Cards of Reminiscence: stimulating social engagement and storytelling in dementia care through the concept of Myriorama

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Abstract. Dementia can have a negative influence on social interactions and maintaining relationships. Research shows that reminiscence (recalling past experiences) can stimulate conversation, increase attention span, and have a positive effect on cognition and mood among people with dementia. In this paper we investigate the enhancement of social interaction through a design, based on reminiscence, for people with dementia to use during daycare. To explore this, we designed a social and creative activity for people with dementia called Cards of Reminiscence. The design of the cards is inspired by the concept of Myriorama, a set of illustrations that could be arranged in any order to form different pictures. The activity with the cards triggers reminiscence and stimulates conversation; the cards provide an accessible, social, and creative activity. Cards of Reminiscence was iteratively developed and evaluated by conducting three interactive sessions during daycare activities with people with dementia. Our results indicate that Cards of Reminiscence stimulate meaningful conversations and social engagement through reminiscence for people with dementia and their caregivers. Finally, we propose design recommendations and future integration of Cards of Reminiscence.

Keywords: Dementia, Reminiscence, Social engagement, Myriorama.

1 Introduction

Dementia can have a negative influence on social interactions, which makes it difficult to maintain social relationships by themselves [5]. People with dementia face cognitive decline, which affects their ability to communicate with others or initiate a social engagement. Because of these challenges people with dementia often have trouble expressing themselves. These communication challenges can increase the risk of social loneliness and social withdrawal [4][19][6][22], which has negative behavioral, emotional, and physical consequences for both people with dementia and those around them [2]. Social participation and interaction with others are crucial to maintain personhood and a sense of self [13]. Because of this, professional caregivers aim to engage the residents in social   interactions and other meaningful activities during day time

activities. However, it is challenging to engage meaningfully and at a personal level with people with dementia [7].

By designing non-pharmaceutical activities for people with dementia and their caregivers we can provide tools for caregivers to facilitate engagement. Reminiscence is sometimes used as an approach or activity to build such a meaningful connection. Reminiscence involves discussing past events, usually with the aid of tangible prompts, such as photographs, music, or familiar items from the past to stimulate a positive response [26]. This can stimulate conversation, increase attention span, and have a positive effect on cognition and mood among people with dementia [12][27]. Additionally, other creative interventions involving art, dance, or music have shown to be effective for people with dementia in improving self-esteem, enhancing cognition, and reducing behavioral problems [16][18]. Recently it was found that people with dementia are very capable of being routinely creative [3], and design to stimulate that creativity provides unique opportunities for self-expression and communication [28]. This study aims to explore reminiscence in a social and creative context, by designing a meaningful activity for people living with dementia. This paper illustrates the design process and results of the concept Cards of Reminiscence. This is a group activity based on the myriorama art concept and was iteratively developed with the aid of three evaluations with older adults and people with dementia.

2   Background: The role of reminiscence

As dementia progresses people experience cognitive challenges, among which memory loss occurs often. This makes it increasingly difficult for them to engage in meaningful activities [25]. Reminiscence or Reminiscence therapy can help, since the primary goal is to facilitate and support recall of past experiences towards a positive experience in the now [11]. Reminiscence therapy concerns discussing the past of a person while using elements like for example personal pictures or other memorabilia and is associated with psychosocial benefits such as improved well-being, memory, mood, social interaction (stimulating conversation), cognitive functions, and self-esteem [12][21]. Reminiscence has been found to be particularly relevant and important for people with dementia, often executed in groups to also include a social dimension to the experience [11]. Therefore, Reminiscence therapy can affect both the people with dementia as well their caregivers as well as family members [21]. Over the past years advanced multimedia technologies [8][22] and interactive artifacts [9] are designed to leverage reminiscence to create a meaningful experience. Other examples of concepts using reminiscence can be seen in the haptic and VR artifacts [14] and tangible interfaces such as the Reminiscence Map [10].

3   Design: Cards of Reminiscence

This paper reports the exploration of applying the myriorama-concept in the context of dementia through an iterative design process. For this study, we developed Cards of Reminiscence, a social card activity for people with dementia.

