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Empathic participation: Designing a game to engage social organisations in age-inclusive neighbourhood development

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ABSTRACT

In participatory societies, social organisations, including housing and care providers, must involve older adults in neighbourhood (re)design to support independent living. However, despite the availability of numerous participatory tools, their application in complex spatial projects often falls short, leaving a significant gap between organisations and residents, leading to exclusion and frustration. To address this, professionals within social organisations must develop a deep and empathetic understanding of how participation processes affect older residents and their living environments. This paper introduces a serious game specifically designed for professionals in social organisations to enhance their awareness of these dynamics. The participation game is developed using the four phases of the Empathic Design Framework. First, the exploration phase included a literature review and living lab research, identifying requirements and boundary conditions for the participatory process, such as communication, expectation management, and ownership. Secondly, expert interviews shaped the game's design, incorporating elements like a modified participation ladder and personas to simulate real-world participatory challenges. Iterative testing and refinement followed, leading to validation with end-users. The participation game successfully enhances empathic understanding of the challenges older adults face in participatory processes among professionals. Making the game ready to embed in social organisations to promote inclusive and empowering design practices, align expectations and foster meaningful participation.

Keywords: Citizen participation; Neighbourhood design; Serious game

1. INTRODUCTION

Housing, and particularly independent living, is a fundamental need, and individuals should have the right to autonomy in decisions regarding their living conditions. However, in current urban development practices, residents are often not meaningfully involved in decision-making processes (Alhassan, 2025; Papastavrou Brooks et al., 2024). This issue is especially pertinent when considering housing for older adults, which is a pressing concern for social organisations and institutions – such as social housing associations, care organisations, and municipal policymakers. Due to demographic ageing and associated policy shifts, there has been a growing emphasis on 'ageing in place', which requires older adults to live independently longer (van Hees, 2017; van Helder et al., 2020). This shift highlights the increasing importance of neighbourhood environments for vulnerable older residents and the critical role of social organisations in shaping inclusive and supportive communities.

Participatory design offers a valuable approach for social organisations to ensure that older adults have a voice in shaping their living environments. Older residents are experts in their own lived experiences, and their involvement leads to better-designed spaces that align with their actual needs (Sanders & Stappers, 2008; Borer, 2010). Moreover, participation fosters a sense of autonomy and control among vulnerable older adults and enhances their self-determination and community engagement (King et al., 2020; von Faber et al., 2020). Furthermore, inclusive participation ensures that marginalised groups are represented in decision-making processes, leading to more equitable and socially just neighbourhood developments (Rossi & Tuurnas 2019; IAP2, 2019).

1.1 Participation tools and serious games

Various participation tools and games have been developed to assist designers and organisations with methods for facilitating participation, with increasing interest in serious games used for urban development (Ampatzidou et al., 2018). Serious games—designed not for entertainment but for learning—offer an interactive way to engage stakeholders in complex real-world challenges (Naul & Liu, 2020; Susi et al., 2007; Ampatzidou et al., 2018; Bayeck, 2020). While often associated with digital formats, serious games can also include analogue approaches such as board games or role-playing exercises. As serious games are well-suited for creating immersive experiences, they have been applied in various fields, including education and professional training, to enhance understanding, develop empathy, and facilitate collaboration (Belman & Flanagan, 2010; Zanjirani et al., 2024; Ampatzidou et al., 2018; Bayeck, 2020; Olivier et al., 2019). In the context of participatory urban developments, serious games have been linked to simplifying the complexity of urban issues and making them more comprehensible, encouraging social learning and skills development, and to making participatory processes more accessible to engage in (Ampatzidou et al., 2018).

