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A sense of home for people with dementia in a long-term care facility: A design perspective

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ABSTRACT

The study aims to provide new insights into the approach to the spatial design of homelike dementia care facilities. This paper builds on Molony's (2010) findings that home meaning in care facilities is a process of people-place integration, and then proposes that people living with dementia can accomplish this process through their bodily habit. This research adopted an ethnographic case study approach. Three cases from a long-term care facility were studied by using semi-structured interviews and observations. According to the findings, having a sense of home for people living with dementia can be understood as a process of re-establishing people-place integration through their bodily habits in a long-term care facility. As a result, designers can consider which design features can assist people living with dementia in re-establishing this integration through bodily habit to create home feelings in a dementia care facility.

1. Introduction

With the development of the person-centered care concept (Kitwood, 1997), there is a growing body of research that recognizes the importance of dementia care facilities provide homelike feelings (Day et al., 2000; Marquardt et al., 2014; Chaudhury et al., 2018). It has shown to improve the cognitive function (Verbeek et al., 2010), the performance of the daily activities (Reimer et al., 2004), and social interactions (Smit et al., 2012; Lee et al., 2016). In a care setting, providing a sense of home for residents with dementia can be understood as creating a small-scale and homelike care environment (Verbeek et al., 2009; Fleming et al., 2015). There is a greater emphasis on residents' privacy (Fleming et al., 2015; Fay and Owen, 2012; Wada et al., 2020) and autonomy (Verbeek et al., 2009; Robinson et al., 2010; Fay and Owen, 2012; Wada et al., 2020; Norberg et al., 2015). In addition, the sense of home stems from the fact that residents with dementia can engage in meaningful activities (van Zadelhoff et al., 2011) and form relationships with others (Norberg et al., 2015; Wada et al., 2020).

The physical environment is one of the most important factors influencing a sense of home in a long-term care facility (Cooney, 2012; van Hoof et al., 2015; Rijnaard et al., 2016; Board and McCormack, 2018; Wada et al., 2020). Numerous built environment factors, including private space, (quasi-)public space, personal belongings, technology, look and feel, and outdoor space, have been shown to have an influence on the feeling of home in a care facility (Rijnaard et al., 2016). These factors serve as evidence to inform the designer in design practice (Stichler and Hamilton, 2008). The current approach to designing homelike care facilities is to incorporate these physical factors that influence the feeling of home into the space through developing specific design features (Eijkelenboom et al., 2017).

However, it is debatable whether design outputs utilizing this approach achieves the effect demonstrated by the evidence (Lawson, 2010, 2013; Moore and Geboy, 2010), particularly for designing care facilities that give dementia residents a sense of home. On the one hand, it may be difficult for people living with dementia to perceive the meaning of an object or environment based on its appearance (Van Steenwinkel et al., 2014). As a result, relying only on physical elements symbolizing home is insufficient to make them feel at home. On the other hand, the home can be viewed as a physical structure (Sixsmith, 1986; Després, 1991) and is influenced by the aforementioned physical elements. In spatial design, home making is more than just incorporating these home-related physical elements into a space. It is more about shaping home feelings by considering the intrinsic meaning of home. In previous research, Van Steenwinkel et al. (2012) have proposed an intrinsic home meaning to inspire the architectural design of care facilities (Van Steenwinkel et al., 2012), but it is not for people living with dementia. The purpose of this paper is to propose the intrinsic meaning of home for people living with dementia to inspire spatial design to

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create a sense of home in care facilities.

This paper first builds on Molony's (2010) findings, which view the home experience in a care facility as a process of people-place integration (Molony, 2010). Following a literature integration, this study defines a concept called bodily habit. This concept can be understood as a habitual structure of the body formed through constant repetition in previous life experiences. And this study believes that the bodily habit can help people living with dementia establish people-place integration (defined as the formation of a sense of home after relocation) in a long-term care facility. Three cases in a homelike dementia care facility are used to demonstrate this. Finally, based on the study's findings, new insights are proposed to design a homelike dementia care facility.

