Soundscapes for Storytelling and Meaningful Activity in Dementia Care

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Soundscapes for Storytelling and Meaningful Activity in Dementia Care

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Abstract: Researchers are investigating how soundscapes can reduce agitation and contribute to the well-being of people with dementia. We advance this research by exploring further how to incorporate the personal background and preferences of individuals with dementia in soundscapes to evoke storytelling and meaningful activity in their everyday surroundings. In this study, we assembled personal soundscapes that were evaluated in individual participatory workshops with six care home residents with dementia. The workshops provided insights into the experiences of people in the mid to advanced stages of dementia listening to personal sounds. The results demonstrate how these soundscapes evoked: interaction with surroundings; open-ended storytelling; activation through pleasurable experiences; and rest and comfort. We propose implications for design to adopt personal soundscapes in care to support engaging and meaningful one-on-one activities in the care home.

Keywords: care home; dementia; soundscapes; participatory workshop

1. Introduction

Dementia is a broad term for a range of neurodegenerative conditions, such as Alzheimer’s disease, which cause cognitive impairment, memory loss, and difficulties with activities of daily living (Alzheimer’s Association, 2022). Despite the increasing number of people with dementia, there is still no effective cure. Therefore, non-pharmacological approaches are vital to counter forms of apathy, boredom or loneliness and improve the quality of life of people with dementia (Olazarán et al., 2010). Engaging in meaningful activities provides interest and positive emotions for people with dementia to support daily functioning and avoid behaviors associated with unmet psychosocial needs of care home residents (Cohen-Mansfield, 2013). Meaningful activities for people with dementia are adapted to the prefer-
ences and background of the person with dementia, stimulate active participation and focus on identity and social belonging (Mansbach et al., 2017). For example, music therapy has been widely adopted in care practice to offer a meaningful activity for care home residents, as listening to music can stimulate reminiscence and social interactions (Raglio et al., 2014). Motivated by how music evokes positive emotions (Gold, 2014), researchers are exploring the under-researched potential of soundscapes for people with dementia in care settings (Devos et al., 2018; Voisin, 2019). Studies indicate that nature sounds can promote rest and be calming for residents in care home environments (van den Bosch et al., 2017), and familiar sounds can give structure and provide auditory cues to enhance safety (Devos et al., 2019). Furthermore, sounds that are integrated into the care space have the potential to shape social relations (Graham, 2018) by providing prompts for meaningful conversations (Houben et al., 2019) and non-verbal communication for people with dementia (Houben, Brankaert, Bakker, Kenning, et al., 2020; Luyten et al., 2018). Sharing narratives or stories from the past can provide enjoyment and social activity for people with dementia (Fels & Astell, 2011). However, most studies on soundscapes in dementia care homes focused on addressing behavioral disorders or emotional states of residents and have yet to explore how listening to soundscapes can culminate in meaningful activities for people with dementia. Therefore, the potential for soundscapes to support meaningful activity and storytelling in dementia care remains insufficiently researched. For example, a soundscape that characterizes a rural setting might evoke memories or stories from a resident who previously lived in the countryside. The question remains how the preferences and personal background of residents with dementia can be incorporated into soundscapes for dementia care.

This paper presents our design research in which we explored: 1) how to design personalized soundscapes for people with dementia; and 2) what responses these soundscapes evoke in care home settings. First, we involved the relatives of six care home residents with dementia to learn about the residents’ backgrounds, interests, and past experiences. Based on these insights, we developed soundscapes for the residents that were compositions of potentially familiar ambient sounds. Next, we evaluated the soundscapes with the care home residents during individual participatory workshops under the guidance of the researcher and a care professional. After the workshop, an interview was conducted with each care professional to gain insights into the benefits for long-term care.