1.2 Misaligned participation

However, these potential benefits of tools and games in participation processes are only effective if implemented correctly. Without internal motivation from organisations to involve residents, participation can be perceived as time-consuming, costly, and difficult to implement effectively due to pressing workload (Kim & Schachter, 2013; Ianniello et al., 2019). Internal misalignment, defined as a lack of coherence or agreement among goals, values and expectations both within organisations and between different stakeholders, further complicates the process. As a result, participation is often outsourced to external consultants, limiting its integration into long-term decision-making structures (Ianniello et al., 2019). This approach risks reducing participation to a procedural formality rather than a meaningful practice that fosters collaboration between organisations and residents (Ianniello et al., 2019).

At the same time, urban redevelopment decisions are influenced by multiple factors beyond the needs of residents, yet these decisions directly shape their daily lives. Professionals of social organisations who work closely with residents often understand these impacts best, but they are not always involved in key policy decisions (Ianniello et al., 2019). While renovation and redevelopment are familiar processes for social organisations, integrating resident participation in these processes remains challenging, as established institutional routines and bureaucratic structures make it difficult to embed participatory practices into everyday operations (Brookfield et al., 2020). To ensure meaningful participation, professionals within social organisations must develop a deep and empathetic understanding of how participation processes impact older residents. This requires shifting perspectives within organisations, aligning internal priorities, and recognising participation not as an obligation but as an opportunity to build more inclusive and effective policies (Ianniello et al., 2019), even before involving residents in the process. Building on this, the following research question arises: *How can social organisations enhance awareness among their employees regarding the importance of participation in neighbourhood (re)design for vulnerable older adults?* This paper addresses this question by presenting a serious game as a tool to illustrate the complexities of participation, encouraging organisations to take greater responsibility in fostering meaningful engagement, using awareness as a starting point.

2. METHODS

This study aims to design a serious game for social organisation to develop a deep, empathetic understanding of how participation processes affect older residents and their living environments. The game aims to foster more empathetic, inclusive and empowering participatory practices. To achieve this, the game development followed the four phases of the Empathic Design Framework (Mohammadi, 2017): Explore, Translate, Process, and Validate (Figure 1). Although not explicitly developed for game design, this framework is well suited to aligning with users' experiences, in this case, the employees of social organisations, by adopting an empathetic and human-centred approach. For this research, we divided the framework into establishing and prototyping (Figure 1), which will be further explained in the coming sections.

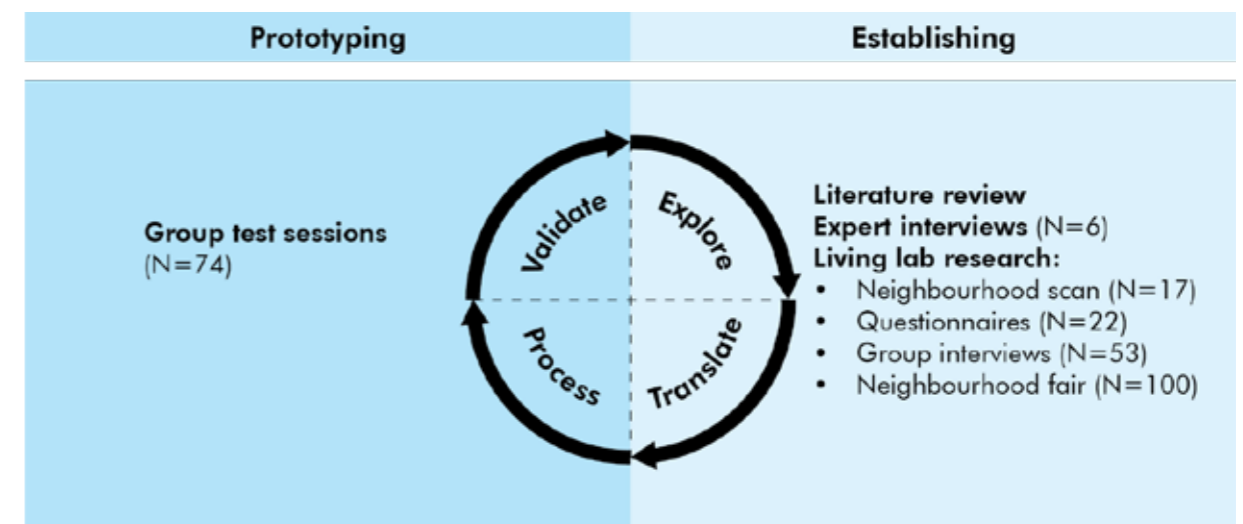


Figure 1. Study design: the four phases of the Empathic Design Framework are divided into two research parts: Establishing and Prototyping.