2. Home means a process of people-place integration after relocation

After decades of research, the term "home" is no longer simply defined as a physical structure made up of the house and its surroundings. It more expresses an intimate relationship between a person and their surroundings (Somerville, 1997; Moore, 2000; Easthope, 2004; Mallett, 2004; Graham et al., 2015). In later life, home means even more the intimate relationship with one's surroundings that develops from living in one place for an extended period (Oswald and Wahl, 2005, pp. 21–45). Rowles (1983) introduced the three levels of "insideness", physical insideness, social insideness, and autobiographical insideness, to describe this intimate relationship that symbolizes home for older people (Rowles, 1983). However, this intimate relationship is often broken as a result of a mismatch between the declined ability of the older people and the environment (Lawton, 1983; Lawton and Nahemow, 1973), putting them at risk of leaving their homes. This is a more frequent occurrence for people living with dementia, with the majority facing relocation during the moderate to severe stages of dementia (van Hoof et al., 2009).

Having a sense of home after relocating to a long-term care facility can be regarded as a process of re-establishing this intimate relationship in a new living environment (Molony, 2010). The study of Molony describes this process of re-establishing intimate relationships in a care facility. She emphasized the formation of the meaning of home in a care facility as a process of people-place integration. The whole process includes 1) Closing one door and opening another (closing the door to the past, determination to feel one's place somewhere); 2) Nested (building/investing in energy, places of personal power, sanctuary, relationships); 3) "My meaning" moving forward (self-reconciliation, continuity, projection of self in place and time). This reflects the process of integrating the older people into their new living environment in terms of physical, social, and psychological aspects. This paper adopts this concept to understand the formation of home meaning after relocating to a long-term care facility.

3. Bodily habit as the key for the people-place integration

While the body is a part of a human being, it is not merely an unconscious physical entity. The phenomenologist Merleau-Ponty (2013) circumvents dualistic relationships between body and mind and believes that the body has a pre-reflective instinct (Merleau-Ponty, 2013). This instinct enables our body to guide each movement automatically without conscious interventions. He uses the following example to demonstrate it. A person can type quickly without having to deliberate over each finger movement (Merleau-Ponty, 2013, p. 145). Following the Merleau-Ponty study, Pia Kontos combined the Merleau-Ponty study with Bourdieu's (1977, 1990) concept of habitus to propose the notion of embodied selfhood to further understand the body's pre-reflective instinct. She believes that the pre-reflective body is an expression of selfhood. This expression is the result of a primordial response towards the world and a response influenced by sociocultural sources (Kontos, 2004, 2005). In short, Kontos's research emphasizes the association between the pre-reflective body and the individual's past life experiences and social culture. So, body's pre-reflective instinct can be understood as a habitual structure formed through constant repetition in previous life experiences, and it is commonly found in procedural activities, habits, skills, routines, etc (Riva, 2018). This pre-reflective instinct of the body also can be described as implicit memory (Schacter, 1987) or body memory (Fuchs, 2012) in other disciplines. In this article, it is uniformly referred to as the term "bodily habit".

Bodily habits can be viewed as the key to developing an intimate relationship with the world around us (Casey, 2009; Fuchs, 2012). When we can rely on our bodily habits for movement in an environment, it indicates that we have developed a body awareness in that environment by a repetitive process of habituation (Rowles, 2000; Gallimore and Lopez, 2002; Rowles et al., 2003), and the familiarity with surroundings (Son et al., 2002). Additionally, when a people's bodily habits are rooted in a space, that space tends to evolve over time into a meaningful place for interpersonal communication, meaning, and attachment. This phenomenon is known as "place-ballet" (Seamon, 2015, pp.148-165). As a result, the bodily habit may be viewed as a critical point in re-establishing people-place integration (defined as the formation of a sense of home after relocation). Bodily habits, as implicit memory, can be retained throughout the stages of dementia (Butters et al., 1990; Fleischman and Gabrieli, 1998; Knight, 1998). Thus, this article intends to argue that people living with dementia can rely on bodily habits to re-establish people-place integration and acquire a sense of home in a care facility.

