A Participatory Approach to Designing Institutional Soundscapes

By Logan Wilkinson | MDes 2025

Listening as Agency

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Abstract

Approaches to designing for sound in long-term care have often prioritized external and infrastructural aspects of the auditory environment, while overlooking how residents actually experience and interpret their auditory environments. This study shifts the focus to the residents' experience, integrating participatory design with sound studies to explore the relational and subjective dimensions of listening. Drawing on the concept of sonic agency, it examines how residents of a Vancouver long-term care home perceive and shape their auditory environments. It also seeks to draw insights into changes residents would like to see within their daily soundscape, setting the foundation for future participatory prototyping.

The research involved two workshops. In the first workshop, residents took part in facilitated “sound explorations,” recording sounds that held personal significance. Following the sound exploration, residents shared insights in interviews regarding their reasoning for recording the selected sounds. These insights informed the development of a framework called the Sonic Ecology of Care, which conceptualizes the interconnected layers of institutional soundscapes, shaped by internal beliefs,

social interactions, physical infrastructure, and policy-level factors. In the second workshop, residents reviewed the recordings and mapped the changes they would like to make in the home onto the Sonic Ecology of Care model. They also engaged in discussions about ways to improve their sonic agency.

By applying listening-centered sound studies practices, *Listening as Agency* presents a new approach to participatory design. Setting the foundation of future participatory prototyping, the affective nature of the audio recordings communicates resident experiences beyond typical ocular-centric modes of design research. The mapping of desired changes to the Sonic Ecology of Care highlights the role of intermediary objects and actors within institutional contexts, as well as the role of designers as intermediary actors. The study's findings and methodological insights open valuable paths forward for the design and services of not only long-term care homes, but for institutional spaces in general, where sonic agency faces hierarchical divides.

Acknowledgements

This thesis is a product not only of academic inquiry but of sustained relationships, institutional negotiations, and a belief in the value of listening as a method for both design and care. It reflects a commitment to process over outcome, and to the creative possibilities that emerge when we attune ourselves more deeply to sound, to others, and to the systems we seek to change. This research was conducted on the unceded, ancestral territories of the Musqueam, Squamish, and Tsleil-Waututh Nations. I am deeply grateful to live, learn, and conduct this work on these lands. I acknowledge the long histories of care, stewardship, and resistance that precede and continue alongside this project. This thesis explores practices of listening, and I hold with humility that such practices must include listening to Indigenous voices, histories, and knowledge systems—especially in the context of institutional care, which settler-colonial structures have shaped.

I extend my sincere gratitude to the residents and staff of the long-term care home where this study was based, especially to the participants in the Listening as Agency workshops. Thank you

for sharing your time, perspectives, and stories with me. Your experiences and voices are the heart of this project.

Thank you, Fiona Lastoria, for your warmth and unwavering commitment to person-centred care. Without Fiona, this project would not have been possible. Thank you to Samson Chu and Alexandra Grace for taking on this project and generously sharing your time and expertise. Your presence in the research team made a world of difference in facilitating meaningful and safe experiences for residents involved in the project.

I would also like to thank the faculty and staff at Emily Carr University for their patience, support, and encouragement during the development of this thesis. I am deeply grateful to my wonderful thesis supervisor and mentor, Peter Bussigel, who was willing to go above and beyond in countless ways to bring this project to life. I would also like to thank Caylee Raber for not only providing guidance and expertise as an internal reviewer but also for welcoming me into the Health Design Lab, where I gained key inspiration and built transformative community connections. Thanks to Lois Klassen for helping me navigate the complex Ethics Board approval process. Thank you to Bobbi Kozinuk for the skillful and adventurous spirit provided in our valiant attempt

to put a radio antenna on the roof of the school, even if my final thesis ended up being free of free radio. I am also grateful for the financial support of the Future Creative Catalysts Graduate Research Fellowship, which helped bring this work to its full potential.

To my MDes cohort and to my friends Nat, Irfan, Julie, Liv, Arlette, Inna, Vincent, Sam, Myshia, and Katie—thank you for grounding and inspiring me.

Finally, I would like to thank my family for their endless support and love, and for teaching me the meaning of care.

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0. Prologue

Listening as Agency grows out of nearly a decade of interdisciplinary practice at the intersection of psychology, philosophy, and design. From the outset, I have been fascinated by questions of subjectivity: how people perceive and interpret their realities, rather than the phenomena themselves. My undergraduate thesis investigated how women with low sexual desire attributed the cause of their low desire, using a combination of quantitative and qualitative approaches. During this time, I also worked as a support worker, also known as an "Intervenor", for deafblind clients, many of whom were nonverbal. This work challenged me to communicate and care beyond spoken language, nurturing a deep sensitivity to the nonverbal and multisensory dimensions of human experience. This thesis is the culmination of an almost decade-long interdisciplinary practice.

After graduating, I worked as a Clinical Research Project Assistant at a children's hospital. Observing the psychiatric research wing's unwelcoming atmosphere revealed how poorly designed spaces can add stress for already vulnerable patients. Coupled with frustrations surrounding the technologies used to conduct research and connect patients with services, I began to

investigate how healthcare spaces and systems might be better designed.

In 2023, I began studying interaction design at Emily Carr University, exploring healthcare innovations through a creative lens. The method for *Listening as Agency* developed organically over the first year of my master's program, shaped by a series of workshops and personal practices that deepened my engagement with listening as both an artistic and design-oriented inquiry. I facilitated Deep Listening workshops inspired by the work of Pauline Oliveros, guiding peers through meditations, soundwalks, and improvisational composition practices. I began maintaining a listening log, documenting my daily sonic environment to cultivate sustained attention to sound in both my creative and service design practices. Simultaneously, I was involved in co-design initiatives within the university, including the co-direction and revitalization of the student radio station, Radio Emily. The combination of these experiences deepened my conviction that listening practices and participatory design methodologies are deeply interrelated.

I also had the opportunity to serve as a teaching assistant in an undergraduate health design course. As part of the

Perspectives program, the course supported students in co-designing tools for connection alongside residents of a local long-term care home. My teaching led to a key connection with Fiona Lastoria, the Senior Recreation Therapist at the care home. I proposed a project focused on the participatory design of sound within the care home, and Fiona generously offered her support. I spent the summer of 2024 developing the project methodology and deepening my understanding of service design and participatory methodologies through my work with the Health Design Lab.

The ethics review process, however, introduced significant delays. The project was one of the first formal research collaborations between an Emily Carr Graduate Student and the Vancouver General Hospital. As such, the Research Ethics Board required an extended institutional agreement, which they expected to take up to a year to finalize. In Fall 2024, faced with this unforeseen delay, I shifted my thesis focus temporarily on other participatory sound projects, such as the revival of Radio Emily. While these initiatives carried their own value, my commitment to the long-term care home project remained central.

By Spring 2025, the administrative agreements and ethics approvals were finally secured. Although I had spent the

intervening months developing other participatory sound projects, I remained convinced that *Listening as Agency* belonged in the context of long-term care, where questions of sound and agency are most urgent. By this time, Fiona had transitioned to a new care home in Vancouver. She invited two colleagues, Certified Therapeutic Recreation Specialists Samson Chu and Alexandra Grace, to join the study team. Nearly a year after its initial conception, the project officially began in May 2025. The delay, while difficult, reinforced the very premise of this work: that listening requires patience, persistence, and openness to shifting conditions. What follows is an account of how these principles guided the development of *Listening as Agency* within a long-term care setting.

1. Introduction

This thesis explores how designers can reimagine institutional spaces and services by considering the role of sound. By combining participatory design and sound studies methodologies, I focus on the sonic dimensions of care environments, asking how residents can have greater agency in shaping the acoustic conditions of their daily lives. The work is grounded in the overlap between participatory design and sound studies along two interconnected axes: a commitment to subjective individual experience, and a focus on increasing the agency of those traditionally disempowered within institutional hierarchies. A theoretical overview of sound and agency in long-term care provides the context for the case study.

The methodology and practice section outlines the main case study, which consisted of two workshops held in a publicly funded Vancouver long-term care home. In the first workshop, residents participated in a facilitated sound exploration activity, recording and reflecting on the sounds they considered significant in daily life. I conducted individual interviews with residents to discuss the recordings and gain insight into how participants experienced and interpreted their sonic

environments. The second workshop built on these insights by introducing *The Sonic Ecology of Care*, a framework for reimagining soundscapes. Residents used it to imagine changes to their environment and to reflect on their sense of agency over sound.

In the analysis section, I identify patterns and reflections that emerged from the workshops and interviews with residents. I examine the ways participants described and responded to their sonic environment, the strategies they used to manage their soundscapes, and the types of changes they envisioned. These insights suggest how participatory sound design might contribute to a broader rethinking of care environments not only in terms of sound, but in terms of who gets to shape the conditions of everyday life within them. The conclusion considers the contributions of this research to design knowledge and participatory practice, and points toward future possibilities for listening-based design in institutional settings.

2. Theory and Context

Through this project, I have uncovered theoretical connections between sound studies and participatory design, specifically regarding 1) methodological integration of

subjective, individual human experience, 2) modes of increasing agency of individuals whose voices have traditionally gone unheard in institutional hierarchies, and 3) reframing institutional design within the context of intermediary objects and actors. This theoretical blending underscores my primary research question: Can applying sound studies methodologies to participatory design practices help improve sonic experience and agency in institutional spaces?

The main case study used to investigate this research question is a series of participatory sound-based workshops in a long-term care home. For context, I provide a brief overview of long-term care in Canada and its relevance to current developments in participatory design and sound studies.

2.1 Theory

2.1.1 Integration of Subjectivity

Participatory design (PD) emerged in the 1970s as a democratic approach to designing products and services, emphasizing collaboration between designers and end users. Early PD practices in Scandinavia aimed to empower workers by involving them in the design of workplace technologies (Bødker et al., 2022). Recent developments in participatory design have

demonstrated the effectiveness of this approach in driving social change. Ezio Manzini's 2015 book, *Design, When Everybody Designs,* describes collaborative processes for change-making among individuals and organizations, where designers facilitate the diffuse design efforts of non-experts. This shift redefines the role of the designer, emphasizing collaboration and collective empowerment.

One of the key overlaps between sound studies and PD is their shared emphasis on individual subjective experience. In sound studies, an auditory environment refers to the physical presence of sound waves in a space, whereas a soundscape is the contextual and individual experience of that auditory environment (Schafer, 1977/2006). While an auditory environment lends itself to more quantitative modes of measurement, soundscapes are qualitative. Culture, beliefs, social circumstances, and the listener's general relationship to their environment shape soundscapes (Thompson, 2002). Critiques of Schafer's soundscape have also led to the idea of "acoustemology" (Feld, 1996), which describes the dynamic and relational process of knowledge production through listening, rather than the creation of a static and external experience as the term "soundscape" suggests.

PD expresses this notion of subjective human experience through democratic approaches, where empowerment and mutual learning are employed to foster a cohesive understanding and collaboration among individuals towards shared goals and future alternatives (Bødker et al., 2022). Input from varying viewpoints is a key feature of participatory methodologies.

Given their inherent acknowledgement of individual differences and subjective experiences, both sound studies and PD emphasize listening practices – that is, modes of understanding the subjective experiences of oneself and others, whether sonic or otherwise. As such, field studies are a core method within both schools of thought. Sound studies draws its insights from practices such as reflexive interpretation (e.g., Schafer, 1977/2006), sonic ethnography, field recording, and acoustic analysis. Soundwalking, a method developed during the Vancouver-based World Soundscape Project (Schafer, 1977/2006), is a mode of exploring one's soundscape as one moves through a physical environment. Recordings taken during soundwalks have been utilized by researchers and artists, such as Hildegard Westerkamp (Westerkamp, 1974), to create soundscape compositions—sonic artifacts that convey experiential knowledge or affect.