2.1 Establishing: Explore & translate

To inform the design of the serious game, an in-depth understanding of participation with vulnerable older residents was required. These two elements—participation insights and game design—were the focus of the first two study phases: explore and translate. The research in these phases consisted of a literature review, a living lab study and expert interviews, as described in the following paragraphs.

Literature review

First, a literature review was performed to get an overview of existing knowledge on how to involve older adults in designing their own living environments. A comprehensive search was conducted in January

2022 using the search engines Crossref, Google Scholar, and Scopus. The search was limited to studies published within the last decade to ensure relevance. The themes of the keyword strings included [senior participation built environment], [senior participation neighbourhood], and [senior co-creation neighbourhood]. Furthermore, additional papers were included by looking at references of relevant articles. In total, 2939 records were identified (Figure 2). After removing duplicates, non-English titles, non-original works, theses, not-peer-reviewed works, and reports, 1175 remained. Next, iterative selection cycles were performed, starting with title selection. Titles were selected based on whether they included the target group (older adults), the context (neighbourhood level) and/or methods or frameworks for participation. Hereafter, the abstract selection was performed using the same inclusion criteria. Eventually, 18 papers were included for full paper analyses (Figure 2).

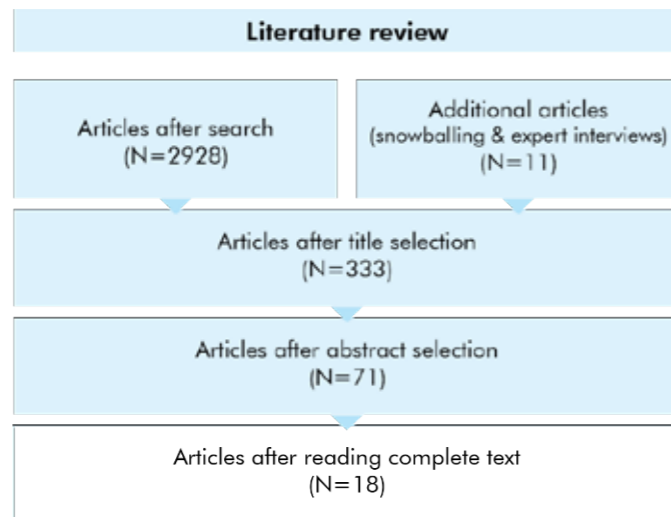


Figure 2. Flow chart of the paper selection process.

Living lab study

To complement the literature review, a living lab study was conducted in the neighbourhood Voldijn located in Waalre, the Netherlands. This neighbourhood is currently redeveloped, engaging social organisations alongside older residents in a participation process. Studying this real-life transformation project provided valuable insights into the different needs and expectations of social organisations and older residents regarding neighbourhood development and their involvement in the process. Various methods were used (Figure 1) to gain a comprehensive understanding of participatory involvement in a redevelopment project.

Expert interviews

Lastly, to translate these findings from the literature review and living lab study into the game design, participatory design and serious gaming experts (N=6) known in their field were interviewed online. A semi-structured interview guide was set up, covering topics regarding participatory design in practice (examples of methods and tools to include older adults) as well as the opportunities and limitations of serious gaming. These interviews explored how the insights about participation with vulnerable older residents could be effectively incorporated into the participation game.