4. Methods

The study aims to understand how residents with dementia establish people-space integration, which is a sense of home, through their bodily habits. To answer this question, the study used the ethnographic case study approach. This type of case study "employing ethnographic methods and focused on building arguments about cultural, group, or community formation or examining other sociocultural phenomena" (Schwandt and Gtates, 2018, p. 334). Thus, it adapts to undertaking an in-depth study of daily lives of people living with dementia. This project was approved by the ethical committee of Politecnico di Milano.

4.1. Setting

In China, dementia care is based on three tiers of care system: home care, community services, and institutional care (Chen et al., 2017). However, with the increasing aging of the population and changes in the demographic structure of Chinese families, among other factors, more and more Chinese people have accepted institutional care (Dai et al., 2020). In China, care facilities are now emphasizing the creation of a family-like institution and the mutual support within this extended family (Zhang, 2020). The study was conducted in a homelike dementia care facility in Nanjing, China. Approximately 20 residents with dementia reside in this facility. This site was chosen due to its typical homelike care facility for people living with dementia. It is a three-story building that includes residential areas, activity areas, and common areas. The residential area has a total of 16 rooms, each with its own bathroom. There are three types of rooms, single, double and en-suite. Each floor has a living room with an open kitchen as well as a laundry room. Residents with dementia can engage in various activities such as housework, walking, exercise, singing, and chatting.

4.2. Participants

Recruitment of study participants began with agency directors recommending residents who had adapted well to living in a care setting to the researchers. Following this, a purposive sampling strategy was employed to recruit participants for this study, as this strategy can be used to find informative participants (Palinkas et al., 2015). Purposive

sampling was drawn according to the following inclusion criteria:1) The participant is willing and able to give informed consent to participate in the study. 2) Dementia has been diagnosed. 3) Possessing the verbal ability to conduct an interview and the acting ability to observe 4) Living for more than six months (because six months is considered an important time point for older people to become familiar with the care environment). We finally recruit three residents living with dementia in facility. For ethnographic case studies, the size of said sample may be limited, but data saturation needs to be ensured by conducting longer or multiple in-depth interviews and observations with participants (Fusch et al., 2017). For reaching data saturation, this study adopts the triangulation approach to collect the data. Triangulation refers to the use of multiple methods or data sources in qualitative research to develop a comprehensive understanding of phenomena (Patton, 1999). Triangulation has also been viewed as a qualitative research strategy to test validity through the convergence of information from different sources (Carter et al., 2014). So, we tried to collect data from as many different participants as possible. Residents with dementia, their relatives, and professional caregivers are included in this study. We finally chose three residents with dementia, their close relatives, and their primary caregivers for data collection (Characteristics of participants see Table 1).

4.3. Data collection

Data collection consisted of two main components: semi-structured interviews and observations. Interviews with residents and their families were conducted in their rooms, and interviews with professional caregivers were conducted in the common areas and in the head's office. Each interview lasted between 0.5 and 1 h and was recorded. To ensure that everything went smoothly, an outline of questions was developed before the semi-structured interviews were conducted, but the exact order of questions and topics varied depending on the setting. The observations were made mainly of the residents. The specifics of the observations were developed from the content of the post-visit. Each case is observed for six weeks, four days a week, for a total of 24 days. A few days were skipped in order to process the data collected during the fieldwork. Observations started at 7a.m. (just as the first residents were being helped out of bed) and continued until around 8pm (when all residents were in bed). Field notes (including drawings) and photographs are examples of the data collected through observation.

4.4. Transcript and analysis

All audio recordings of interviews in this study were fully transcribed, and the field notes of observation were partially digitized. As Nowell et al. (2017) explain, the lack of rigorous analysis has implications in terms of the credibility of the research process. Therefore, data analysis process follows Braun & Clarke's 6-steps thematic analysis framework, namely familiarisation, coding, generating themes, reviewing themes, defining and naming themes, and writing (Clarke et al., 2015). And all analysis finished by using MAXQDA 2020.

Table 1
Characteristics of participants.