In PD, qualitative investigations into the current state of the design space are an important part of the process. These methods include ethnographic observations, interviews, and scenario representations of the current practice (Bødker et al., 2022). However, the goal of field studies in PD is to support collective reflection and mutual understanding, facilitating the following stages of workshops, prototyping, infrastructuring, and evaluating (Bødker et al., 2022). As such, PD typically seeks to apply insights gained from early stages through design, creating democratically orchestrated change.

2.1.2 Sonic Agency and Democratic Design

Developed by composer Pauline Oliveros, the practice of Deep Listening emphasizes the distinction between hearing (the physical conversion of sound waves to auditory experiences) and listening (the psychological experience of paying attention to sounds). Oliveros created several compositions and workshop frameworks based on the concept that the deliberate shifting of attention can alter one’s experience of their sonic environment. Deep Listening points to what might be the fundamental element of sonic agency. Sonic agency is a term used to describe sound’s capacity to shape social dynamics and challenge power structures

by political philosopher Brandon LaBelle (2018). By “staying close to sound and listening”, LaBelle suggests, we may discover transformative affective processes and new forms of communication that go beyond what is strictly visible. It is the interconnected network of individual listeners, acting autonomously upon their environment, that creates sonic agency. As such, sonic agency is inherently relational. Through shared sonic experiences, communities can reveal previously invisible modes of being-together and imagine alternative structures of being, especially in situations of loss and powerlessness.

Before “sonic agency”, initial writings on “acoustical agency” were developed by Suzanne Cusick (2013). Her documentation of military use of extremely loud music and sound deprivation as a mode of torture highlights some of the more extreme examples of limiting individual control over exposure to sounds. Social scientists have since emphasized the role of acoustical agency in other forms of “total institutions” (Goffman, 1961), such as hospitals (Rice, 2013), prisons (Rice, 2016), and elder care homes (Greubel, 2020). In Tom Rice’s 2013 ethnography of the Edinburgh Royal Infirmary, he noted that staff maintained patients’ visual privacy through the use of curtains

and doors. However, the lack of control over physical proximity to other patients meant they consistently overheard cries of pain, bodily functions, and medical operations. Although this lack of privacy served an informational function, allowing staff to hear calls for help, it also compromised the privacy of patients and their control over their auditory environment. Some patients would use radios and headphones to mitigate unwanted sounds; however, this was not an accessible option for all patients. In contrast, Rice's 2016 investigation into low-security prisons reveals how agency over sound is resilient to institutional limitations. Modes in which control over the production of noise, such as using radios, and control over listening, such as through eavesdropping, serve as tools of sonic agency, which in turn serve as tools for self-care, identity construction, and expression of power.

With its historical roots in giving a "voice" to white and blue-collar workers by actively involving them in the design of technologies imposed upon them by management (Ehn & Sandberg, 1979; Bødker et al., 2022), PD practices overlap with the philosophy of sonic agency in using relational methods to transform existing structures. PD practices emphasize the

redistribution of power through collaborative processes that recognize users not as passive recipients but as co-creators of their environments. Just as sonic agency involves an attunement to how sound can be used to navigate, resist, or reimagine institutional constraints, participatory design foregrounds the lived experience of participants as a site of expertise. In this way, PD offers a methodology for operationalizing sonic agency. By inviting individuals to critique and alter the conditions of their sonic environments, it enables new forms of autonomy and relationality. In line with institutional case studies of acoustical agency, PD has recently incorporated notions of "Institutioning" (Huybrechts et al., 2017) to describe not only how designers can shape institutions through PD, but also how institutional elements such as policy, bureaucracy, or funding logics are active agents in shaping the outcome of participatory processes.

2.1.3 Intermediary Objects and Actors in Design

Jean-François Boujut (2003) describes intermediary objects as not only physical artifacts but also cognitive or symbolic "objects" that mediate between human and non-human actors. The meaning of an intermediary object is contingent on its use in

interaction: a sound used to express a need temporarily becomes an intermediary object, but once the demonstration ends, it returns to being an ordinary object.

In addition to transmitting knowledge, intermediary objects facilitate the elicitation of knowledge and mutual learning. In collaborative engineering contexts, Boujut shows how intermediary objects enabled participants to collectively work on an artifact, acknowledge the limits of their own expertise while requesting input from others, and generate new interface knowledge through collaborative interaction. In this process, designers often serve as what Boujut terms intermediate actors—facilitators who structure, translate, and mediate the flow of meaning through these objects.

Building on Boujut, the *Sound in the City* workshops with blind participants foreground the co-creation of meaning through sound (Steele et al., 2019). Researchers paired recordings of urban navigation with interviews in which participants re-listened to their recordings. These "immersive interviews" (Grond, 2025) revealed meanings not evident in the recordings alone—for example, the social significance of hearing footsteps passing by. Here, the recordings themselves served as

intermediary objects, but their power lay not solely in their sonic content. Instead, their significance emerged in the moment of shared listening and reflection, which transformed participants into active co-researchers rather than passive subjects. The design of these moments is itself a crucial design act (Grond, 2025).

2.2 Context

Long-term care (LTC) homes in Canada provide twenty-four-hour support to those in need of continuous care. Also called nursing homes, continuing care facilities, or residential care homes, they are where eight percent of Canadians aged 65 or older reside (Public Health Agency of Canada, 2020). Just under half of the care homes in Canada are publicly funded (Canadian Institute for Health Information, 2021). LTC serves as a home for a diverse group of individuals with varying disability statuses. “To select and extract which sounds in a given environment are ‘unwanted' is a consequence of one’s situation in time and place” (Kittay, 2008, p. 46). In a space containing as much listener diversity as long-term care, how can we “improve” the soundscape? Perhaps it is not so much a question of “improvement” as it is a question of agency and choice.

In the context of long-term care, resident agency refers to the capacity of residents to make choices, influence their environment, and participate meaningfully in decisions affecting their daily lives (Agich, 1990). Long-term care homes exhibit characteristics of a *total institution,* as defined by Erving Goffman (1961), in which individuals live in a closed, regulated environment where staff tightly schedule resident routines and may make decisions on behalf of residents. The inherent limitations of resident agency in inhabiting this institutional space, paired with potentially limited physical or cognitive capacity, have led researchers and practitioners to consider approaches that increase agency in long-term care (Pirhonen & Pietila, 2016; van Loon et al., 2024). Forms of relational agency become especially important in long-term care, where caretakers may make decisions or act on behalf of residents due to limitations in function.

In the wake of such overwhelming complexity, this thesis does not aim to provide concrete solutions. Instead, it seeks to explore the potential in shifting attention towards a subtle yet pervasive force — sound. Instead of approaching the challenges of long-term care solely through clinical or bureaucratic reforms,

sound offers a way to attune to the lived realities that often go unheard, both literally and metaphorically. The current study utilizes sonic ethnography to intentionally listen and relate to the experiences of residents in long-term care. Sound theorist Brandon LaBelle writes- “In listening one is situated within an extremely relational instant… to nurture and care, as well as to argue and disrupt.” (LaBelle, 2018). As such, the current study seeks to further embody this relational power through participatory design methodologies, where residents can plant the seeds of sonic agency in actionable and collaborative ways.

The intersection of institutional and subjective approaches to both participatory and sound design provides a theoretical basis for my work. The context of long-term care and its potential to benefit from these approaches provides a setting for advancing my research question: Can applying sound study methodologies to participatory design practices help improve sonic experience and agency in institutional spaces?

3. Methodology and Case Study

The current study takes place in a publicly funded long-term care home in Vancouver, British Columbia. The study team present at the workshops included myself, F.Lastoria (the Interim Senior

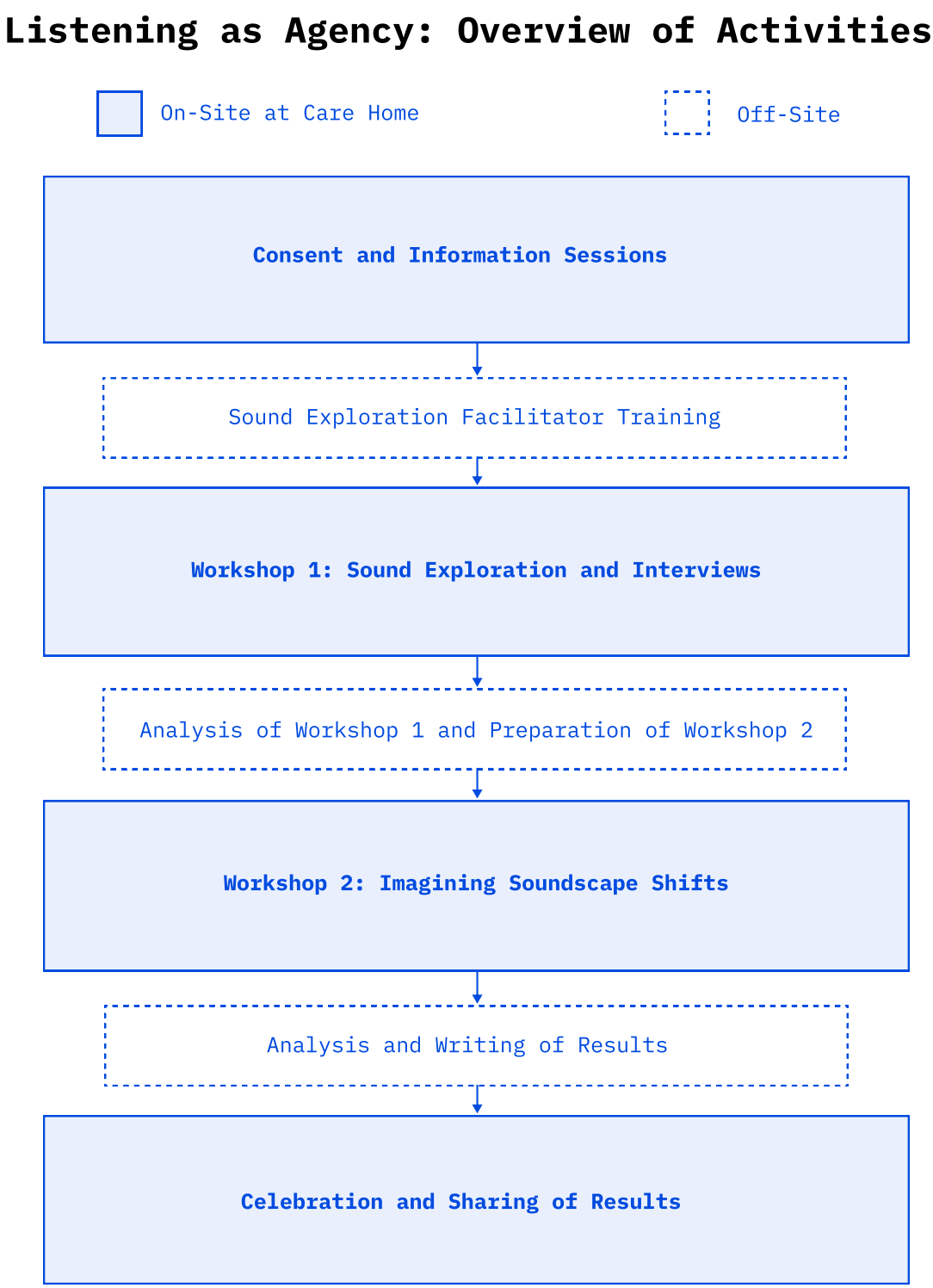
Manager of the care home with a background in Recreation Therapy), S. Chu (Recreation Therapist), and A. Grace (Recreation Therapist). I recruited study participants in collaboration with the care home staff study team members. The study participants included four residents of the care home who met the eligibility criteria of having the capacity to provide informed consent to the study activities, the ability to verbally or nonverbally communicate thoughts and opinions, and an expressed interest in their home environment. Participants who were deaf or hard of hearing were not excluded from the study, as they can provide valuable insight into how sound affects the experience of differently hearing populations. I did not formally collect information about the hearing abilities of participants; however, participant anecdotes revealed a wide range of auditory processing abilities.