2.2 Prototyping: Process & Validate

The design and validation of the game took place in the last two phases of the study: process and validate. After designing the game, ten testing sessions were conducted to refine its mechanics and content (Figure 3). Each session involved between 5 and 11 participants, with one researcher acting as facilitator and another observing. The observing researcher took extensive notes during gameplay. Participants (N=74) included employees, managers, and policymakers from housing corporations, care organisations, municipal authorities, architects, researchers in the social domain, residents, and students. Following the game, a debriefing took place using reflection cards, after which participants provided feedback on the game itself. This iterative process enabled modifications after the initial testing session, enhancing the game's effectiveness, with revised versions tested in subsequent sessions.



Figure 3. One of the testing sessions during the conference 'Verbindingsfestival Samen Buurten 2022'. (Picture taken by conference organisation Samen Buurten).

3. RESULTS AND ANALYSIS

3.1 Establishing: Explore & translate

In the first two phases – explore and translate – eight requirements and boundary conditions for the game were defined (Table 1). The living lab research and literature review identified key challenges of participation with older adults to be addressed in the game, such as the need for clear communication (Scharlach & Sanchez, 2010) and expectation management (King et al., 2020; Tuckett et al., 2018; Leino & Puumala, 2021).

Table 1. Requirement and boundary conditions of participation with vulnerable older adults

Requirements and boundary conditions		Derived from:
Communication to capacity	Communication methods should match the capacities and resources of older adults, accounting for digital literacy and sensory impairments.	Scharlach & Sanchez, 2010; Living lab
Experience & empathy	Participatory design must be based on empathy, ensuring environments reflect the needs and experiences of older adults.	King et al., 2020; Tuckett et al., 2018; Ellery & Ellery, 2019
Safety & trust	Building trust is essential. It requires transparency, security, and clear communication at every stage.	Scharlach & Sanchez, 2010; Srivarathan et al., 2019
Expectation management	Expectation management must be maintained throughout the process, clarifying possible contributions and ensuring realistic outcomes.	King et al., 2020; Tuckett et al., 2018; Leino &

		Puumala, 2021
Richness lies in variety	The diversity among older adults necessitates a variety of participation methods to include different voices.	Living lab
Life experiences	The life experiences of older adults should be valued, encouraging active listening and inclusive group discussions.	Living lab
Reflecting on goals	The project's goals should be revisited regularly, maintaining alignment with initial agreements and clearly communicating any changes.	King et al., 2020; Tuckett et al., 2018; Pawlowski et al., 2017; de Boer et al., 2021
Include context	The unique emotional, social, and spatial context of each project requires adaptable design approaches.	Pawlowski et al., 2017

As an experiential medium, serious gaming allows players to engage with the subject matter in a more impactful way than passive learning methods, through immersion, engagement and motivation (Naul & Liu, 2020). Expert interviews underscored its potential to create emotional resonance and lasting impact, particularly by integrating both emotional empathy, which can be described as an emotional experience invoked by someone else's emotions, and cognitive empathy, which develops through intentionally adopting another person's perspective (Stephan & Finlay, 1999; Belman & Flanagan, 2010). In this context, it is important to distinguish between how empathy can be used in gameplay to incite awareness and what role it can assume in shaping inclusive policies within social organisations. For awareness both emotional and cognitive empathy are important, whereas regarding introducing inclusive policies, empathy is understood as the ability of professionals to temporarily and consciously put themselves in the shoes of residents – not as emotional empathy, but as a means to better coordinated action in design and decision-making.

These insights helped shape the structure of the game. Since the game relies heavily on player interpretation, each session unfolds differently while aiming to deliver a consistent experience. To ensure this consistency, the game follows three main structural components: 1) eliciting emotional empathy through **tangible consequences**, 2) **immersion** through setting and character roles, and 3)

redirection through a facilitator & **conclusion** with a collective debriefing centring cognitive empathy. In the following paragraph, these components are discussed more in-depth.