Type of participant	Participant Profile
Dementia residents	Li, Man, 85 years old, moderate to severe stage, 2 years of residence
	Wang, Woman, 83 years old, moderate stage, 1.5 years of residence
	Zhang, Man, 79 years old, moderate stage, 1.5 years of residence
Dementia residents' relatives	Li's wife
	Wang's daughter
	Zhang's nephew
Dementia care staffs	Professional caregiver 1
	Professional caregiver 2
	Professional caregiver 3

5. Findings

5.1. Reducing resistance through bodily habits

In the early stages of moving to a care facility, bodily habits, such as previous daily activities, habitual behaviors, or routines, can help residents with dementia relieve their bad emotions when faced with an unfamiliar environment. Li and his wife moved into an ensuite room at this long-term care facility for more than two years. They have now adapted well to life in this place. However, Li initially resisted moving into a long-term care facility. During the first two months of relocation, Li was constantly wandering around and attempting to escape. According to his wife: "He doesn't think that is our home at the beginning. He always requests to return home." When he began performing some previous activities in their new home, this situation improved.

> *"When he could once again sit in his old armchair to watch television, eat, and nap. He appears to forget that this is not our residence." (Interview of Li's wife)*

In addition to this, when Li continued to carry out some of his previous habits, such as growing plants and walking with his wife after dinner, he began to show irritation and resistance less often.

> *"He is happy to be able to continue doing what he loves (planting, walking). It keeps him from walking around all the time and wanting to go home like he did when he first arrived …. He has things to do."(Interview of Li's wife)*

The second participant, Wang, has been moving from her home to the care facility for one and a half years. In the beginning, Wang was concerned about losing control of her life after moving from home to a long-term care facility. Her daughter told us:

> *"She always wants to be in charge of everything in the house. Even though we told her how nice it was here. But she was afraid it would be like a hospital. She felt her home should not be like that" (Interview of Wang's daughter)*

This concern almost disappeared after she found that in many things she could continue as before. She brought over many items from her home, such as a sideboard, a comfortable chair, a desk, and something memorable. These items were kept in the same arrangement as they were in her previous residence, allowing her to retain her previous usage habits.

> *"When I found everything is there, ….I can do it as before, …. come here wasn't so bad" (Interview of Wang)*

Zhang described a similar situation to the previous two residents. The previous activities could be continued in a new living environment that let him have no resistance to moving into a long-term care facility. Prior to developing dementia disease, Zhang spent very little time at home each day, spending most of his time at senior centers or parks for activities. However, due to the symptoms of dementia, he is no longer able to go out as much as he used to. Zhang spends the majority of his days at home, sitting quietly. He described his life after being diagnosed with dementia with the following quote:

> *"I can't get out, I lost my life … I'm trapped there [home] " (Interview of Zhang)*

After moving into this dementia care facility, Zhang has had more opportunities to participate in various activities than he did at home. According to the description from his nephew and primary caregiver, Zhang doesn't spend much time in his own room each day, only returning to wash up and go to bed. He spends the majority of his time in the common living room. He enjoys participating in various activities and will only want to return to his room when he is exhausted. Continuing the habit of activities makes him feel less anxious about moving into a long-term care facility away from home.

5.2. Bodily habits and surroundings form a rhythmic fit

After the elimination of resistance to the new living environment through previous habitual activities, the dementia residents' bodily habits gradually develop a rhythmic fit with the new environment, which includes three different aspects: objects, time & space, and people.

5.2.1. Rhythmic fit with objects

Over time, the dementia residents' body habits and their surrounding objects developed a rhythmic fit. This rhythmic fit is reflected in the way the body interacts with the objects around it in a fluid, relaxed way that does not require much thought when they go about their habitual activities.

Li's armchair is surrounded by numerous items he uses on a daily basis, such as cups, TV remote controls, and blankets, all of which are arranged according to Li's usage habits. When he sits in the armchair, the interaction of his body movements with these objects is fluid and without any pauses.