The methods for the case study combine the practice of soundwalking (renamed sound exploration for accessibility purposes) with participatory design to understand and to shift the soundscapes of institutional care. Although this methodology is suitable for any institutional setting, this thesis focuses on LTC homes and their residents. The case study contains two main

stages: 1) Recording current soundscapes, and 2) Imagining soundscapes shifts. Between each stage, thematic analysis was conducted on the output of the workshops and the transcribed audio recordings of discussions held during the workshops, informing the next stage.

Figure 1

Listening as Agency: Overview of activities.

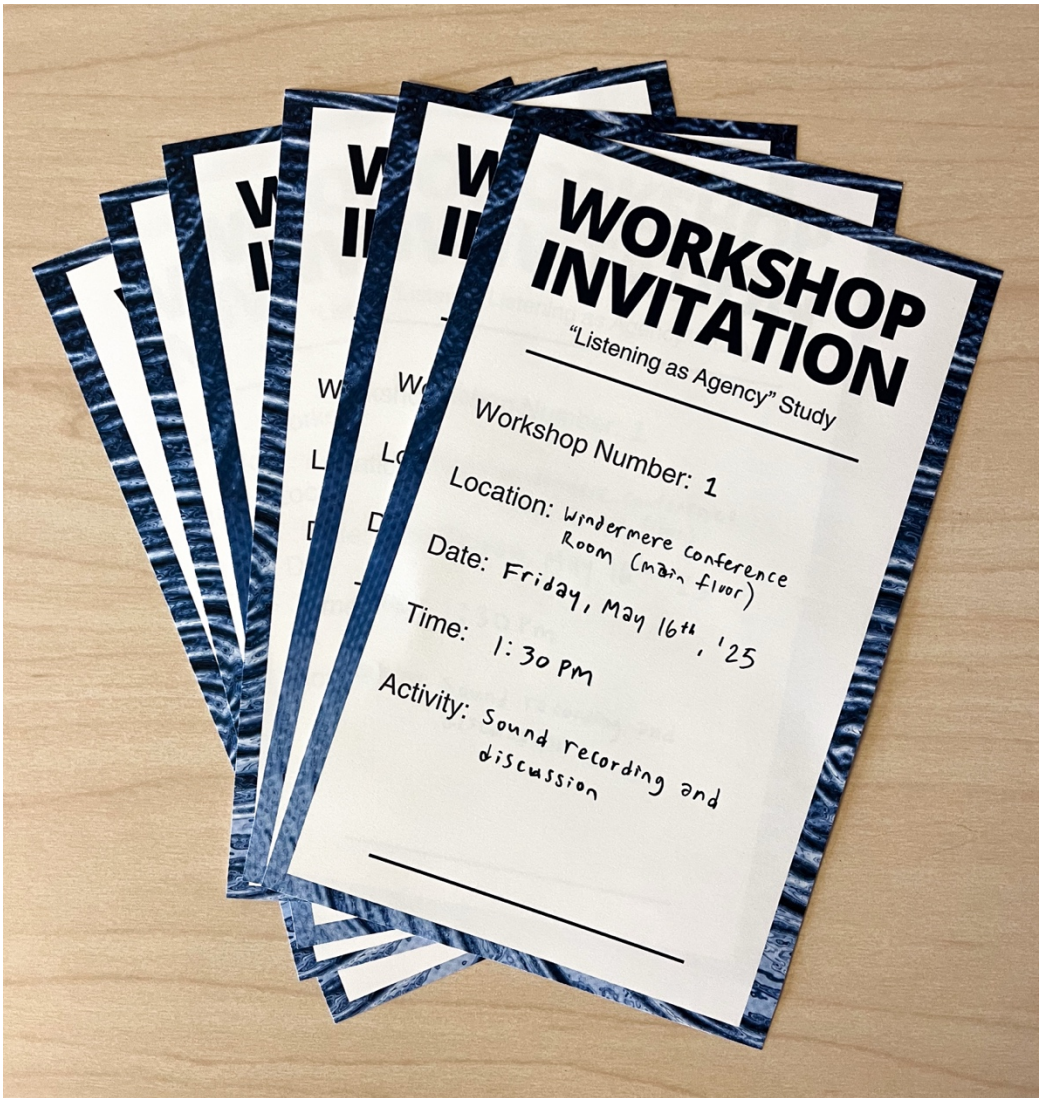


The methodological approach arose from the literature discussed in the Theory and Context section, in combination with several small-scale workshops surrounding Deep Listening and PD I conducted with peers over the first year of my Master's program. Iterations on the workshops resulted in the final version of the method used with participants in the Long-Term Care Home.

Guidelines for community-based researchers developed by Simon Fraser University's Community Engaged Research Initiative (Grain et al., 2024) also informed the workshop models. In line with these guidelines, each workshop began with introductions, an overview of the session's schedule and scope, and a review of the community guidelines. Due to the short timeframe of the sessions, I created an initial draft of the guidelines in collaboration with study team members and invited participants to suggest changes as needed. The study team provided refreshments to create a comfortable environment, and workshops were held in accessible areas within the home, allowing participants to gather comfortably and privately. Prior to each workshop, care home staff study team members provided participants with a printed invitation that included a reminder of the workshop's date, time, location, and the activity that would be taking place.

Figure 2

Workshop invitations for participants

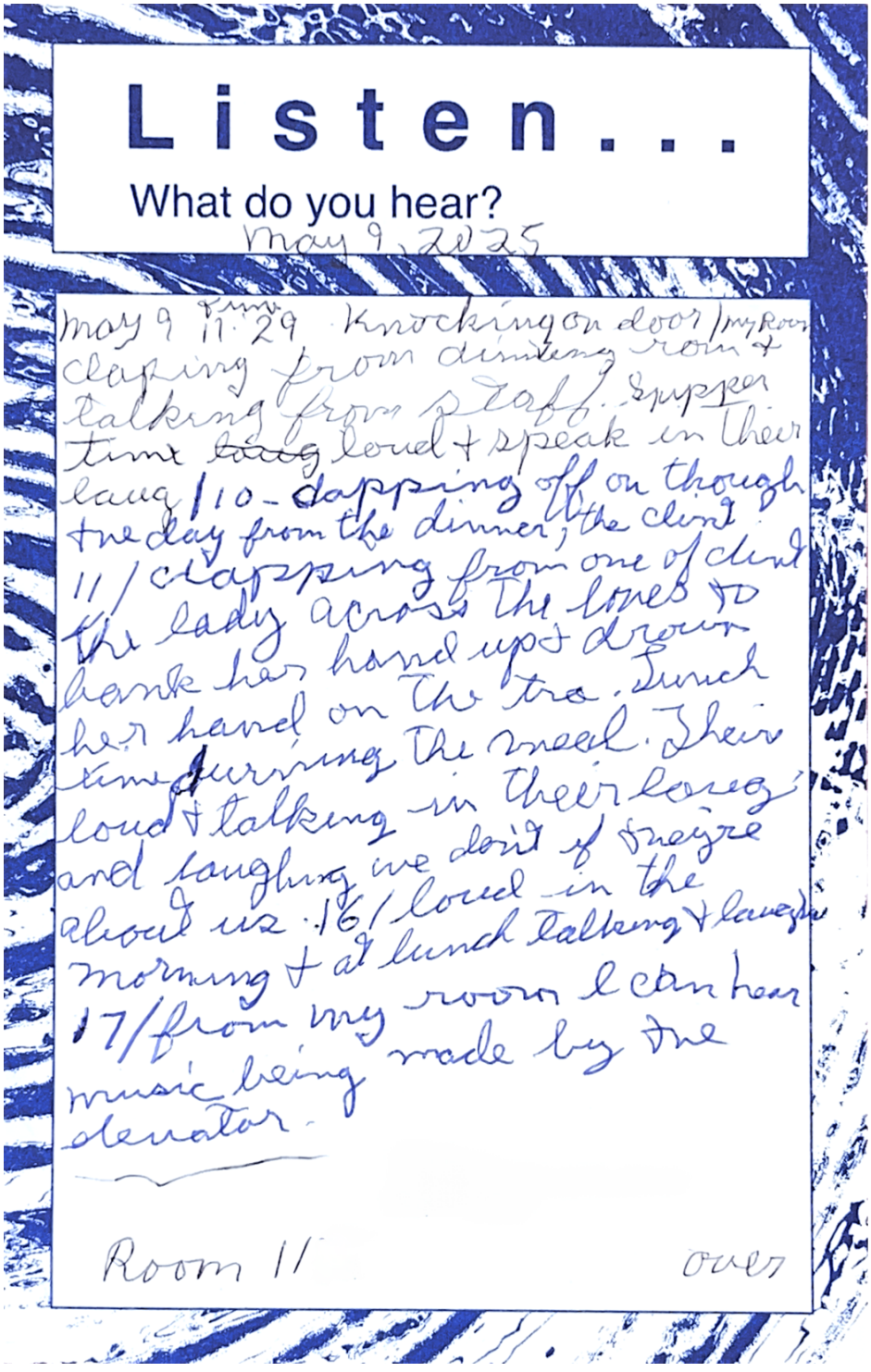


At the beginning of each workshop, I led a brief listening exercise to help participants focus their attention on sound. These also incorporated a moment in which I shared something about myself and my own personal soundscape, such as an audio recording. I gave the prompt for the Listening Exploration to

participants after they submitted their consent form, along with a Listening Journal Card, which they used to track the sounds they noticed in the care home leading up to the sound exploration (see Figure 3).

Figure 3

Participant's Listening Journal, completed between the consent session and the first workshop.

