their sense of home and the constituent factors. The role of the social environment was stressed by the participants, more so than the built environment. The sense of home is a complicated phenomenon, which is multifactorial, and which is defined by a sense of security and autonomy. When still living in the community, people have more options to live the life they wish to lead [3]. The current study has added further knowledge of the housing needs of people with dementia, in particular in relation to personal belongings, atmosphere and interior design.

V. CONCLUSIONS

Designing nursing homes for people with dementia and creating a sense of home for them, by considering their building-related housing needs, is a difficult task. Important features are the use of familiar pieces of furniture as well as preferred colour schemes and patterns. These aesthetically pleasing aspects of the built environment may contribute to a sense of familiarity and recognition, and, in turn, to a sense of home.

A PD approach to the design of nursing homes can combine creative and interviewing techniques which help create an ideal home situation. PD can provide facilitate participation for the least voiced. In the future, nursing home organizations and family cares could engage in similar creative workshops in order to find out which aspects of the built environment are appreciated by people with dementia, and how their rooms should be decorated. With a little help, private rooms can be turned into a place which meets the needs of people with dementia as much as possible. Creative sessions may be held repeatedly, as preferences and behaviors may change over time (for instance, pictures not being recognized), and interior design and decorating may need an update. This research shows that involving older people with dementia into the process and rationale for the interior design of nursing homes with the aid of creativity this can lead to a better match between the needs and design solutions and can stimulate the dialogue between stakeholders involved thinking about the design of nursing homes.

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