" …... He sat down and slowly raised his right hand, reaching for a small table on the right, picking up the TV remote control that was placed on it, and pressing the red button on the TV remote control toward the TV in front of him (he did not look for the button). Li returns the remote control to its original position after turning on the television …... He reached up and drew the blanket on the armrest closer to himself, covering himself. Then he leaned back against the chair's back and lifted both his feet, placing them on the footstool in front of him." (Observation Notes)

On the balcony of Li's room, there are many plants and a seat for Li. When he sits on this seat or performs 'watering' activities on the balcony, his body movements also show a rhythmic fit with the surrounding objects. His body can complete positioning automatically, even without using his eyes, and it all happens naturally. A describes this process with the following quote:

"They are there every day. I ..do every day … I knew it." (Interview of Li)

Wang's body shows rhythmic fits with the surrounding items as she goes about her daily activities in the room. For example, dressing activities. There is a chair next to her bed with the clothes that she and the caregiver selected the previous day. All the clothes are folded in wearing order. When Wang awakens in the morning, she can easily get these clothes and put them on one by one.

Numerous items in her room are labeled or arranged in a specific order to facilitate their use. For instance, the toiletries on the shelf above the bathroom sink are color-coded and organized by wash order. On the vanity, skincare products, the mirror, and combs are organized from left to right, making it easier for her, who uses her left hand, to access these items from the side closest to her. These ensure that Wang moves coherently and feels at ease when performing basic daily tasks.

"They're all in a fixed place so that it's hard for me to forget …. And I do it every day, I'm familiar with it, it's not that hard. " (Interview of Wang)

But this rhythmic fit of Wang's has been disrupted before. We discovered this during our interview with Wang's daughter. Wang's daughter once wanted to help her mother clean her room, so she rearranged the position of items in the room and stored some of the less frequently used items in a drawer. This change, however, disrupted Wang's original rhythm. She couldn't find the items she needed for her daily activities, so she had to take more time looking for them, there were more pauses in every step, and she began walking around, rummaging through various cupboards to find them, even forgetting what she was going to do. This enraged her.

Zhang spends a significant amount of time in the common living room every day, and he has a fixed position in the living room (a seat at a table for four by the window and facing the corridor). Every time he tries to sit or stand up, his body movements show rhythmic fit with the surrounding tables and chairs.

"He leans his walking aid against the wall after the chair and stands beside the chair. The caregiver pulls the chair out, he took a small step forward and turned around to sit down slowly The care staff pushes the chair forward until Wang can place his arm on the table in front of him." (Observation Note)

His body movement in the seat of the leisure area in the corner of the living room also shows a fit with the seat.

"He patted the mat as he approached the sofa, as he always did. He sat down and shook his left leg up and down in a certain rhythm His right hand is holding the sofa arm and stroking it slowly" (Observation Note)

5.2.2. Rhythmic fit with time & space

This rhythmic fit not only reflects the body's movement have smooth interaction with surrounding objects while performing habitual activities, but also reflects the fit between bodily habit and time & space. It can be explained by the fact that dementia residents arrange their habitual activities at a fixed time & space in a care facility.

According to the description from Li's wife and caregiver, his daily routine in this long-term care facility is regular. He typically rises at 7.30 a.m. After completing the dressing and washing procedures with the assistance of his wife, he sits in his armchair to watch the morning news on television until his wife brings breakfast back. After eating, he would sit and watch TV until the morning news ended at 10 a.m. His wife would then bring him out onto the balcony to water the plants, and if the weather permitted, he would remain in his chair on the balcony until lunchtime. He will return to his room for sleep after finishing lunch in the public living room. He prefers to take a nap in his armchair while watching television. In the afternoons, he and his wife usually walk down the corridors or outside to chat with residents and care staff, but he will typically just say hello and then sit and listen to his wife speak with them. On weekends, they like to go to the activity room for some activities. After that, they spend whole afternoons in the entrance lounge area, waiting for their children to come to see them.