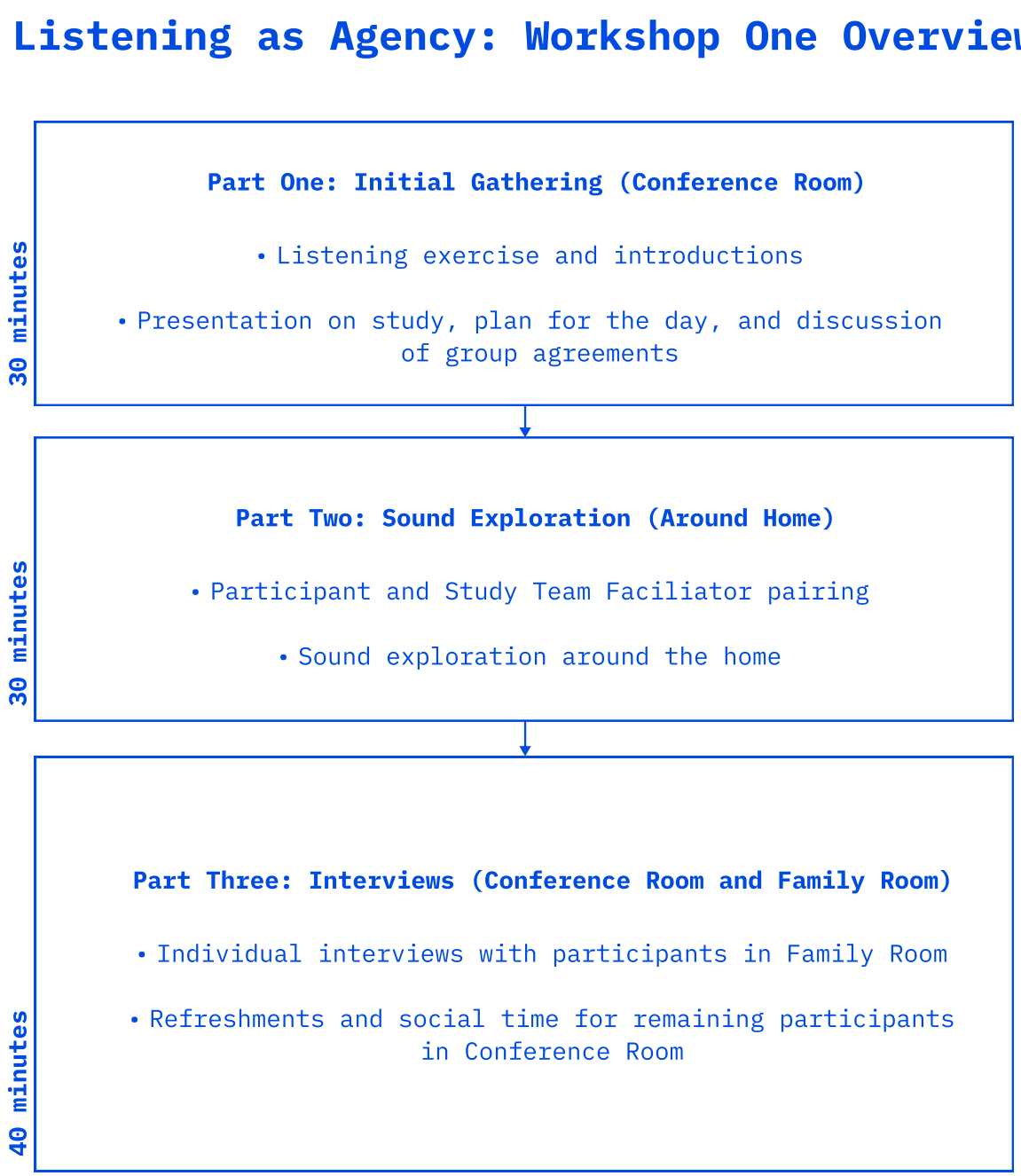


3.1 Stage One: Recording Current Soundscapes

3.1.1 Workshop One

Figure 4

Workshop One Overview



The first workshop involved a facilitated sound exploration of the care home. The term “sound exploration” is derived from Hildegard Westerkamp’s soundwalking, modified to be inclusive for participants who move through spaces in modes other than walking (e.g., wheelchairs). The route of the sound exploration was emergently determined by participants based on their interpretation of the core prompt of the activity, “What sounds are significant to your day-to-day life in the care home?”. Prior to the sound exploration, a study team member paired with a participant, and each pair took a Zoom recorder. The study team asked participants to record the sounds they deemed significant during their sound exploration with the help of the study team members. I instructed the study team members and participants to minimize talking during the sound exploration and recording, and instead focus on listening. Monitoring headphones were provided for the participants to wear during the recording. However, participants did not wear headphones while exploring the environment to ensure their listening was true to their everyday soundscape (Bull & Cobussen, 2021).

Following the sound exploration, I conducted individual interviews with each participant to discuss the recordings and

their significance. To prepare for the facilitated sound exploration, I developed training materials such as a guide for facilitators (see Appendix B) based on guidelines given by Hildegard Westerkamp in her seminal writings on soundwalking (e.g., Kits Beach Soundwalk, 1989) and contemporary forms of facilitated sonic ethnography (Stevenson & Holloway, 2016). Scripted prompts and technical cues emphasize maintaining the residents' agency in determining the route of the sound exploration and in the recording process, while mitigating any potential barriers caused by technology or accessibility needs.

For example, the guide prompts facilitators to continuously check with participants to see if they would like to operate the Zoom recorder, and to give the resident the option to press the record and stop buttons. I also led a practice session with the care home staff study team members to familiarize them with the equipment and the facilitation process, and I created a simplified instructional diagram for the Zoom H6 Handy Recorder (see Appendix C).

I had initially planned for a group reflection following the sound exploration, following the model of participatory design workshops. However, I decided to change the study design to individual interviews to provide the time and space needed for participants to reflect on their experience, given their diverse modes of listening and communication. In each interview, I asked participants to describe what they recorded during their sound exploration, listening back to recordings as needed, and to explain why they chose to record that particular sound. I recorded the interviews and later transcribed them. The interviews took place immediately following the sound exploration to maximize recall.

Following the workshop activities, I conducted a thematic analysis of the recordings and interviews. I conducted the analysis to represent the sounds that were significant to residents and why, as well as to inform the materials and activities of the second workshop

3.1.2 Workshop One Results and Analysis

Figure 5

Summary of Sound Exploration recordings from Workshop One.

Listening as Agency: Sound Exploration Recordings

Recording of **other residents playing games and watching TV**. The participant feels that they are all having fun and that it is good for them to be doing these things rather than being bored.

Sound of traffic is constant in participant's bedroom. Participant says they have developed "selective hearing" and grown accustomed to it, since there is nothing anyone can do about the noise.

Recording of the participant's **encounter with a staff member** while on the elevator. The participant recorded the encounter because **"I see her and she knows me since I lived here for 3 months- makes me feel happy."**

Mechanical whirring and airflow of HVAC in resident's room. Participant finds the noise irritating because it never stops. Feels that the fan system has worn down with time, but that no one wants to spend money on fixing it since they will likely tear the building down in coming years.

Recording of **staff speaking in a non-English language.** Participant dislikes when people around them, especially staff, talk to each other in a language other than English. It makes the participant "think they're talking about me, and the way I look."

Recording taken in hallway in front of resident's bedroom, sound of **another resident hitting walker rhythmically against the floor**, then dragging it across the floor to create a loud squeaking sound. Participant expresses confusion about why the resident in the recording makes sounds when they don't have to.

Recording of the 11th floor because the **participant likes the quietness of the floor.** They said the floor that their room is on is okay, but that there is a resident there who calls for help all day long, and in the morning, there are loud banging sounds of the laundry lids closing.

Participant likes Gordon Ramsey and keeps his show playing on the TV in their bedroom throughout the day. They note that at night, the sounds of people calling out for help are of concern.

For all recording descriptions, see Appendix D.

Following Braun and Clarke's (2006, 2021) reflexive approach to thematic analysis, I transcribed the recordings and participants' reflections and repeatedly reviewed the transcriptions to familiarize myself with the data. I generated the initial codes inductively, capturing specific references to sounds and the contexts in which they occurred. These codes were then iteratively examined, compared, and refined, allowing for the development of broader candidate themes. Through this process, two dominant patterns became apparent: references to the physical aspects of the building, such as mechanical systems and spatial acoustics, and the social sounds produced by staff and fellow residents. However, listening to participants' insights revealed that their internal beliefs and understandings were also a factor in their assessment of the soundscape. For example, every resident either recorded or mentioned in interviews the significance of the sounds made by other residents in their daily soundscape. Specifically, sounds that were made by residents who were likely experiencing a form of dementia, such as calls for help or repeated "banging" of walls and tables that went through the day and night. A key feature of many participants' reflections on the sounds was their confusion about why the other

residents made distressing noises. For example, one participant shared a quote regarding their feeling of worry when they hear calls for help from other residents at night:

> *…at nighttime people yell and scream, and I go "oh God, not again, here we go, jeez". And I hate that... sometimes I'm like, are they okay, is there something wrong? But, I can't do anything about it, right? So it just, stay in your room and stay out of trouble. Cause I'm not a nurse, so it's not my job, right.*

Another resident shared frustration around the sounds from other residents, saying, "[The resident] screams at everything and everyone... I just well, I don't make noise, and I don't know why anyone else makes noise. They don't have to." As such, internal beliefs about the reasons (or lack thereof) for the sounds made by other residents also appeared to influence the participants' soundscapes.

Furthermore, although not as directly referenced by participants as the other categories, policy and systematic elements underlie the recordings and reflections made by residents. For example, one participant felt concerned about staff speaking in languages other than English:

[In] the dining room, all I hear is the nurses talking in their own language. Laughing in their own language and talking in their language. I feel, I don't know, what if they're laughing at us? Talking about us?

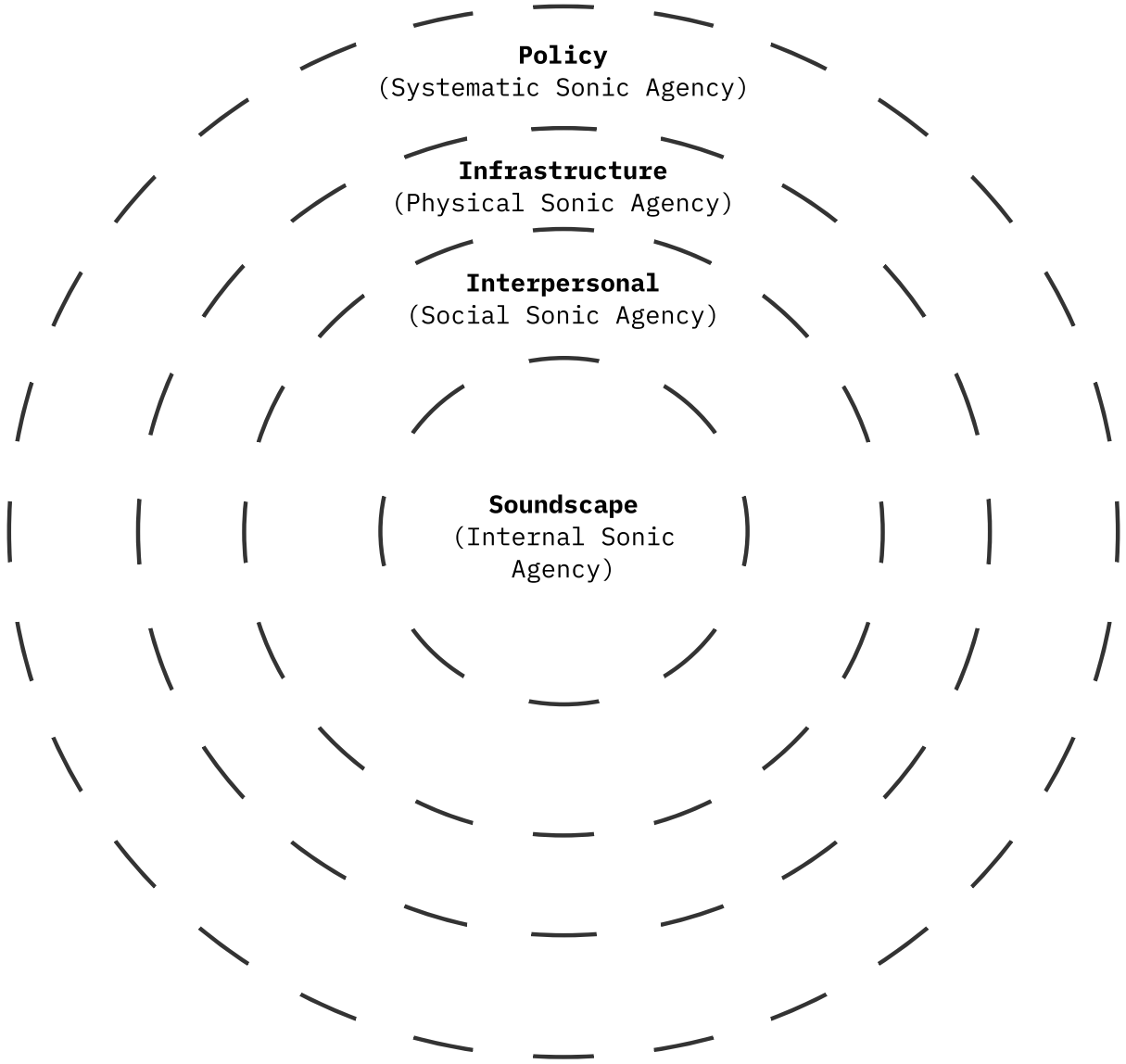
This example most directly touches on themes of internal experience (e.g., the resident's preferred language of communication being English) and relational factors of sound. However, discussions with study staff revealed that the care home has a policy prohibiting staff from speaking languages other than English around residents, unless they are communicating with a resident who understands the non-English language being spoken. As such, the resident's concern also intersected with the realm of institutional policy.