3.1 Inspiration: Myriorama

The final design is inspired by the concept of a Myriorama (see Fig. 1). A myriorama, stemming from the Greek myriad, is an art-concept conceived way back in the 19th century. In essence, it's a modular artwork; multiple pieces that fit together seamlessly, in any order, to form a complete and continuous view; a panorama. In their original form, they were designed as cards that children could arrange and rearrange, forming different pictures [24]. The myriorama is of great interest within the context of dementia, because there's no right or wrong way, any order is possible and any combination of visuals will form a cohesive artwork. Therefore, utilizing the myriorama concept in the dementia context allows for accessible creativity, where participants can build and rebuild their own artworks and corresponding narratives.

Fig. 1. Myriorama: A Collection of Many Thousand Landscapes by John Heaviside Clark (c. 1771–1863)

3.2 Cards of Reminiscence

The final design is Cards of Reminiscence (see Fig. 2): a set of cards that can be laid horizontally next to each other in any order to form a cohesive artwork, following the myriorama concept. Besides providing an accessible framework for creativity, these myriorama artworks act as tangible prompts for reminiscence; the panels present familiar visuals to the participants, from which they can build their own fictional world.

Fig. 2. Myriorama prototype - cards theme 2 (grassland)

To create the myriorama effect the visual design of the cards needs to be coherent, aesthetically pleasing and, considering the user, easy to understand. To make the cards more stimulating to observe, the images are visualized with a sense of art. The visuals are at times mysterious, playful, or even slightly utopic. Although the cards are not completely surrealistic.

Due to the user's variety of interests, three sets of cards were designed, each with an unique theme: (1) sea, (2) grassland and (3) interior (see Fig. 3). These themes can be distinguished by the card's aesthetics and color scheme. To trigger reminiscence among participants, each card contains points of recognition. These points/elements make the otherwise unfamiliar visuals relatable. Considering that the target group for this study is Dutch, the visuals are based on Dutch cultures, such as the agricultural landscape, iconic mills, tulip fields, or the Wadden Islands. The themes are distinguished by the landscape and color ambiance used in the visuals, with warm and bright color palettes that are appealing to a wide audience.

Twenty-one cards for each theme were developed (see Fig. 3) and printed on thick paper, to mimic the feel of traditional, high-quality cards. The dimensions of each card are 9.5 cm by 14.5 cm, larger than regular playing cards, to make the cards feel ergonomic and make the elements on the card more visible for the user. This prototype is used in session 1 and 2. The visuals on the cards stayed identical across all sessions.

Fig. 3. Myriorama prototype - All themes: (I) Sea, (II) grassland, (III) interior

For the third session a magnetic playing board (see Fig. 4) is added to the prototype. The magnetic playing board consists of a wooden board with integrated magnets. The surface is covered with soft felt and shaped by two wooden slats on top and bottom. This frame keeps the cards in place and communicates the number of cards needed to fulfill the individual myriorama. The cards themselves are improved as well and now contain an extra layer of soft-coated metal. This extra layer gives the cards the option to stick to the magnetic boards and adds overall richness due to the weight increase (see Fig. 5). Because of these boards, the artworks are easier to share among the participants and have the opportunity to unite the group by placing the boards together. This also might lead to a playful moment of surprise.

Fig. 4. Myriorama prototype - magnetic playing board

Fig. 5. Myriorama prototype – Magnetic cards

4 Evaluation Process

We adopted a design thinking process for the development of this project, which defines a creative and analytic process that engages a person in opportunities to experiment, create and prototype models, gather and review feedback, and redesign the concept iteratively [20]. The overall design process can be characterized as being iterative and exploratory. In this paper we focus on the final part of the iterative design process of letting older adults and people with dementia engage with the Cards of Reminisce. To do so, we conducted an initial expert-interview and three field sessions at a care facility in the Netherlands. Cards of Reminiscence was evaluated with older adults and specifically people with dementia. *Session 1* explores the experience and engagement with the Cards of Reminiscence in a one-on-one setting. Based on these findings, in *Session 2* we evaluated Cards of Reminiscence in a group setting. Finally, *Session 3* reviews design adaptations made based on *Session 2*, in a similar setting to the evaluation in *Session 2*.