The workshops offered insights into the individual experiences of people with mild to advanced stages of dementia listening to personalized soundscapes. We further contribute to literature by formulating design implications for personalized soundscapes to enable meaningful activity and support the well-being of people with dementia.
2. Background

2.1 Soundscapes and dementia
The term soundscape refers to an array of sounds that represents an acoustic scene, and how the listener perceives or understands these sounds in context (ISO, 2014). Soundscapes provide detailed sensory information about the surroundings, raise expectations, and cue behavior (Brooks et al., 2014). As the perception of sound can influence well-being and promote or impede health (Andringa & Lanser, 2013), research in acoustics and psychology aims to improve the sound quality in care facilities and reduce unwanted noise (Aletta et al., 2018). These studies have also suggested that adding enjoyable sounds can improve overall sound quality and benefit residents (Hayne & Fleming, 2014; Talebzadeh et al., 2020). For example, soothing sounds of nature can reduce stress in people with cognitive disabilities (van den Bosch et al., 2017).

Sonically enhancing the care environment opens up new possibilities to provide shared experiences (Graham, 2020) by prompting care home residents to relate to each other (Graham, 2018). Research has demonstrated how non-musical sounds can evoke associations, memories, and emotions (Frohlich et al., 2020; Houben et al., 2019), leading to conversations, playfulness, and social activities (Houben, Brankaert, Bakker, Kenning, et al., 2020; Luıyen et al., 2018). However, as soundscapes regulate and are regulated by the social context (Rudi, 2013), more insight is needed into the quality of the listening experiences for people with dementia and their caregivers. Our work follows a sound-driven design approach by adopting human-centered methods to analyze sound experiences (Delle Monache et al., 2021; Yüceturk et al., 2016). These approaches address how we can bridge the gap between how the soundscape is intended by the designer and perceived by the listener (Delle Monache et al., 2021). Here, participatory workshops are a meaningful design tool for exploring the situated responses to sound in a real-life context (Droumeva & Wakkary, 2006).

2.2 Involving people with dementia
People with dementia are often stigmatized as lacking responses or active engagement (Kontos, 2004). Research on dementia in design aims to counter these medicalized views by recognizing embodied and emotional forms of expression as social agency (Foley et al., 2019). People in advanced stages of dementia can still be actively included in designing and evaluating novel technologies for residential care (Brankaert et al., 2019; Garde et al., 2018). These research approaches explore the role of technology and digital media in improving the quality of the lived experiences of dementia (Lazar et al., 2017; Wallace et al., 2013) and have demonstrated how a relational and sensitive approach is needed to engage with people with dementia, their relatives, and caregivers in tailoring media experiences for dementia care homes (Hodge et al., 2018; Thoolen et al., 2020).
Bespoke digital media can contribute to the well-being of people with dementia by providing social activities that involve reminiscing and sensory stimulation (Frohlich et al., 2020; Gowans & Campbell, 2004). The curation of media experiences in long-term care settings is often facilitated by the professional care staff who explore meaningful content based on the residents’ responses (Alves et al., 2019; Sas et al., 2020). However, involving relatives in co-creating media can result in experiences that reflect and nurture social relations while respecting residents and their families (Hodge et al., 2019). Nevertheless, collecting content and background information for personalized reminiscence activities from relatives in care practice can be challenging and time-consuming (Alves et al., 2018). Therefore, tailoring auditory experiences requires a careful balancing of input from relatives and care staff, placing those with dementia at the center.

3. Method

3.1 Participants

This study involved six people with dementia living in a residential care home, one relative of each resident who regularly visited the care home, and five professional caregivers (see Table 1). The participating residents were in a moderate to late stage of dementia caused by Alzheimer’s disease or vascular diseases, as reported by the care organization. We relied on the expertise of the care staff and music therapists during the recruitment of the participants to ensure the residents had no severe hearing disabilities. We recruited five professional caregivers who were acquainted with the residents: two nurses, a music therapist, an occupational therapist, and a psychology nurse. The professional caregivers were assigned to the participatory workshops based on their experiences and personal bond with the care home residents. We also recruited a relative for each resident with dementia to participate in a short inquiry and 20-minute phone interview to gain personal information about the participating residents. The relatives, all daughters, did not participate in the workshops as the professional caregivers indicated that the relatives might distract the residents or speak for them.