Sonic Ecology of Care

Given the multi-modal nature of the residents' recordings, my thematic analysis resulted in the development of an ecological framework for approaching the design of sound in institutional spaces (See Figure 6):

Figure 6

Sonic Ecology of Care: A Model for Mapping Soundscapes of Institutional Care



The model was developed not only to represent the recordings and reflections of residents collected in the first workshop, but

also as a tool of analysis to use when mapping potential touchpoints for change in the second workshop and beyond. Each layer is interconnected and overlapping. In the following sections, I define each layer of the model, using the example of sounds made by residents with dementia.

Soundscape (Internal Sonic Agency). This innermost layer of the Sonic Ecology of Care describes changes to individual beliefs, perspectives, and other factors that can influence one's soundscape (that is, their subjective experience of their sonic environment). For example, residents' beliefs regarding the reason other residents make disruptive sounds influenced their assessment of the sounds. Thus, psychoeducation or other belief-centred interventions may be helpful.

Interpersonal (Social Sonic Agency): At the relational level, sonic agency emerges through interactions and negotiations between people. Participants described responding to disruptive sounds from residents with dementia by turning up their televisions, telling the residents to be quiet, or closing their doors. These strategies reflect attempts to set boundaries or restore control through interpersonal means. However, they can also create tension and reinforce isolation. Design interventions

here involve structured dialogue, peer support, or staff-led facilitation to build understanding between residents and encourage relational forms of coping rather than adversarial responses.

Infrastructure (Physical Sonic Agency): At the infrastructural level, sonic agency is linked to the material and architectural environment. Residents proposed physical solutions to mitigate unwanted sounds from their peers with dementia, such as placing “noisy residents” on a separate floor or adding more soundproofing between rooms. While these changes could reduce disturbances, they also risk increasing social isolation for already vulnerable residents. This link highlights the dual role of infrastructural design: it must consider the implications for the inner layers of relational and internal care depending on how it is implemented.

Policy (Systemic Sonic Agency): At the policy level, sonic agency involves the institutional structures that regulate care routines and the lives of residents. Encompassing the other three layers, Systemic Sonic Agency can be powerful as it often controls the resources and decision-making required to make significant changes. For example, psychoeducational materials

about dementia and the organization of participatory design workshops must undergo this level of review before being implemented. In the case of disruptive sounds made by residents with dementia, the issue often extends beyond personal coping or architecture to questions of staffing levels, care protocols, and institutional priorities. For instance, insufficient staffing might mean residents in distress vocalize for long periods before being attended to. From this perspective, unwanted sounds are not only an individual or social challenge but also a systemic signal of institutional limitations. Interventions at this level include embedding sound considerations into quality-of-life assessments or involving residents in discussions about institutional practices that affect how disruptive sounds are managed.

Outside of the ecological model, the theme of helplessness over aspects of the soundscape emerged from the first workshop. Participants expressed in interviews a feeling that there was nothing that anyone could do about the unwanted aspects of their soundscape. For example, one participant expressed the following regarding a recording taken of the loud sound of street traffic in their bedroom:

> *All I hear is traffic, which can't be helped. My room is on the North side, on the main street...and the hospital is just down, across the street. [laughs] That's just the way it is. And they can't do anything about that.*

Regarding the sound of a fellow resident calling out for help throughout the night, another participant shared: "Nothing I can do... So, it's just called life. Maybe they're in pain or something like that but what can I do? There's nothing I can do." These comments suggest that some participants viewed certain aspects of their soundscape as fixed or unchangeable. In these instances, sounds such as traffic or vocalizations from other residents were described without expectation of intervention or improvement. Participants often responded with acceptance, indicating a perceived boundary around what they could realistically change in their environment.

3.2 Stage Two: Imagining Soundscape Shifts

The results of the first workshop shaped the structure of the second. I considered several models of prototype-based participatory workshop activities, including design future-inspired fictional soundscapes (Lundmark et al., 2023), foley mockups, and electroacoustic mockups (Hug & Kemper, 2014).

However, the creation of prototypes at this stage of the study seemed misaligned. In the case of sounds participants wished to change, the barrier to such change was not necessarily a lack of technological development—it was the complex interconnectivity of the agents within the sonic ecology of care. Participants' observations mainly stemmed from internal beliefs and social interactions, and in the case of infrastructural sounds, it was policy and economics that prevented change rather than insufficient technology.

Furthermore, participants' observations focused on the presence or absence of a sound rather than its particular quality. For example, the sound of the air vent was not something the resident wanted changed; instead, they wanted silence. This factor made the idea of augmenting the recordings not particularly compelling. In most instances, residents had made it clear that the only augmentation they wanted was for the volume to be set to zero.

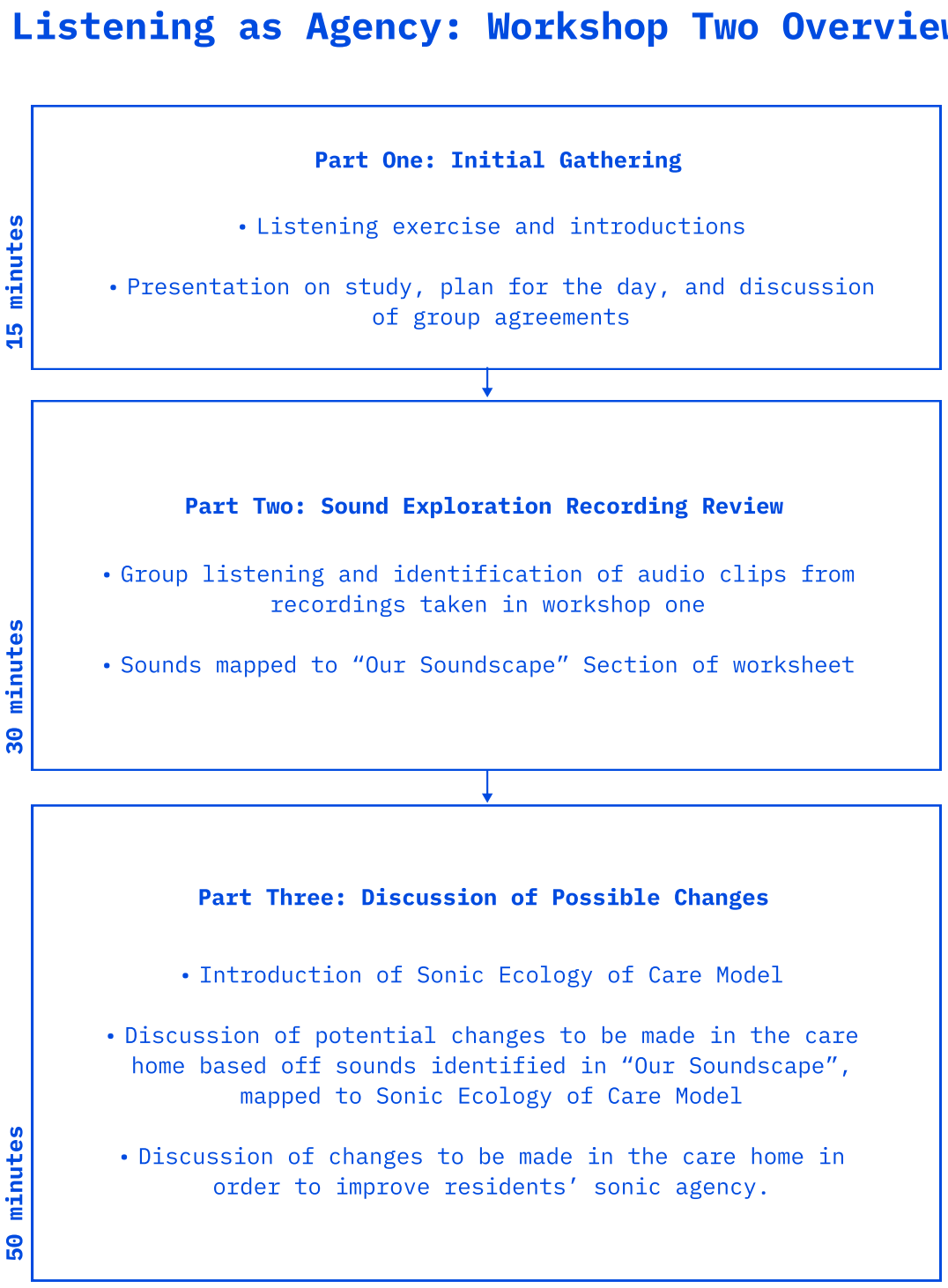
With these considerations in mind, I decided to use the second workshop as an opportunity to understand residents' ideas for changes they would like to see in the soundscape of the home, and how (or if) we could map those changes onto the sonic ecology

of care model. I also included prompts regarding sonic agency, asking how residents might feel more in control of their soundscapes.

3.2.1 Workshop Two

Figure 7

Workshop Two: overview of activities



The second workshop took place in the lower main floor of the care home, and participants gathered around a large table. As a priming exercise for both creative thinking and attunement to sound, I began the session by laying out a variety of sound-making objects on the workshop table (e.g., a mini synthesizer, wood blocks, a kalimba). When participants arrived, I invited them to experiment with the different objects and choose one they felt drawn to. When all the participants had arrived, I asked each of them to make a sound with their chosen instrument and share what the sound reminded them of or made them feel. Reactions varied from laughter to sharing of personal childhood memories and helped set a tone of openness and connection.

Figure 8

Objects for sound making provided during the warm-up activity at the start of Workshop Two.

Following the sound-making activity, I conducted a second listening exercise, during which I played clips of the sound recordings made by the participants in the first workshop. After each 10-to 20-second clip, I asked the participants to try to identify the sound. I wrote each identified sound on a sticky

note and placed it onto the poster printout for the workshop under “Our Soundscape”. Assessments of the sounds also came up during the priming exercise, mostly expressions of dislike (“It’s terrible! It’s so loud!”). After each sound had been listened to and identified, I asked the participants if there were any sounds that they did not get a chance to record in the first workshop that were significant to their daily lives.