4.1 Session 1

The first session took place in the canteen of a care facility (see Fig 6.), where both residents at the care facility and older adults who live independently in the neighbourhood come to socialize during particular hours of the day. The session took place during a morning coffee gathering where twelve participants with Dutch nationality participated, varying from no to very light symptoms of dementia. The participants were all still able to socialize independently during this coffee break. The aim of this session was to observe the response to the myriorama concept and our Cards of Reminiscence in a one-on-one setting, to see if they understood the concept and how effective it was at eliciting reminiscence. During the get-together, two researchers joined participants at their table to explain and interact with the Cards of Reminiscence. The researchers provided the participants with the first iteration of Cards of Reminiscence (see Fig. 7) and asked them to make their own artwork with the provided cards. While the participants were making their artwork, the researchers observed and asked questions about the choice of cards made by the participant and how they experienced the concept of Cards of Reminiscence. During this session, participants were mostly engaged with the concept and the cards were effective to start conversations. Some participants expressed confusion about the goal of the exercise and lack of structure within the activity, which motivated the change of setting for session 2.
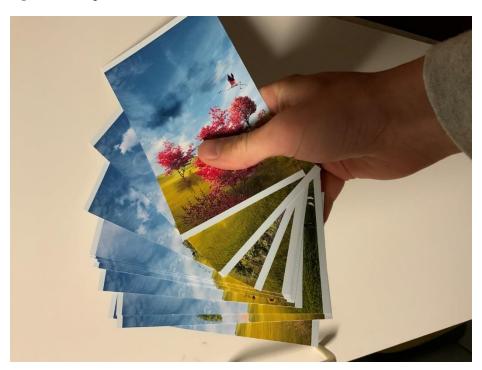
Fig. 6. The setting of session 1

Fig. 7. First Iteration that was used in session 1

4.2 Session 2

The second session took place in an activity room of the care facility, during a daytime activity session where a group of people regularly get together to do leisure activities under the guidance of a care professional. During this session, six participants took part in the session for this iteration. They were in varying stages of dementia, experiencing light to mild symptoms. The aim of the session was to observe Cards of Reminiscence in a social context, where the group discusses their artworks together under the guidance of the caregiver, to observe how it instigated social interaction between people with dementia and their peers. In this session all six participants took part at the same time (see Fig. 8). The participants were asked to create their own artwork with the different cards. The care professional guided the activity, helping whenever participants had difficulty choosing their cards. After everyone created their artwork, these artworks were discussed in the group, with the care professional guiding the conversation. The two researchers that were present during the session observed the activity and spoke with some of the participants during the artwork building phase. Afterwards, a context-interview with the care professional who helped guide the activity was conducted and transcribed; to help understand both the perspective of the people with dementia as well as the care professionals who were involved in the activity. The new setup was an improvement for the structure of the activity and guidance of the care professionals during this session resulted in better engagement across participants. However, we found that some participants had difficulty with laying the cards straight next to each other, which is important for the myriorama concept to come across effectively. The separate cards also made sharing the entire artwork with others more difficult. These findings influenced the design additions for the third iteration.

Fig. 8. The setting of session 2

4.3 Session 3

The third and final session took place in the same context as session 2. During this session, three participants who were also present during session 2 took part: They were in varying stages of dementia, experiencing light to mild symptoms. The aim of session 3 was to verify our design changes to Cards of Reminiscence. We added a playing board (see Fig. 4) and changed to magnetic cards (see Fig. 5) to increase understanding of the activity and help with sharing the artworks among the participants. Furthermore, we were curious if adding all artworks together into one big myriorama was a valuable activity or not. Therefore, the session was again a group activity with a similar structure as session 2. All participants were asked to create their own artwork with the different cards. In this session, a third phase was added where all artworks were combined into a single myriorama, by sliding the playing boards together. The two researchers that were present observed the activity and spoke with some of the participants and the care professionals during the artwork building phase.

Fig. 9. The setting of session 3

5 Results

We analyzed the qualitative data gathered in the field sessions conducted over the course of the three iterations. The main findings are divided into three themes: (1) *Myriorama in practice*, (2) *Social storytelling through reminiscence*, and the (3) *Structure of activity*. From these observations, we gained insights for further improvement and implementation of the design.