Table 1: We recruited six residents with dementia, a relative for each resident, and five professional caregivers.

<table>
<thead>
<tr>
<th>Resident</th>
<th>Age</th>
<th>Dementia Stage</th>
<th>Involved relative</th>
<th>Professional Caregiver</th>
<th>Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Barbara</td>
<td>91</td>
<td>late</td>
<td>Daughter</td>
<td>C4</td>
<td>Nursing Staff</td>
</tr>
<tr>
<td>2. Charlotte</td>
<td>86</td>
<td>late</td>
<td>Daughter-in-law</td>
<td>C2</td>
<td>Occupational Therapist</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C5</td>
<td>Nursing Staff</td>
</tr>
<tr>
<td>3. William</td>
<td>81</td>
<td>moderate</td>
<td>Daughter</td>
<td>C1</td>
<td>Music Therapist</td>
</tr>
<tr>
<td>4. Robert</td>
<td>93</td>
<td>moderate</td>
<td>Daughter</td>
<td>C1</td>
<td>&quot;</td>
</tr>
<tr>
<td>5. Dolores</td>
<td>83</td>
<td>late</td>
<td>Daughter</td>
<td>C3</td>
<td>Psychology Nurse</td>
</tr>
<tr>
<td>6. Margaret</td>
<td>82</td>
<td>late</td>
<td>Daughter</td>
<td>C3</td>
<td>&quot;</td>
</tr>
</tbody>
</table>
3.2 Ethics
This study was approved by the TU/e University Ethical Review Board (ref: ERB2021ID5). All collected data were handled confidentially and pseudonymized. A contact person from the care institution recruited the residents and assessed if residents were capable and suitable for this study. The residents with dementia and their relatives were informed in person about the study and given information letters regarding the study’s aim and procedure. After two weeks, the contact person from the care institution obtained informed consent from the residents with dementia and their legal representative. We obtained separate informed consent from the relatives and professional caregivers for their participation.

3.3 Inquiry with relatives
Before the participatory workshops, we conducted an inquiry with the residents’ relatives to identify ambient sounds that were potentially familiar to the resident. This inquiry consisted of a scrapbook (see Figure 1) to collect information from informal caregivers on the person with dementia and tap into their shared life experiences. The scrapbook contained open-ended questions focused on familiar spaces, routines, activities performed at those places, and the corresponding sounds. For example, a squeaking door in an old home, the buzzing sound of the TV turning on, the sound of the clock on the wall, or specific bird songs. The scrapbooks were sent to the relatives by post and collected at the care home. Next, we conducted twenty-minute interviews with the relatives via telephone to complement the entries in the scrapbook.

Figure 1: The relatives offered information on the residents with dementia via scrapbooks and interviews to identify and select meaningful sounds.

3.4 Soundscapes and objects
We categorized and clustered the entries in the scrapbooks provided by the relatives into reoccurring themes, resulting in six initial categories, of which four contained relevant insights related to sound: 1) place of birth, 2) home, 3) hobby, and 4) vacation. The two remaining categories work and other did not provide insights into potential familiar or enjoyable soundscapes and were discarded. We prepared two to three soundscapes for each resi-
dent that reflected the themes based on the specific information in the scrapbooks (see Table 2). The soundscapes were curated and mixed from existing high-quality sound files selected from multiple online open-source databases to become new, unique, and personalized composed soundscapes for the participating residents. The professional caregivers listened to a first version of the soundscapes before the participatory workshops, and we adjusted the soundscapes based on their feedback and remarks. We did not receive information from the relatives of Charlotte and Margaret, so we developed three general soundscapes with input from the professional caregivers related to home, vacation, and hobby to include these residents. As requested by the care staff, we did not exclude these participants who were already informed and recruited for the study.