In the second portion of the workshop, I introduced the Sonic Ecology of Care model, explaining that I had developed it after reflecting on the insights shared by participants in the previous workshop. I explained how I wanted to use the model to map how the participants might want to change their sonic experience or soundscape at the care home. I also described what each layer of the model referred to. For example, how “internal” meant factors that might influence our personal experience of sound, such as beliefs or preferences. I left pens, stickers, and sticky notes around the table, and I encouraged residents to use the supplies provided to express their ideas. During the conversation about changes to be made, I prompted residents to consider the different categories of the Sonic Ecology of Care

model. As they spoke, I wrote down their ideas and insights on sticky notes and added them to the diagram.

In the final portion of the workshop, I asked participants for their thoughts on how they might have more agency over their sonic experience in the care home. In a similar manner to the previous portions, I wrote a summary of their ideas on sticky notes and placed them on a designated spot on the diagram.

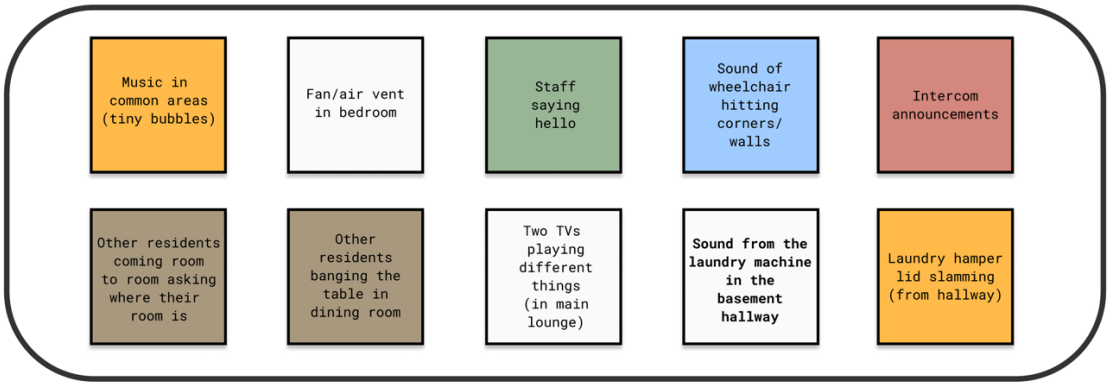
The workshop was recorded and transcribed.

3.2.2 Workshop Two Results and Analysis

Figure 9

Digitized version of sticky notes mapped to the Workshop Two mapping exercise.

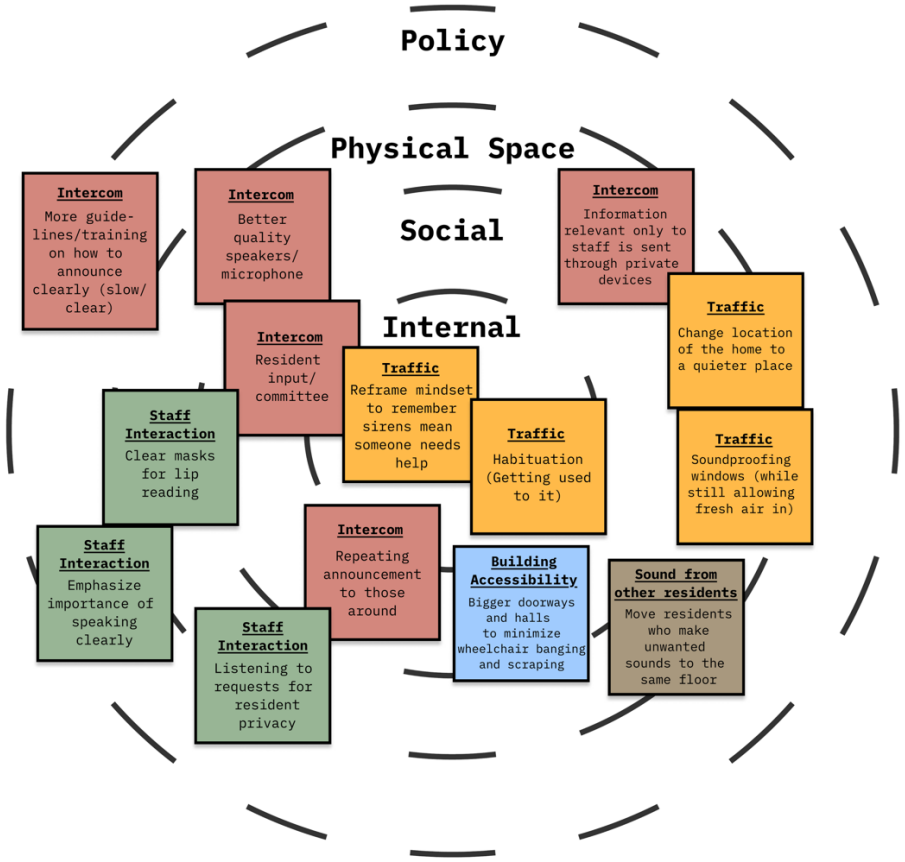
Our Soundscape:



What Can We Change?

How can we have more agency?

- More time with staff that is social and not medical
- More privacy/ less disruption by staff and residents in personal space
- More freedom of routine (for socializing/ conversation)
- Mutual support between residents (sharing, social advocacy)



The second workshop ultimately included a discussion of both the sounds recorded in the first workshop and new sounds that had not been previously discussed. For example, one of the priming activities was interrupted by an announcement about a staff education session taking place later that day. This interruption led to an in-depth discussion surrounding the issues with the announcement system and how we might mitigate them. The following table summarizes the residents' suggested changes to make to improve their soundscape, mapped to the Ecological Model of Care.

During the discussion, a few key sounds and proposed changes stood out as especially prevalent to residents:

Intercom Announcement System: The intercom system, used to make announcements that project throughout the entire home, is outdated and of low quality. A participant noted that the person speaking into the intercom often spoke too fast and too close to the microphone. In this particular example, a story shared by a resident highlighted the role of internal understanding and perception in the experience of sound: "[I heard] mumble mumble mumble [on the intercom] and then the doors all closed. It scared the living jebeezus out of everybody! What, is it going to burn down, or sink, or…?"

In this instance, the poor quality and technique of the announcement affected the residents' knowledge that the fire doors were closing as part of an emergency preparedness drill, leading to fear rather than the usual annoyance.

Potential solutions to the issue touched on infrastructure (replacing the intercom system) but also included social and relational approaches. Residents suggested new training guidelines for those using the intercom, perhaps even led by residents with relevant experience, that encourage proper speaking volume, enunciation, and distance from the microphone. Participants also suggested that for announcements on the intercoms that are not relevant to residents, staff could communicate through the "Sonim phones", private communication devices that staff already have access to.

Sounds of Street Traffic in Resident Rooms: Regarding the loud sound of traffic caused by the care home being located on a busy road across from the hospital, residents were initially resistant to the idea of any changes being made to mitigate the sound. A resident stated, "Traffic is traffic, and that's that. You can't do anything about the traffic." Initial suggestions for change centred around infrastructure approaches, such as relocating the

care home to a quieter part of town and improving the soundproofing of the windows while allowing fresh air to circulate. However, when the idea of habituation to the sound of sirens came up, a more internally based sentiment was introduced by a participant:

> *When I hear a siren, I think, oh, somebody needs help. So, that's not offensive to me. I can put up with that easily… We don't only hear with our ears, we hear with our heart, too.*

Although perhaps not a deliberate "design" solution, this participant's internal beliefs helped mitigate the potential discomfort caused by the sonic environment.

Sounds Made by Other Residents (With Dementia): Participants expressed frustration regarding sounds made by other residents who likely have dementia, such as repeated calls for help to staff and other repetitive vocalizations or behaviours. To try to assess any internal factors that may be contributing to the participants' frustration, I asked why they thought the other residents were making those sounds. Responses included feelings that they were trying to get attention from staff, and "Because they're not in this world. They're somewhere else in the past."

When asked to imagine potential ways to reduce the distress caused by noise from other residents, participants suggested "putting all the noisy people on one floor". One participant shared that they will often turn up the TV in response to the sounds or tell the residents to be quiet. In response to the idea of putting residents with dementia on a separate floor, I asked if participants felt this might further isolate those residents. A participant responded, "Well they've been isolated for so many years, they don't know anything else."

Difficulty Understanding Staff: Participants expressed difficulty understanding some of the staff, especially when wearing face masks. Potential solutions included the use of clear face masks, and providing more training on best practices when communicating with residents.

Intrusion of Personal Spaces: Several participants shared stories of distress when staff and residents enter their personal space without consent. For example, a participant explained how when they are using the toilet, "[a staff member] puts the key in [the door], I say, "excuse me, you can't come in!" And sometimes, they just keep on coming." Similarly, a resident shared that staff will knock and open the door to their bedroom without receiving

permission to enter. Regarding staff, it was suggested that more policies or training be put in place surrounding privacy.

A participant described how they keep their bedroom door locked at all times because otherwise, residents will come into their room. Another resident stated, “I have the same thing. I don’t mind the staff, but that [resident who is calling out], I have the door closed, she opens that door handle, and clicks the door open. All the time.”

Ideas Regarding Sonic Agency

In response to the prompt, “How could we have more control over the sounds at the care home?”, directly touching on sonic agency, the immediate response of one resident was, “...that’s something that has to come out of the 5th floor, right, where the bosses are!”. I responded by emphasizing that I wanted to hear their dreams and ideas for possible changes. The following discussion introduced four key changes surrounding sonic agency:

More privacy/less disruption by staff and residents in personal space: Participants underscored the importance of having their own private space. They suggested that staff receive training when hired on respecting resident privacy, such as not entering a locked room without the resident's prior consent. They also

shared frustration about confused residents entering their room, thinking it was their own.

Mutual support and advocacy among residents: Participants shared several stories of how they support one another. For example, one participant shared how they try to help a man who sits next to them at dinner time, who is partially blind, by describing where the items on his plate are. Another resident shared a story about sharing some of his lotion with another resident who had developed an allergic reaction to the cream provided by the care home. Furthermore, a participant helped advocate for another resident to obtain a fridge in their room, as most other residents already had one. The participant communicated this request to a nurse, who then had to pass the message on to somebody who could help facilitate getting the resident a fridge. This form of relational support amongst residents helped feelings of agency and control within the care home.