5.1 The myriorama in practice

Participants were intrigued by the myriorama concept, with one participant noticing that *''it keeps going on''*, and another participant saying *''It is all family, you see''* about their collection of cards. In contrast, one participant tried to prove the opposite and was looking very closely at the cards to find some mismatches between the transitions of each card. The participants chose the cards with different intentions and approaches. Some participants were more focused on choosing the cards as separate elements, picking their cards based on recognizable elements or colors they preferred. For participants who had trouble with choosing cards themselves for their artwork, the caregiver would step in to help decide, until they found one they liked. This participant would for example articulate what they liked or disliked *''Yes, [this] does not appeal to me, yes does not appeal to me [...] Yes, but I think this one is very beautiful!''*

Other participants were more interested in the myriorama as a whole, either as an artwork or as a visual story. The most active participant was trying to create a myriorama that symbolizes their view of vacation: *''This is my final choice. This actually, is all vacation''*. This thematic approach was completely different compared to their neighbor, who was driven by the aesthetic beauty of the entire myriorama. Because the number of card options was limited and the myriorama required 4 cards, some of the participant's decisions were forced: *''These ones are actually the best, the boat was added because I didn't see anything better''*.

5.2 Social storytelling through reminiscence

During all sessions, the visual elements of Cards of Reminiscence provided natural conversation starters. The activity requires choosing a set of cards and order. Sharing and talking with the participant about their choices often sparked memories about for example vacation, family, or personal hobbies: *''I used to visit the cows in the mountains, you know those brown ones with the big earrings. I just could not resist having a quick look. And also, I see them as a business [...] I used to be a butcher!''* Or a remarkable memory they felt compelled to share: *''My most beautiful memory was in a small village, rain, rain. We enter [the church]. My wife she lights a candle, a coin, and a magic book, and *pats!* the sun shines!''* This participant was talking about the church illustration, showing how participants told stories with their Cards of Reminiscence creations.

Participants almost always chose cards based on personal relevance instead of aesthetic quality. Some participants preferred speaking about one card at a time, a small number of participants also involved the sequence of cards in their story. Particularly one participant, who was experiencing more severe dementia, chose the interior theme and seemed involved with the idea of a person going from one room to the next in the artwork, repeatedly remarking *''have you seen these cards, they fit perfectly beautiful''*.

In a group context, this conversation element became more dynamic. After sharing and discussing an artwork created by a participant, the conversation often evolved and went on tangents, with others chiming in. For example, based on a sea-themed

myriorama, one participant remarked that she often went to Texel for vacation, with someone responding in disdain: *''The sea, the sea is something only the rich people can afford''*, showing how the cards sparked social interaction, allowing participants to build on each other's stories.

The participants who were experiencing more severe symptoms of dementia often found it difficult to choose their favourite cards and needed more guidance with building their myriorama. One participant stored their cards in a pile quickly after finishing their artwork, hesitant to share their work with the group. However, these participants still contributed and were attentive during the group conversations about other artworks by actively listening and responding to what others had to say.

5.3   Structure of activity

During the first session some participants were a bit confused about the activity. Initially, the goal of the activity was unclear and resulted in some cases of passive behavior. *''What is the goal of this? Do I just need to lay down the cards, that's it?''*. In the second session a more structured approach to the activity was taken, with clear phases in the activity and a caregiver who guided a group from one phase to the next. This increased engagement across the board. However, the caregiver still observed uncertainty among the participants. The caregiver mentioned *''without any guidance the participant would not do anything with the cards''* and noticed that the situation needed an additional trigger, a stimulation from her side to help them open up and start talking. Additionally, the participants at times sought a form of confirmation; *''I am allowed to take these four (cards) right?''*. With the caregiver being present to reassure the participants, the activity progressed more smoothly.

In the second session there was also confusion about when their artwork was actually finished; it was not clear for the participants that they had to pick five cards. And now that sharing the artwork with others became a fundamental part of the activity, the building of myrioramas was a bit messy. In the third session, the playing boards were added, which added some visual structure to the phase of individually building a myriorama and made sharing the finished artworks with each other easier.

6   Discussion

The results presented above provide insights into how Cards of Reminiscence cued retrieving memories, meaningful conversations, facilitated a connection with peers and caregivers, and provided opportunities for playfulness and creativity in the context of dementia care, on which we will elaborate further below.