Table 2: We assembled soundscapes based on the input of the relatives that reflected the themes: ‘home’, ‘hobby’, ‘birthplace’, and ‘vacation’, each represented by a physical object.

<table>
<thead>
<tr>
<th>Resident</th>
<th>Theme</th>
<th>Object</th>
<th>Background Sound</th>
<th>Foreground Sounds (Left)</th>
<th>Foreground Sounds (Right)</th>
<th>Foreground Sounds (Dynamic)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Barbara</strong></td>
<td>birthplace</td>
<td>clogs</td>
<td>birdsong</td>
<td>chickens</td>
<td>cow milking</td>
<td>clogs</td>
</tr>
<tr>
<td></td>
<td>home</td>
<td>whisk</td>
<td>piano</td>
<td>kettle whistle</td>
<td>cooking</td>
<td>stirring mug</td>
</tr>
<tr>
<td></td>
<td>vacation</td>
<td>leaf</td>
<td>park</td>
<td>campfire</td>
<td>hand pump</td>
<td>bicycle</td>
</tr>
<tr>
<td><strong>William</strong></td>
<td>vacation</td>
<td>castanet</td>
<td>crickets</td>
<td>Flamenco</td>
<td>guitar</td>
<td>Spaniards</td>
</tr>
<tr>
<td></td>
<td>birthplace</td>
<td>lighthouse</td>
<td>seaside</td>
<td>harbor</td>
<td>ship horn</td>
<td>seagulls</td>
</tr>
<tr>
<td><strong>Dolores</strong></td>
<td>home</td>
<td>spice grinder</td>
<td>rain</td>
<td>boiling</td>
<td>frying pan</td>
<td>spice grinder</td>
</tr>
<tr>
<td></td>
<td>vacation</td>
<td>seashell</td>
<td>seaside</td>
<td>Spaniards</td>
<td>children</td>
<td>seagulls</td>
</tr>
<tr>
<td><strong>Robert</strong></td>
<td>hobby</td>
<td>whistle</td>
<td>football</td>
<td>goal!</td>
<td>whistle</td>
<td>cheering</td>
</tr>
<tr>
<td></td>
<td>vacation</td>
<td>tractor</td>
<td>crickets</td>
<td>farm animals</td>
<td>picnic</td>
<td>tractor</td>
</tr>
<tr>
<td></td>
<td>home</td>
<td>garden trowel</td>
<td>park</td>
<td>birdcage</td>
<td>gardening</td>
<td>lawnmower</td>
</tr>
<tr>
<td><strong>Charlotte</strong></td>
<td>home</td>
<td>coffee mug</td>
<td>rain</td>
<td>music</td>
<td>fireplace</td>
<td>stirring mug</td>
</tr>
<tr>
<td>&amp; <strong>Margaret</strong></td>
<td>vacation</td>
<td>seashell</td>
<td>seaside</td>
<td>street music</td>
<td>ship bell</td>
<td>seagulls</td>
</tr>
<tr>
<td></td>
<td>hobby</td>
<td>leaf</td>
<td>birdsong</td>
<td>chatter</td>
<td>geese</td>
<td>bicycle</td>
</tr>
</tbody>
</table>

Each soundscape consisted of a background sound and three foreground sounds: panned left, panned right, or dynamically panned between left and right to simulate movement. Using this structure, we designed the personal soundscapes by selecting one background sound, and three matching foreground sounds corresponding to past experiences and places of the resident as described by the relatives. To engage the residents during the participatory workshops, we provided tangible objects that reflected the themes of the soundscapes (see Figure 2, left). The objects were not intended to trigger specific memories but to encourage interaction and engagement by making people with dementia familiar with the workshop setup and building up to the soundscapes (Houben, Brankaert, Bakker, Bongers, et al., 2020).
3.5 Setup in private room