More freedom in routine: One participant emphasized a desire for more freedom in their routine, particularly regarding social time. They shared, “This place is such a strict clock. Like, it’s ten to three. We all have to disappear into the woodwork. Or else. We can’t stay behind and talk to [resident name] or

[resident name] or any other lady." The participant also expressed a desire to have more non-medical time with staff:

> *Well right now they're so busy that they can't watch TV with me. And I keep saying, there's 22 people on my floor, on every floor, it's busy… They have to change the diapers, change bed sheets, shower people, feed somebody… The staff are overworked.*

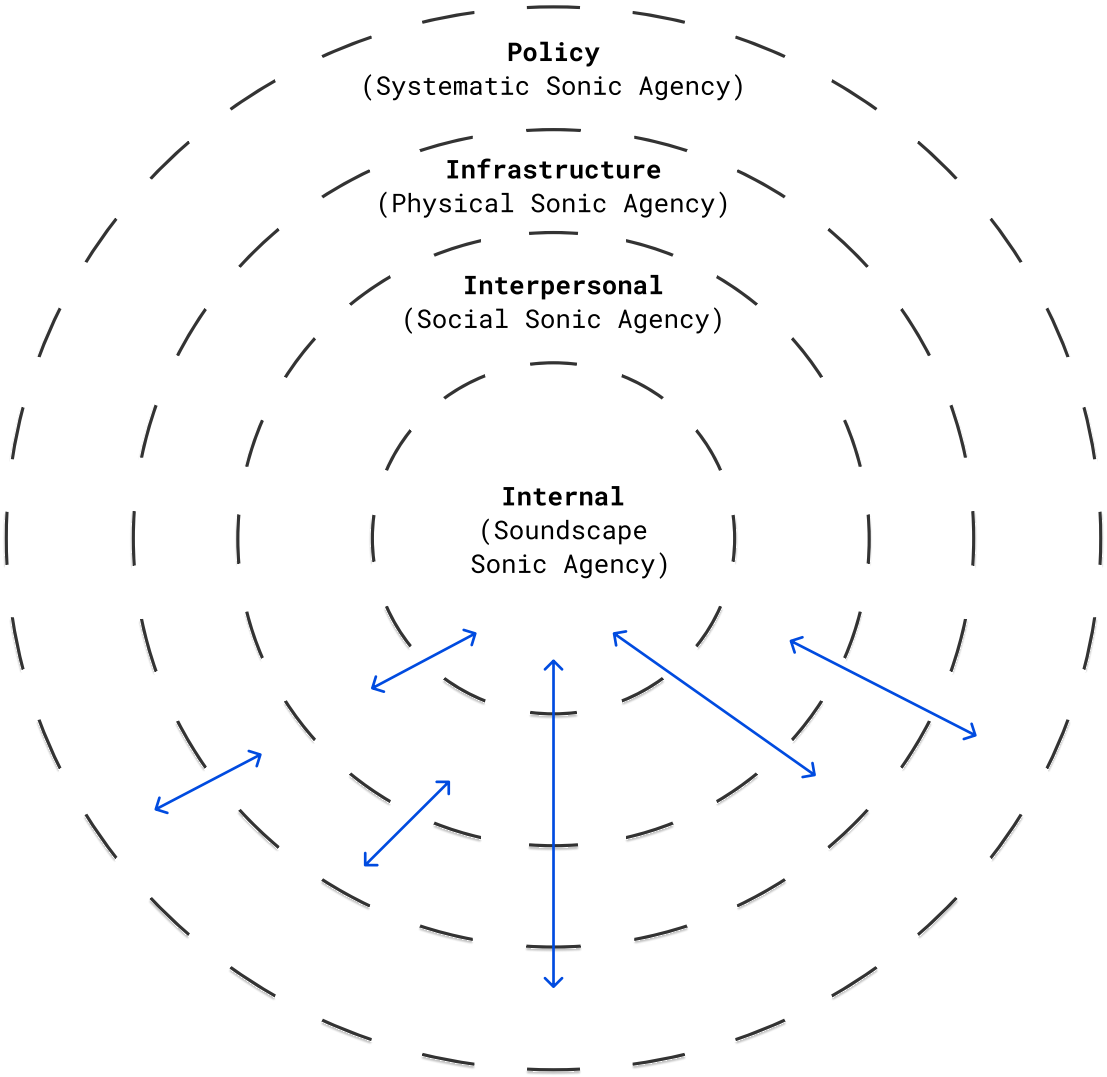
Involvement in the PD workshop as agency building: Although participants often expressed feelings of helplessness regarding their ability to change their sonic environment throughout the workshop, conversations at the end of the workshop revealed feelings of hope and agency through the outcome of the study activities. For example, the following exchange:

> *Participant x: We are being given a chance to help everybody. Is that right?*
>
> *Participant z: Especially the ones that can't talk for themselves. And there's a lot of them that can't talk. Too many.*

3.3. Applying Design: Intermediary Objects and Actors

Figure 10

Sonic Ecology of Care with the incorporation of intermediary objects and actors.



Returning to the Sonic Ecology of Care model following the second workshop, I decided to adjust the model to account for the concept of intermediary objects and actors. Rather than treating

design interventions as fixed affordances, this perspective emphasizes their mediating role in connecting residents' experiences to broader institutional and policy layers.

3.3.1 Intermediary Objects

Intermediary objects are materials or practices that translate lived experience across layers of the ecological model. They are design interventions that emphasize the contextual and relational nature of resident soundscapes.

For example, intermediary objects connecting residents' individual soundscapes with the outer layers of interpersonal, infrastructural, and policy contexts may include recorded listening sound explorations and immersive interviewing, which allow staff or policymakers to encounter residents' experiences indirectly through mediated sound and narrative. Other possible intermediary objects include facilitation guides, workshop materials, and design artifacts that embody insights and communication from the inner and outer layers of the Sonic Ecology of Care.

3.3.2 Intermediary Actors

In parallel, intermediary actors are those who translate and mediate between groups. If the workshop materials and the

facilitation guides are the intermediary objects, then the intermediary actors are those who facilitate workshops and enable change. In the context of a long-term care home, intermediary actors exist in a complex hierarchy of agency. In this workshop, residents expressed an understanding of this hierarchy, where they themselves were at the bottom, with staff above them, followed by management and policymakers. Several residents mentioned a sense of dependency on staff to implement the changes they desired, while also acknowledging that factors beyond the staff's control were at play, such as understaffing and architectural constraints. Participants attributed these limitations to the responsibility of management and policymakers. Although not related to sound, one exchange between participants embodied this belief, where a resident shares a story about trying to help a fellow resident get a fridge for his room:

> *Participant x: I have a fridge, I don't see why he can't have a fridge. And I was told to talk to the nurse, and I did that yesterday. I asked her today and she said she didn't know what was happening. She has to talk to somebody who knows. Who knows?"*

Participant y: Probably on the [floor where the managers are] ⋆laughs⋆

The involvement of designers of intermediary actors facilitates communication between the levels of this hierarchy of agency. By conducting workshops that involve the expression of residents' lived experiences, and through facilitating the creation of intermediary objects, staff and management may have more opportunities to understand and act upon the needs of residents.

4.0 Discussion

This study aimed to investigate how PD methodologies informed by sound studies can enhance resident agency over the sonic conditions of institutional life. By narrowing focus to sound, this research offers a lens for addressing institutional complexity in ways that center subjective experience and relational care.

4.1 Sonic Ecology of Care

While subjectivity is central to sound studies, this project sought to move beyond descriptive accounts of individual differences by codifying subjective experiences within the Sonic

Ecology of Care model. For example, residents' interpretations of disruptive vocalizations were mapped not only as personal perceptions but as relational factors influencing the wider care environment. By situating subjective experience within the layered model, these accounts highlight opportunities for creating intermediary objects and interventions, such as psychoeducation, infrastructural changes, or policy adjustments. In this way, subjectivity becomes both a method of inquiry and a framework for action.

Bronfenbrenner's Ecological Systems Theory (Bronfenbrenner, 1979) serves as the base for the Sonic Ecology of Care Model. Originally developed as a framework for developmental psychology, the theory explains human development as shaped by dynamic interactions between an individual and multiple nested environmental systems, ranging from immediate relationships to broad cultural and historical forces. Designers have used Ecological Systems Theory in workshops such as Hay and colleagues' (2024) study on factors influencing service designers' capacity to address power dynamics in their work. The Sonic Ecology of Care Model incorporates the nested and dynamic nature of Bronfenbrenner's model. However, it mitigates its

broadness (noted as a pain point in Hay (2024)) by focusing specifically on institutional soundscapes, which allows for mapping of current experiences but also provides a way to communicate and break down design solutions that are complex and abstract.

In the context of long-term care, where many aspects of the environment are fixed and funding for infrastructure modification is limited, considering possible intermediary objects between internal, social, and policy-based changes that can be made to improve resident experience is critical. Public health research, service design, and other fields of practice work extensively with the interpersonal and policy-based aspects of care homes. However, the subjectivity of sound, as explored in the current study, highlights the significance of the internal as a component within the design of long-term care homes. This subjectivity echoes the nature of intermediate objects in that their ability to act as a mediator is not exclusive to a material function, but also to their contextual meaning that arises through interaction (Boujut & Eric, 2003).

The layers of this model are overlapping, dynamic, and contain multidirectional relational factors. For example, in the

case of sounds made by other residents with dementia, the most obvious approach may be to modify the infrastructure - rearranging room assignments so that residents with dementia are separated from other residents, adding more soundproofing between rooms, or installing white noise machines at night. Ultimately, these approaches may help address residents' concerns about unwanted sounds. Indeed, in the current study, residents suggested moving residents who make disruptive sounds to a separate floor.

However, these solutions alone may only further alienate residents from one another (Graham, 2018) and, in the case of adding white noise, lead to more unwanted sounds depending on resident preferences. Beginning at the level of soundscape, as described by the Sonic Ecology of Care model, we would instead approach this dilemma by assessing the factors influencing individual perception of sound. In the current study, many of the participants' concerns about other residents making unwanted sounds were underscored by beliefs surrounding the reason for the sounds, including confusion, concern, and feelings of anger due to the perception that the sounds were being made deliberately and with malicious intent. Without making any change to the

physical environment, feelings of disturbance may be reduced if residents receive resources regarding the nature of dementia, its effects on behaviour, and the care provided by staff to residents living with the condition. The reciprocal relationship between soundscape and interpersonal connections is also made evident through the development and provision of these educational materials. The materials, developed by staff or outsourced, would ultimately be shared with residents, furthering the relational connection.

Ultimately, designers may still need to implement infrastructural changes, and not all residents may experience relief from this internally based approach. However, this approach underscores a central contribution of the study: by attending to the internal and interpretive dimensions of sound, designers can surface previously invisible levers for change. In care environments where residents' agency is often limited, these internal and relational interventions may prove more feasible, sustainable, and empowering than infrastructural overhauls alone.

4.2 Participatory Design and Sonic Agency

The study workshops offered residents an opportunity not only to describe their environment but also to imagine and

communicate alternatives. The act of recording sounds, listening back, and discussing their meanings helped surface affective and experiential layers that would have been difficult to access through verbal discussion alone. Several participants expressed appreciation for the space to share, reflect, and contribute ideas that might help not only their own experience but also those of others, suggesting that participatory design can be a form of agency-building in itself.

In this study, I employ the term sonic agency to describe how residents interpret, adapt to, and seek control over their sound environments. While Brandon LaBelle (2018) defines sonic agency as sound's capacity to shape social dynamics and redistribute power, I adapt the term to institutional contexts where physical, social, and policy structures constrain residents' capacity for agency.

Sonic agency is not only about the production or resistance of sound, but also about the interpretive, relational, and communicative practices through which residents make sense of what they hear. For example, sonic intermediary objects exemplified residents' frustrations regarding privacy, such as

doors opening without consent, muffled voices behind masks, and intercom announcements that were unclear or alarming. By focusing on a specific, embodied experience, such as sound, concerns that were previously unarticulated also arose, even when they did not relate to sound (for example, requesting more respectful routines).

In this way, sonic agency functions less as a discrete outcome and more as a dynamic process involving intermediary objects and actors. Sound reveals broader tensions in institutional life and becomes a site where residents negotiate control, belonging, and dignity. The Sonic Ecology of Care model helps surface these points of negotiation, showing that what appears at first as “non-sonic” feedback is often inseparable from how sound structures experiences in care.