6.1   The art of the myriorama

There were multiple remarks made during the sessions, by both participants with dementia as well as caregivers, about how they thought the cards and the myriorama effect were beautiful. We think that this is something that should not be underestimated and

is actually fundamental to the usefulness and experience of an activity of this kind. With Cards of Reminiscence, we deliberately applied an artistic visual style. In our eyes, the artistic nature of the cards enticed participants to engage with them more intently and fantasize more about the creative possibilities with Cards of Reminiscence; what cards fit in their myriorama, and what story would accompany their artwork. This creativity and self-expression results in the motivation to share the work with others and improves the meaningfulness of the conversations that follow. The visuals need to inspire the participants in their self-expression and storytelling, showing a possible relation between the appreciation of the visuals and the social engagement during the activity.

Research states that people with dementia recall events of personal significance better than non-significant events [20]; the stories that were shared during the sessions emphasized this point. The inspiration for these stories often came from the recognizable visuals on the cards. Reminiscence can be stimulated by using personal prompts such as photographs [15], but research shows that generic imagery can be more effective at eliciting personal stories than explicit personal photographs [1]. This allows for freedom in recollecting stories of personal significance and avoids failure of recollecting explicit memories. The abstract imagery of Cards of Reminiscence maintains a level of fiction, which lowers the threshold for reminiscence because there is no right or wrong memory. However, we observed instances where participants could not relate to the fictional environment, which resulted in decreased engagement. A certain level of relatability has to be maintained, by attuning the theme of the cards to the participants, for example by keeping the culture, age, and geographic location of the participants in mind.

6.2   Low tech, tangible design

Multiple early design directions for Cards of Reminiscence involved digital interfaces to make the activity more dynamic or personalized. But during the study, the tangible and low technology aspect of the final design of Cards of Reminiscence was appreciated the most by caregivers and participants. The affordance of choosing, moving, placing, and sharing cards turned out to be fundamental to the activity and showed us how important it is for Cards of Reminiscence to exist in a group context. For the participants, it made the interaction familiar, similar to a puzzle. For the caregivers, it gives more control to intuitively adjust the activity where needed. Using separate, physical panels did pose challenges regarding the seamless attachment of the myriorama panels to create the myriorama effect, which will need to be overcome with further refinement of the physical prototype.

6.3   Implementation in the daily routine

The care professionals involved with the project expressed interest to implement Cards of Reminiscence as-is in their current activities. They indicated that, because of its simplicity, Cards of Reminiscence is practical, easy to understand, and therefore quick to implement in their current routines. The caregiver that was present during *session 2* mentioned the flexibility of the activity; they felt that the large amount of cards

presented to the participants was overwhelming, but they could start simple with a limited amount of cards and expand the intensity of the activity from there, depending on the people that participated and their state of mind.

6.4 Limitations & Future work

During this study, three themes of Cards of Reminiscence were created, with the future perspective that many different theme sets would be available to adapt the activity based on the participants' culture and interests. The visual prompts on the myriorama cards are crucial for the engagement of the participants, and due to the exploratory approach of this study, the visual prompts on the myriorama cards were developed in a short time frame. This study also shows that some participants interact differently with Cards of Reminiscence than they do with a normal visual image, by using the sequence of panels as an extra layer to their creation. Therefore, further research about the visual content that is suitable for the myriorama in relation to people with dementia could be valuable to strengthen the immersion and creative stimulation of the activity.

7 Conclusion

This paper presents Cards of Reminiscence, a social activity that supports reminiscence for people with dementia through the myriorama concept. Cards of Reminiscence contributes to a flexible and tangible solution to activate and stimulate people with dementia to retrieve and share memories and stories with each other. Three studies were performed during the development of Cards of Reminiscence, which show that the creative, open-ended aspect of myriorama can be implemented as a valuable practice to socially engage people with dementia in a group context. It motivated participants to interact with the cards, the caregiver and each other by sharing meaningful and personal stories based on their myriorama creation.

Future work is recommended regarding the visual content of Cards of Reminiscence and further explorations are needed to investigate the potential of the myriorama concept in relation to people who experience more severe dementia symptoms.

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