The participatory workshops were held in the residents’ rooms, seated in their lounge chair or wheelchair at a small table (see Figure 3). Two Bluetooth speakers (see Figure 2, right) were placed on tripods visible next to the residents at an equal distance. The researcher was seated across from the resident, and the professional caregiver was seated next to the resident. For Charlotte, two caregivers [C2, C5] were present because the care staff expected that it could benefit Charlotte’s participation in the workshop. The researcher facilitated the workshops and composed each soundscape in real-time by playing the background and matching foreground sounds with a digital soundboard on a laptop in response to the residents’ reactions. The professional caregiver co-facilitated the workshop by interacting with the person with dementia and engaging in conversations that emerged during the sessions.
3.6 Workshop structure
First, the residents were invited to explore an object from a wooden box to start the conversation and build up to the soundscape. Next, the researcher played the background sound that reflected the object, as the sound level was slowly increased until heard by the resident. The resident was given time to listen and react to the background sound. The researcher asked if the resident could hear and recognize the sound, what potential associations it evoked, and how it made them feel. Finally, the researcher lowered the background sound volume and played specific personal foreground sounds into the soundscape based on the resident’s responses. The resident was given time to react, after which the researcher and caregiver entered into conversation in response to the specific sounds. After a short break, the resident with dementia could pick a new object from the box to move on to the next soundscape. On average, the workshops lasted 30 minutes, with the longest lasting 40 minutes and the shortest lasting 12 minutes.

3.7 Interviews with professional caregivers
After the participatory workshop sessions, we conducted semi-structured exit interviews with the professional caregivers present at the sessions that lasted approximately 10 to 15 minutes. The researcher asked open-ended questions on 1) general impression and atmosphere during workshops; 2) observed responses of the residents; 3) social interactions between the residents and the caregivers during the workshop; 4) the appropriateness of the soundscapes and objects for each participant, and; 5) general feedback on the study and potential application areas of the soundscapes in care practice.

3.8 Data collection and analysis
Video and audio recordings were made of the participatory workshops to capture the verbal and non-verbal responses of the residents. William’s workshop was only recorded on audio as he did not want to be filmed. The exit interviews were also audio recorded. The audio recordings were first transcribed verbatim and later expanded into field texts by adding descriptions of non-verbal responses as observed in the video recordings. A thematic analysis was conducted in ATLAS.ti using the six-stage approach described by (Braun & Clarke, 2006). We used an inductive approach to construct themes that inform the experiences and motivations of the residents relevant to the research question (see Table 3).

Table 3: Based on our thematic analysis, we identified four themes on how soundscapes can offer meaningful activity for people with dementia.

<table>
<thead>
<tr>
<th>Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Interaction with physical and social surroundings</td>
</tr>
<tr>
<td>2 Supporting open-ended storytelling</td>
</tr>
<tr>
<td>3 Activation and pleasurable experiences</td>
</tr>
<tr>
<td>4 Providing rest and comfort</td>
</tr>
</tbody>
</table>
4. Results

4.1 Interaction with physical and social surroundings

The foreground sounds of the soundscapes offered auditory cues that were spatially distributed in the workshop space. The video observations revealed that half of the residents pointed or gazed toward the speaker producing a foreground sound at that moment. In this way, the residents indicated that they heard the sound and knew it was coming from one of the speakers. For example, Margaret followed and pointed to the sound of seagulls that was dynamically being played from the left to the right speaker:

‘Margaret frowns and looks to her right where the sound is being heard. She points with her finger very carefully. “Do you hear that?” responds C3 to Margaret. “Yes…” says Margaret while softly smiling. “Can you tell me what you hear?” asks the researcher. Margaret silently looks up [as if to birds in the sky].’ (fieldnote workshop 6)

The auditory cues stimulated interaction with the physical elements present in the residents’ private rooms as we observed how four residents pointed out and interacted with personal items related to the sound played at that moment. For example, the association with a certain sound cued William to interact with specific elements that he related to this sound:

‘The researcher plays Spanish guitar sounds. Afterward, it is silent, and the researcher plays another guitar sound. William now points to a painting and says: “This looks like Spain. […] Yes, with those fields on it like that!”’ (fieldnote workshop 3)

Similarly, residents who had difficulties speaking or understanding speech expressed non-verbal reactions to the soundscapes. For example, Charlotte also interacted non-verbally with her environment in response to the sound, as described in the field texts:

‘The researcher plays the stirring mug sound as Charlotte sits still. Suddenly, Charlotte looks up quickly and looks at C2. The researcher asks: “What would that be?” CS says: “A cup of coffee, Charlotte, nice.” Charlotte looks ahead, extends her hand imaginatively towards her big display cabinet with antique cups, and takes an imaginary [presumed] cup. She holds it in her left hand. She pretends to put a spoon in the cup with her right hand, brings it to her mouth, and takes a sip.’ (fieldnote workshop 2)

The residents connected to the people present in the space by exploring the physical surroundings. The auditory cues offered an incentive for verbal or bodily responses from the residents towards the caregiver or researcher present in their room to seek validation regarding the soundscapes. These responses were also observed by C3, who indicated the residents needed time to process the auditory cue. For example, Dolores did not recognize children sounds at first but engaged with the researcher while making sense of what she heard:

‘Dolores points with her finger to her right to the sound of the children and asks, “That bird, do you hear it (too)?” The researcher replies that he does not hear any birds as Dolores says: “A duck, it is a duck!” She depicts a duck with her hands.’ (fieldnote workshop 5)
Residents involved multiple people in their conversations as they often made eye contact with those in attendance and responded well to the auditory cues. For example, Robert divided his attention in the workshops between the caregiver and researcher:

‘Robert hears Cheering and turns his head to the left speaker. Next, he looks at the researcher and turns to the caregiver, who smiles back. Robert says: “Who are they applauding for?” The researcher: “For you” as Robert starts to laugh, “they are clapping for the coach!” (Robert was a former soccer coach)’. (fieldnote workshop 4)

4.2 Supporting open-ended storytelling
The soundscapes were related to aspects of the residents’ past and evoked memories and stories related to the themes from the inquiry with the relatives (see Figure 4). For example, William’s relative had provided us with many stories of his holidays and experiences in Spain that were translated into his vacation soundscape:

‘William hears Spaniards and is silent. After a few seconds, he says: “They have a big square there, in Salamanca (a Spanish city frequently visited by William).” C1: “Yes?” William: “Plaza Mayor, the bullfights used to be there.” [...] C1: “Nice to talk to you about this (his stories about Spain)!” William: “It is a beautiful city!” C1: “Beautiful memory!” William: “Yes, I would like to go there again.”’ (fieldnote workshop 3)

![Figure 4: Residents shared their stories in an informal setting with the researcher and the caregiver.](image)

William could not recall intact stories or memories of what happened, where, when, and with who. However, it was clear that the soundscapes prompted remembering noises, sights, and names. During the workshops, the researcher supported the residents in telling their stories by playing the foreground sounds based on residents’ reactions, leading to them recalling brief essences or single details of their past life. For example, Dolores shared how she would cook fish or meat:

‘Dolores explains: “When I am preparing fish or chicken, I do squeeze a lemon against the inside of the frying pan, and the lemon juice will then... you know...” The researcher plays the sound of frying oil during the story of Dolores as she promptly reacts: “Then you fry it in oil!” The researcher: “Can you hear something?” Dolores points back to the right over her shoulder and says while gesturing with her hands and imitating stir-frying: “Someone is cooking!”’ (fieldnote workshop 5)
C3 elaborated on how *Dolores’s vacation* soundscape resulted in her sharing her experience: “she would like to tell you that from her own experience, how she did it herself.” Therefore, exploring the personal soundscapes offered the opportunity to go further into someone’s personal life, as C1 indicated that residents told stories she had never heard before:

“Yeah (it was) nice! You then hear new stories from someone you already know, but all-new stories! [...] They were nice in-depth conversations.” (interview C1)

**4.3 Activation and pleasurable experiences**

The video observations revealed how the residents smiled and laughed during the activity. *Dolores* stood out in terms of enjoying the workshop as it was very clear from her bodily and verbal expressions (see Figure 5) that she was enjoying the sounds in particular:

‘The researcher plays the *seaside* and *seagulls*. The moment Dolores hears it, she nods her head while her eyes are still closed. Her hands go free, and she opens her eyes. Looking at the researcher, she says: “On the beach, and in the background those birds.” The researcher asks: “Do you like that?” Dolores replies: “I find it beautiful!” She closes her hands, leans back, closes her eyes, and listens.’ (fieldnote workshop 5)

*Figure 5: The residents expressed their reactions to the soundscapes by sharing stories or movement.*

Sharing their experiences of the soundscapes with the researcher and the caregiver in a social and friendly atmosphere evoked positive emotions for the residents. C1 stated that the workshop had activated Robert to socially interact and have a moment of clarity:

“I just noticed that he (Robert) was activated, because what struck me was that he knew his way back to the living room. [...] I think that it (the workshop) was the reason for this. He had one-on-one contact—a nice conversation. We often call it a successful experience as therapists! [...] I think that is the reason that he is now a bit more open in contact.” (interview C1)

Only for Barbara, it was clear that she did not enjoy the workshop at one point as she showed a low-spirited emotional state. C4 indicated in the interview that *Barbara* did not feel like engaging in a one-on-one activity: “Barbara did respond well to the sounds, but she was just too distracted and did not feel like it.” We later learned she was tired and barely
awake, as her daughter had already visited her in the morning before the workshop. This example illustrates how the beneficial effects of soundscapes are also dependent on the residents’ current mindset, emotions, and preferences.

4.4 Providing rest and comfort

We observed comfort and tranquility in the participating residents through non-verbal reactions such as being at rest, closing eyes, or leaning back. Subsequently, four professional caregivers stated in the interviews how they observed a calm and comfortable mood in the residents. Therefore, all professional caregivers envisioned application possibilities of soundscapes in residential care as one-on-one therapy. For example, C2 reflected on this calm atmosphere she called “intimate” as she explained:

“You could see that in the small things, the way she let her hands fall quietly, she was nice and relaxed, and when she felt like that, it just felt intimate. As you just saw with Charlotte, it made her very calm. Those soothing sounds certainly bring the emotion of tranquility and security.” (interview C2)

C5 elaborated in the interviews on how the setting of the private rooms of the residents contributed to an intimate atmosphere:

“It (the workshop) was in her room. I think she recognized that too. […] That already feels safe. Here are all the things that she recognizes. Those are her items. She recognizes them all.” (interview C5)

The caregivers also elaborated on the role of the soundscapes to create a safe atmosphere during the workshops and a familiar feeling over influencing behavior. The feelings of familiarity and calmness positively affected the residents’ attitude and behavior in general. For example, C1 indicated that the build-up of the soundscapes brought calmness:

“Building up the soundscape and then reducing it again. It works up to a conversation, and it can simmer for a while when it is over.” (interview C1)

5. Discussion

Based on our findings, we propose design implications for soundscapes in dementia care to: offer meaningful activity, provide dynamic cues, and personalize audio content.

5.1 Meaningful one-on-one activity

Our findings suggest how connecting with people with dementia in intimate, one-on-one settings through open-ended engagement with sound enables residents to recall essences of memories or stories without pressure to locate the recollections geographically or remember them temporally. It relieves people with dementia from the often-unintended pressure of relating the stories to truths or facts that may be expected by family or caregivers (Sabat, 2006). As such, the soundscapes cued untold stories for caregivers and offered cues to start meaningful conversations with individuals with dementia. Our findings illustrate the role of
the soundscapes in supporting open-ended storytelling for the residents as sounds operate as samplers of information that allow for essences of memories and stories to emerge.