Wang spends the majority of her day in her room, except for three meals in the dining room. Her daily activities in the room have a specific order of time and area use. For example, she rarely returns to the bed area after waking up in the morning and only returns to the bed area when she naps or goes to bed at night. According to her caregiver, "Unlike other residents, she does not like to get up and then lie down on the bed to rest because lying on it at other times will mess up the bed." After rising, she would proceed to the bathroom to complete the washing procedures with the assistance of a professional caregiver. She would then sit at a small table near the television cabinet to apply her makeup and listen to the radio broadcast. Following that, she will sit in a corner of the room and spend the majority of her day there. This is a corner sofa with a small table, a sideboard, and a floor lamp facing the television. She sits on the couch, watching television, chatting with the caregivers, or sorting out her personal items in the side cabinet.

Zhang's daily activities and habits in the care facility also showed a certain degree of order in terms of time & space. It is primarily reflected in public space. His daily activities are always in these three locations: the living room, the leisure corridor, and the activity room. After eating, he would go to the garden with his caregiver to get some sun, or if the weather was bad, he would walk in the leisure corridor or chat with others. After lunch, he would go back to his room for a nap. Usually, around 3 p.m., he goes to the activity room and plays card games, sings songs, etc. until dinner time. After dinner, he likes to watch TV in the living room until bedtime.

5.2.3. Rhythmic fit with people

In addition to the rhythmic fit with objects and time & space, it also includes fit with others. This can be interpreted as a positive bodily interaction with others in the performance of habitual activities or daily

routines, which predicts a positive connection with others.

Due to dementia disease, Li rarely talks to his wife, but they have good bodily interaction during daily activities. For example:

"Whenever Li's wife needed to leave the room, he would sit up straight, look away from the television, and stare at her until she said, "I'll be right back," at which point Li would lean his body back against the backrest and continue watching television." (Observation Note)

"Before each meal, he got up from his armchair and reached out to help his wife place a small table in front of him He would reach out and try to push the small table back to its original position after his wife finished collecting the dinner plate. " (Observation Note)

He also has some positive bodily interactions with care staff and other residents when they walk down the corridor every afternoon or wait outside for their children to visit on the weekends. When Li saw the next rooms with open doors, he would wave his hand to the residents inside and usually receive a response from neighbors. His wife likes to talk to other people on the walk, so he sits on the aisle seat and waits for her, a process that frequently involves caregivers passing by to see and greet him and ask for information, and he nods and waves to them. This appears to have become an important part of Li's daily waiting routine, as his wife stated, "He loves it, and it makes him feel welcome."

Wang disliked going outside to the living room, but she welcomed visitors, particularly care staff, to her room. She always greets guests in a room's specific area, which is a corner comprised of a single sofa, a small table, and a sideboard. Whenever a caregiver enters her room, there is some positive interaction between them.

"When the caregiver enters the room, her mouth lifts and she waves at them, saying: 'How are you?', 'I've been waiting for you', 'You're nice!' " (Observation Note)

" …. When the caregiver approaches, she would reach for the caregiver's forearm and tug it toward her, and the caregiver would always take her hand gently and sit next to her …." (Observation Note)

Wang likes to show her personal belongings to the care staff and tell the stories behind them. In this process, they show a series of bodily positive interactions.

"She is pleased when the care staff listens carefully and shows agreement or appreciation by touching her arm. Her mouth turns up and she responds by nodding her head. When they end the chat, they shake each other's hands and say, "That was nice of you! See you next time." (Observation Note)

When Zhang stays in the living and activity room, he develops positive inter-body interaction with the other residents.

"He was sitting in the living room when he noticed another resident who always sits across from him walk in. He leaned forward slightly and raised his hand to get the other person's attention, and when their eyes met, he smiled …..The residents walks up to him, shake his hand in greeting, and start to chat … " (Observation Note)

"In the activity room, he gathers in a semicircle with several residents. A caring staff begins to hum a ballad. He and the other residents join in the singing, and they respond to the care staff's song by smiling, clapping, or singing along with her." (Observation Note)

5.3. Rhythmic fit brings meaning

The bodily habits of dementia residents have developed a rhythmic fit with objects, time & space, and people, allowing their past lives to be fully integrated into their new living environment. As time goes by, this rhythmic fit takes on psychological meaning for them. It shows two themes: 1) Continue the self-meaning; 2) Find a new self-meaning for the future.