By foregrounding listening as a design practice, *Listening as Agency* reconfigures the role of the designer. Rather than acting as a central decision-maker, the designer becomes an intermediary actor, facilitating communication between levels of the institutional hierarchy and creating intermediary objects that enhance the soundscape. The findings of this study emphasize

models of “institutioning” (Huybrechts et al., 2017), which reposition institutions not as fixed systems, but as evolving networks of human relationships. Participatory sound design, in this light, is not simply about modifying environments—it is about co-producing new ways of being in relation to each other within them. This echoes Brandon LaBelle’s (2018) framing of sonic agency as harnessing the affective and subjective nature of sound to build compassion and relationships, which designers can use to redefine systems of power and control. Indeed, residents in the current study emphasized relational approaches to sonic agency, both within the context of PD and within day-to-day exchanges between residents and between residents and staff.

4.3 Methodological Reflections

Focusing on sound as an entry point to institutional life proved to be a generative approach. The workshops surfaced not only specific sonic issues but also broader concerns about autonomy, privacy, respect, and daily routine. In fact, many of the ideas for change discussed by residents were not directly related to sound itself, but to relational and procedural factors that shape sonic experience. These findings suggest that sound

can act as a diagnostic surface, revealing systemic tensions that remain unspoken.

Although this research draws directly from interaction design and participatory design traditions, its contribution lies less in demonstrating adherence to a fixed professional role and more in the capacity to move across disciplinary boundaries. By combining methods from sound studies, ethnography, and design research, the project demonstrates an *osmosis between practices*—a fluid exchange of approaches and modes of transmission that enriches the design process. This flexibility is not a departure from interaction design, but an expansion of it: a demonstration that interaction design can include sensory, relational, and institutional dimensions, and that designers can act as facilitators of listening and co-creation across complex care systems.

Several reflections emerged for future iterations of this methodology. First, providing residents with personal audio recorders could enable them to document their soundscape more flexibly (e.g., Bartlett 2023). During the interviews and discussions, participants noted several sounds as significant that did not occur within the allotted time for sound

exploration. For example, all residents shared frustration around the consistent slamming of the laundry basket lid in the laundry rooms, which they could hear in their own personal rooms throughout the day. One resident made a lengthy recording during the sound exploration, hoping to capture the sound of the laundry lid closing, but without success.

Regarding future workshops, I recommend structuring the second workshop such that the facilitator integrates the discussion of potential changes into the review of sounds from the first workshop. That is, the facilitator plays a recording from the first workshop, and participants immediately discuss changes that could be made in relation to that sound. This adaptation would likely facilitate a more direct correlation between the recorded sound and the changes suggested by participants. Additionally, not all residents were enthusiastic about the sound priming exercise with the instruments. One resident refused to participate, feeling that since he was not a musician, he should not be playing an instrument. Although I intended for the exercise to help residents become more comfortable with creative expression of sound before beginning the brainstorming session, it may be helpful for future workshops

to use creative engagement with the recorded sounds from the first workshop for this purpose. This adaptation may help alleviate feelings of confusion regarding the relationship between the exercise and the workshop activities.

A crucial aspect of the current study was to involve care home staff as part of the study team. The staff study team members facilitated the recruitment of participants, booked and navigated spaces within the home, provided care and accessibility support to participants, and performed other tasks as needed. During the workshops, the care staff study team members provided valuable insights regarding the care home design and possible changes to be made for Sonic Agency. However, these insights were not included in the current study, as it focused on resident insights. In future iterations of this methodology, including institutional staff and leadership as participants would be beneficial.

Lastly, considerations arose regarding the ethical implications of introducing Deep Listening practices to individuals living in unpleasant sonic environments. At the beginning of the second workshop, a participant told me that they had been hearing all sorts of new things since the last workshop,

and that most of them were not good. This shift in attention to listening can be empowering and revealing, but it can also be distressing and difficult to disengage from once it has been introduced. Working towards implementing changes ideated in these workshops, ideally through participatory prototyping, may help mitigate feelings of helplessness and disturbance caused to new Deep Listeners.

5.0 Conclusion

> *Everybody is good here—nice, caring and helpful. Thanks for sharing the study with [us] here today. So we can all share. I'm very appreciat[ive].* (Participant, Workshop 1).

This study demonstrates that participatory design methods informed by sound studies can illuminate new paths for resident agency in institutional care by attending not only to the acoustics of a space, but to how sound is interpreted, shared, and resisted. Through the development and application of the Sonic Ecology of Care model, this research reveals the layered complexity of institutional soundscapes. It provides a framework through which designers, staff, and residents can collectively map and reimagine their sonic environments.

A key future direction is the participatory development of prototypes based on insights developed from the first two workshops, ranging from service design interventions to physical products. These could include training modules for staff on issues such as best practices for intercom use and respecting the privacy of residents, as well as physical changes like cushioning on laundry bin lids to reduce noise when closing. Additionally, staff could provide psychoeducational materials on dementia for residents. Facilitation of social and policy-based changes may also be an outcome, such as support in connecting resident councils with designers and resources. Further workshops enable the proposed changes by residents to be implemented, allowing this new methodological approach to reach its full potential.

Drawing on the structure and materials of this study, I aim to develop a toolkit for other designers working in care homes and institutional settings who are interested in facilitating participatory sound workshops. This toolkit will include facilitation scripts, accessibility adaptations, and sample activities. More accessible recording devices may also be required. The toolkit could also be used in part by non-designers working and living in institutional contexts. Expanding

participation to include staff and institutional leadership as active collaborators could further enrich the relational ecology necessary for lasting change. The shift to listening produced by this methodology can reveal aspects of soundscapes that expand beyond sound.

Finally, this work suggests that sound can be a powerful diagnostic and relational medium. The shift to listening produced by this methodology can reveal systemic patterns that extend beyond the auditory, touching on dynamics of care, power, privacy, and belonging. In this way, participatory sound design becomes not only a tool for environmental change but a practice of collective attention, attunement, and transformation.

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Appendix A

Link to my listening journal:

https://drive.google.com/file/d/1QqDREQ4zwRbjeSsId8H5C_xijyEsEmC4/view?usp=sharing

Appendix B

Listening as Agency Study: Sound Exploration Facilitation Script

1. Introduction (Before Recording)

- "We'll walk around Windermere for ~25 mins to record sounds important to your daily life."
- "Do you have any sounds in mind?"
- "Keep listening as we go — more might come to you!"
- **Ask: "Would you like to hold the microphone, or should I?"**
  → If they want YOU to hold it:

  "Ok, let me know if you change your mind!"

  → If they want to hold it:

  "Great! To record, press this red button [point]. Press it again to stop. Let me know before you start."

2. Recording a Sound

1. **Check the sound levels:**

- Put on the headphones to ensure the sound is clear and at a good level.
- Help the participant put on the headphones and ask: *"Can you hear the sound you want to record?"*
- Adjust the playback volume on the side of the Zoom if needed. Ensure the input meter is in the midrange (not peaking or too low).

2. **Starting the recording:**

→ If you are holding the microphone:
"Where would you like me to point the microphone?"
"Would you like to press the record button when you're ready? Or do you prefer if I press it?"

→ If the participant is holding the microphone:
"When you're ready, press the red record button to start, and press it again when you'd like to stop.

- While recording, keep an eye on the input meter to ensure the levels remain good. Adjust the volume dial as needed.

3. Listening Back

- "Let's listen to the recording to make sure it sounds right."

→ **If you're holding the mic:**
"Would you like to press play?"

→ If they're holding it:
Guide them to press play.

- Ask: "Does that sound the way you wanted it to?"
- Press stop (or have them press it)
- Repeat for the next sound.

Prompt questions:

To facilitate exploration without biasing the participant's choices, use the following neutral prompts:

- "What area of the home would you like to go to next to record sounds?"

- "What sound(s) would you like to record?"

- “What sounds are significant to your daily life here at Windermere?”

- “Are there any sounds that stand out to you as part of your everyday routine?”

Appendix C

Quick Guide for ZOOM H6 Handy Recorder created for use by study staff while facilitating sound explorations.

Appendix D

Description of Participant Sound Exploration Recordings and Insights from Post-Sound Exploration Interviews.

Content of Recording	Participant Insights
Sound of street traffic as heard in the participant's bedroom.	The sound of traffic is constant. Participant says they have developed "selective hearing" and grown accustomed to it, as there is nothing anyone can do about the noise.
Persistent metallic clanging of another resident hitting their hand against the dining hall table, with ambient music playing in the background.	No insights shared.
A staff member speaking in a different language to a colleague with music in the background.	Participant dislikes when people around them, especially staff, talk to each other in a language other than English. It makes the resident "think they're talking about me, and the way I look."

Gordon Ramsay playing on the TV in resident's bedroom.	Participant likes Gordon Ramsey and keeps his show on the TV on throughout the day. They note that at night, the sounds of people calling out for help are of concern.
Mechanical whirring and airflow of HVAC in resident's room.	Participant finds the noise irritating because it never stops. Feels that the fan system has worn down with time, but that no one wants to spend money on fixing it since they will likely tear the building down in coming years.
Recording taken in hallway in front of resident's bedroom, sound of another resident hitting walker rhythmically against the floor, then dragging it across the floor	Resident expresses confusion about why the resident in the recording makes sounds when they don't have to. Describes other behaviours, such as vocalizations, that the

to create a loud squeaking sound.	resident in the recording does at other times.
Two staff members having a conversation in a non-English language. Whir of airflow through vents, occasional noises of doors closing, people rolling carts, keys jingling.	Participant was trying to record the sound of the laundry hamper lids closing but it was too late in the day. The hampers make a loud thud that the residents can hear in their rooms. The resident finds the sound irritating, as it goes through the walls even when the door is shut.
Sound of soft resonant bells and chatter of different voices and people moving around.	Recording is of other residents playing games and watching TV. The participant feels that they are all having fun and that it is good for

	them to be doing these things rather than being bored.
Study team member softly says "Are you going to say hi?" and then we hear 3 knocks against what is presumably a door. The door creaks and we hear a new voice say "Hi" and then the participant saying "Hiii" in return. The new voice becomes more animated- "Hi [Participant name]!" and the participant laughs happily. "Hi [participant name]!" the voice says again. "How are you! You wanted to see me?" And the participant vocalizes affirmatively. "Yea, you can come in". The participant vocalizes softly.	Elevator up to the 5th floor where there is a hair salon. Participant says they are due for a haircut for the summer. They also saw the office of the participant's social worker, so they went to say hi.

Electrical buzzing, footsteps, staff greeting the participant and asking about the study. Conversations from a TV or radio.	Recording of the 11th floor because the participant likes the quietness of the floor. They said the floor that their room is on is okay, but that there is a resident there who calls for help all day long, and in the morning, there are loud banging sounds of the laundry lids closing.
Recording begins with a conversation between staff and residents in the elevator. The elevator arrives in the lower main floor and the participant records their journey down the lower main floor corridor. We hear sounds of them being greeted by staff, and a loud mechinical whirring and	Recording is of the journey to the lower main floor and the sounds of the laundry room as heard from the hallway. The participant felt that the sound would hurt the ears of staff working in the lower main floor. They had only been down to the lower main floor once before.

banging sound that grows louder and softer as the participant approaches and passes the laundry room.

We hear a loud mechanical whirring sound, likely the sound of the laundry room. There are some faint voices. There is the beep of the elevator and the announcer voice say “going up”, and cheery music suddenly starts. We hear someone gasp. The participant says "hiii". “HeLLO!”, a new voice says, and the participant vocalizes. Someone begins to sing.

Recording of the participant’s encounter with a staff member while on the elevator. The participant recorded the encounter because “I see her and she knows me since I lived here for 3 months- makes me feel happy."