3.2 Prototyping: Process & Validate

After identifying the requirements, boundary conditions and form of the game, the game was further developed through an iterative design process. The boundary conditions helped determine what the players should experience during the game, while the expert interviews provided insights on how to achieve that experience. The final version of the game consists of eleven elements (Table 2, Figure 4 & 5), all relating to one or more of the structural components outlined in the previous section.

Description of the game. The game simulates the renovation of a residential care complex where five to eight players, each assuming a persona, experience a participation process under the guidance of a facilitator. The game is structured around an interpretation of Arnstein’s participation ladder (1969) (Figure 5), illustrating the shifting influence of the residents depending on the position of the group pawn on the ladder. The location of the pawn changes after discussions and unexpected events, meaning that at times, residents have the most decision-making power, while at others, they are merely observers. Each player is assigned a position on the ladder as a personal goal. However these goals are a decoy, as the game cannot be won or lost: the true aim of the game is to experience as many rungs of the ladder as possible to help foster awareness of participatory dynamics. The game ends when the allotted time runs out or when all discussion cards and unexpected events have been played. The game concludes with a debriefing, in which players can share their experiences during the game with each other.

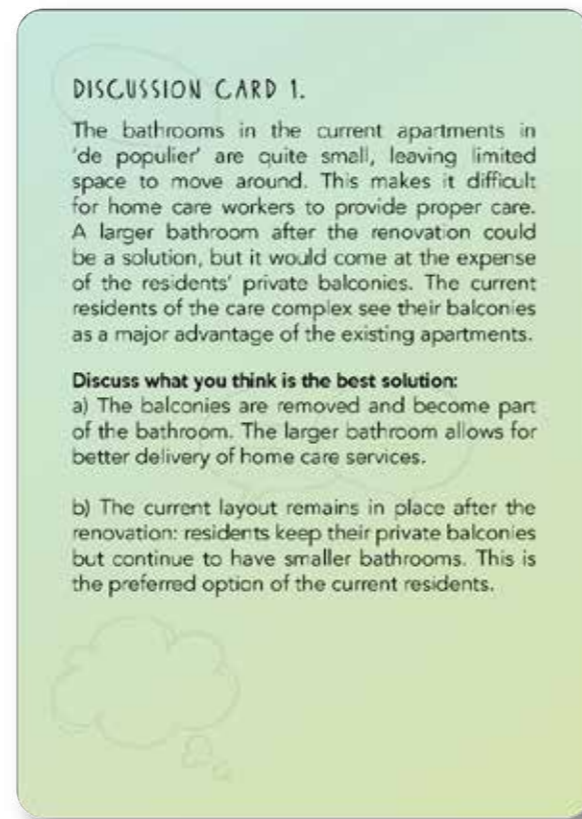


Figure 4. Example of a discussion card

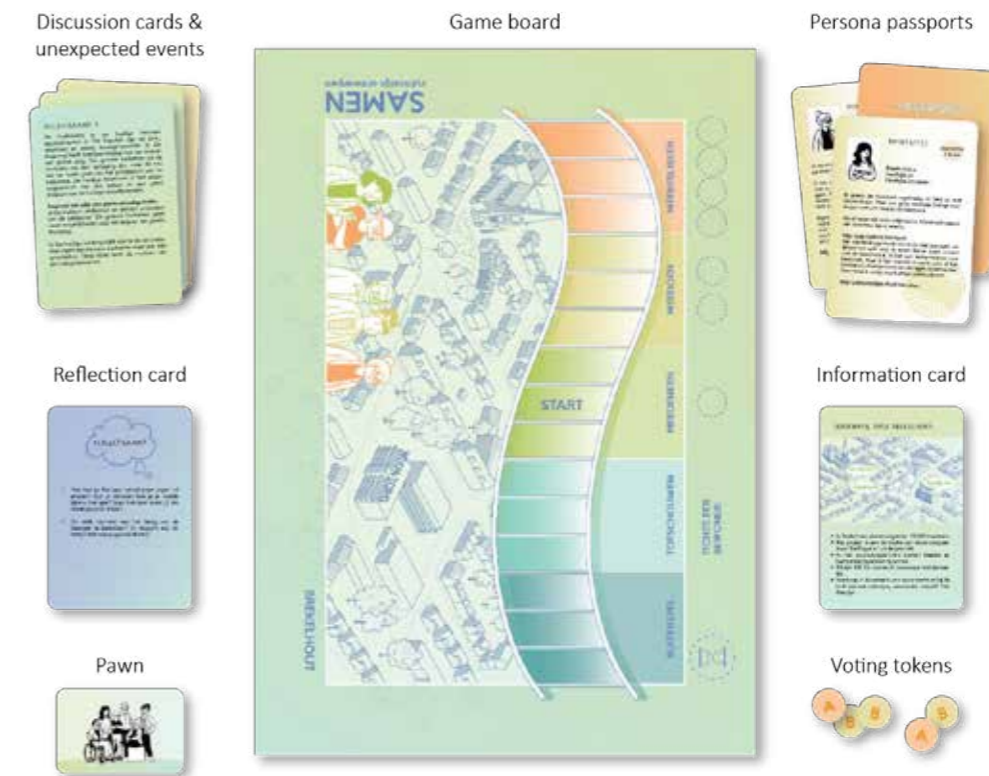


Figure 5. Game elements

Game elements. The elements of the game were refined and validated through feedback gathered during subsequent testing sessions in the iterative design process. This feedback included, amongst others, the duration of the game, the number of players and the content of the discussions. For example, the game duration was adjusted to ensure players had enough time to immerse themselves, engage in discussions, and move on the ladder through multiple phases while also allowing for a thorough debriefing at the end. The minimum and maximum number of players were also determined to ensure everyone could comfortably fit around a single table while maintaining enough character diversity. In terms of content, the discussion cards were revised to better facilitate discussions after identifying which discussion topics worked well and which did not. Other feedback and refinement regarding the main structural components of the game are discussed in the following sections.