5.3.1. Continue the self-meaning

Residents in three cases all expressed to us that they were able to keep their previous lifestyles, including previous activities or habits, in their current living environment. This gave them the feeling that they had not lost themselves because of relocation.

" ….can (continue to) do these things (watch TV, water the flowers, take a walk, etc.) like many previous I do, ….., It's good, … still me, " (Interview of Li)

"It's a lot smaller than the old (home). But I made it nice and neat just like before … I feel relieved that it [dementia] hasn't taken everything away from me." (Interview of Wang)

"It's a good feeling, and life goes on" (Interview of Zhang)

There are even times when previous habits or activities will remind them that he is still living in the past, as if he had never developed dementia or left home.

"Every time we went outside to wait for the kids to come to visit us, he urged me to hurry up, saying the kids would be out of school soon and we needed to go pick them up right away … I'm sure he's remembering the good old days because he used to wait at the station for them to come home from school." (Interview of Li's wife)

"Sometimes she would treat us as if we were his former friends and would invite us to her room, and she would prepare some snacks for us to taste or talk to us about her past stories." (Interview of Wang's caregiver)

5.3.2. Find a new self-meaning for the future

When previous habits are integrated into a new life and positive interactions with others occur, residents with dementia are able to find a new self-meaning and self-worth in their future lives in a care facility.

Li feels the meaning of the future because he can continue to live with his wife as before.

"He is happy that I am always with him and that the people here are very friendly to him and they get along very well. It makes him feel like this is the place he wants to live in the future." (Interview of Li's wife)

For Wang, although she has left home, the control she has over her life now gives her confidence in her future. Her daughter tells us:

"She is happy to have gained control of her life here and to have the appreciation of many people, which gives her the feeling that she is not a useless person and that there is hope for life." (Interview of Wang's daughter)

Zhang has developed new social relationships in his daily activities, which makes him feel like an important part of the group.

"Many friends here, they are nice! … I am happy to stay with them." (Interview of Zhang)

In the survey of dementia residents' views on their current living situation. Not every dementia resident used the word "home" to describe their current living situation. However, for residents with dementia, the development and continuation of self-meaning through a rhythmic fit with objects, time and space, and people gradually creates feelings of belonging and attachment to a place.

…. It's my place, it's warm. (Interview of Li)

I won't leave, ……. until we're gone (dead) together (Interview of Li)

This is my last home and I will always be here. (Interview of Wang)

…. Very harmonious, I will be sad if leave there (Interview of Zhang)

6. Discussion

The study uses the concept of bodily habits to further explain

Molony's (2010) findings. Specifically, it explains how people living with dementia re-establish people-place integration through their bodily habits after relocation, which is also considered to be the process of developing a sense of home in a long-term care facility. The research findings present three themes (see Fig. 1): 1) Reducing resistance through bodily habit; 2) Bodily habit and surroundings form a rhythmic fit; 3) Rhythmic fit brings meaning. To be specific, in the early stages of moving into a care facility, continuing some habitual activities in the early stages of moving into a care facility can help people living with dementia be less resistant to their new environment. With longer stays, their bodily habits gradually develop a rhythmic fit with the surrounding objects, time & space, and people. The rhythmic fit with surrounding objects can be explained as the body becoming familiar with the surrounding objects after personalizing the new living environment. This means that the dementia resident brings their previous habits into the new living environment, which is frequently the very first stage after the relocation (Aminzadeh et al., 2013). The rhythmic fit with time & space indicates that the dementia residents have integrated the past into their new lives by adapting to their new surroundings' rhythms, rules, and regulations and developing new personal routines. In addition to the above two aspects of fit on a physical level, there is also a fit with people. Rhythmic fit with people reflects the regular, positive physical interactions with others that occur in the daily habits of dementia residents. It reflects positive social relationships and also reflects integration on a social level. Eventually, this physical and social integration brought about a psychological integration over time. Overall, the feeling of home that people living with dementia develops after moving into a long-term care facility can be explained by the integration of their bodily habits, such as past habits, past activities, and routines, with their new environment on a physical, social, and psychological level.