The soundscapes could activate the residents and provide pleasurable experiences but depended heavily on the residents’ current mood, situation, and mindset. The soundscapes also evoked mixed feelings or nostalgia about past experiences. For example, Robert felt nostalgic when listening to garden sounds, but he also realized he no longer had a garden to work in. It remains challenging to avoid such mixed feelings while engaging in activities that explore past experiences with people with dementia (Houben, Brankaert, Bakker, Bongers, et al., 2020). However, mixed feelings are all valid forms of emotional expression for people with dementia and lead to various ways of processing emotions that can be life-affirming or positive (Campbell et al., 2019). For example, people enjoy listening to sad music as it brings back memories or emotions associated with a meaningful event in their life (Sachs et al., 2015). To address this full range of emotions, the implementation of soundscapes in care requires careful consideration of the residents’ context (Kenning & Brankaert, 2020), which also refers to the appropriate context for cueing sounds suited to a time and place.

5.2 Soundscapes as cues in time over space

Our findings illustrate how soundscapes supported residents to interact with their immediate surroundings and the people present in that space. The participatory workshops highlighted the private rooms in the care home as a place for meaningful activity, as it offers a comfortable, personal, and private setting without expectations to behave in a particular way. The soundscapes could provide the residents with feelings of calmness and comfort in their private rooms by facilitating a safe atmosphere and familiar sounds. In this space, sounds evoked attentiveness and interactions with the environment for people with dementia. Therefore, the spatial delivery of soundscapes should be related to the existing surroundings to support people with dementia to focus on the experience of being in the ‘now’ (Treadaway et al., 2016) and in contact with their surroundings.

Furthermore, responding with specific sounds to the context of the workshop on intuition by the researcher was experienced as beneficial in connecting to the residents. These individual sounds created a unique and dynamic soundscape for the story of the resident to develop and evolve continuously. Digital storytelling methods have proven to be valuable tools in increasing the confidence and social participation of people with dementia (Rios Rincon et al., 2021). We contribute to that research by demonstrating how the dynamic characteristics of sound enable the adaptation of soundscapes to the residents’ responses as sounds can be meticulously inserted to support the development of the story or memory of the resident.

5.3 Personalizing audio content

The relatives were vital to understand the residents’ background and past home or personal environment to design the soundscapes. However, it can be challenging to contact relatives and exchange information needed for personalized activities in the care home (Alves et al.,
Similarly, the input from the relatives was highly variable among the residents. The open-ended process of identifying meaningful sounds resulted in four relevant themes: birthplace, home, hobbies, and vacation, as suitable categories for developing personal soundscapes. These themes are not exclusive topics for reminiscence in general but were most relevant for identifying enjoyable or meaningful soundscapes. Therefore, these categories offer a basis on which relatives or professional caregivers can tailor audio content with their implicit knowledge to the individual resident’s preferences. Presenting a range of generic sounds based on preselected themes that can be customized, e.g., (Houben et al., 2019), can reduce time barriers and result in meaningful experiences. These might lack the richness of highly tailored soundscapes but allow for a more accessible level of customization to the general preferences and responses of the resident.

6. Conclusion

We evaluated personalized soundscapes with people with dementia in individual, participatory workshops. The results demonstrated that unique soundscapes that reflect themes such as birthplace, home, hobbies, and vacation evoked memories and cued verbal and non-verbal interactions with the immediate surroundings and the people present. We contribute to existing literature by indicating how familiar and recognizable sounds provide dynamic cues in time over space, resulting in sociable atmospheres where residents and care staff can connect during meaningful activities. We argue the need for personalized approaches in design and implementation strategies to support meaningful experiences in formal healthcare settings.

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7. References


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