The findings of this study are consistent with previous research and have been expanded on that basis. Previous research has proved the "feeling of being at home" can be "evoked by being in a familiar place and doing familiar activities with familiar objects at the same time" (Case, 1996). And, when we are away from home, we can reclaim the feeling of being at home by participating in normal home life through the habits of our bodies (Jacobson, 2009). This is especially important for older people living in long-term care settings, as the continuity of home activities and daily rituals can help them finding home (Cooney, 2012; Falk et al., 2013). The results of this study support the aforementioned findings. Furthermore, the study has shown that for people with dementia, establishing a "sense of home" in a new environment requires not only continuing previous habitual activities at home (rhythmic fit with objects), but also allowing these habits to form new routines (rhythmic fit with time & space) and incorporating positive social interactions into these habitual activities (rhythmic fit with people). This will give them a positive psychological connection to the place, which will foster a deep-rooted sense of home.

The study also reveals the nature of the physical environment to support the development of a sense of home for residents with dementia. As Lovatt (2018) describes the feeling of home is created by the interaction between the person and the physical entity, rather than by the meaning of the physical entity itself (Lovatt, 2018). The physical environment actually triggers the bodily habits of the people living with dementia to form a fit with the new environment, allowing them to integrate with the place and finally have the sense of home. It provides new insights into the design of homelike long-term care facilities for people with dementia. Shaping the feeling of home in design is not just making it look like a home or providing people with dementia home-related physical elements, It is more important to create design features that facilitate the rhythmic fit between their bodily habits and new environment.

7. Implications for practice

The study presented in this article proposes a new design approach for creating a feeling of home — designing for the bodily habit. Its aim is to develop design features that enable the physical environment to support the integration of people with dementia into their environment through bodily habits. Specifically, design features stimulate bodily habits in people with dementia and support them in forming a rhythmic fit with their new environment. We discovered in previous interviews and observations that the ordered organization of the physical environment appears to provide a great deal of assistance. For example, because of the clear and regular placement of objects around the armchair, Li's interaction with the surrounding objects creates a rhythmic fit while sitting in the armchair. This clear and orderly physical environment helps Li to organize a coherent series of bodily movements. Another example is orderly placement of clothing supports Wang's fit during the dressing process. This organizational potential of the physical environment will be the primary focus for subsequent development of specific design features. Further research will focus on stimulating the rhythmic fit between the body's habits and the environment through the ordered organization of the physical environment in long-term care facilities to help residents with dementia develop a sense of home.

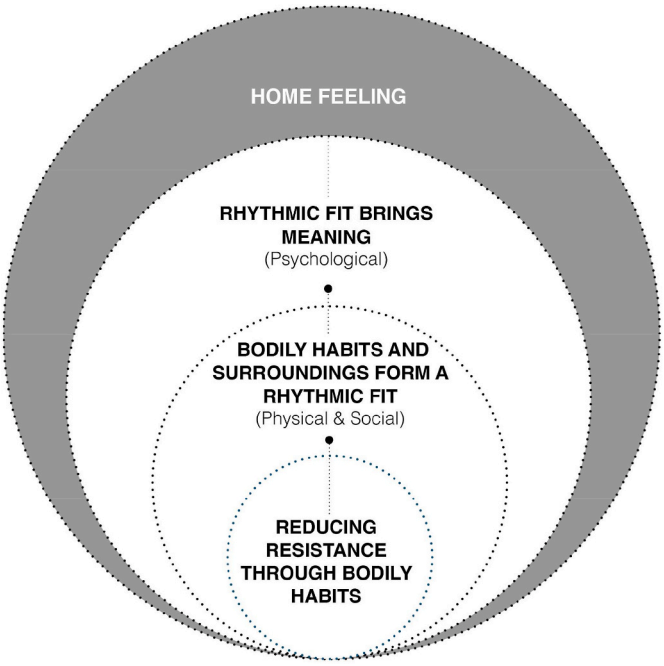

Fig. 1. A process of re-establishing people-place integration through bodily habits.

Declaration of competing interest

None.

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