Table 2. Key elements of the game

Game element	Description	Focal component	structural
Participation ladder	The game board shows a participation ladder with different rungs. The players each have a rung indicated on their persona passport as a personal end-goal.	Tangible consequences, immersion	
Persona passport	The passports are used to step into the role of one of the eight personas, consisting of older residents, employers of a housing corporation, care organisation or municipality. The passports indicate the role of the player, a task from their employer, the amount of voting tokens and a personal end goal.	Immersion	
Information card	The information card shows additional context of the fictional renovation case.	Immersion	
Discussion card	Players draw a card in turns and read it out loud. Cards either contain a topic for discussion or an unexpected event. Depending on the course of the discussion and the voting afterwards, the facilitator states whether the pawn will move up or down the ladder.	Immersion, redirection	
Unexpected events	Due to an unexpected event, the pawn moves a determined amount of steps up or down the ladder.	Tangible consequences, immersion, redirection	
Voting tokens	After a discussion, all players use their voting tokens to vote for their preferred outcome. Players have a fixed amount of tokens, depending on their role, however the amount of tokens changes for residents, depending on the location of the pawn on the ladder.	Tangible consequences, immersion	
Pawn	The pawn moves up or down the ladder after discussions and unexpected events.	Tangible consequences	
Dice	The dice indicates the amount of steps (1-3) the pawn moves up or down the ladder after a discussion.	Redirection	

Earplugs	If the pawn is located on one of the rungs of the ladder, indicating 'sidelined', the players with the personas of residents have to wear earplugs.	Tangible consequences, immersion
Hourglass	The facilitator guards the timing of discussions using the hourglass.	Redirection
Reflection cards	At the end of the game, the group debriefs, revealing the main goal of the game and having a discussion about the experience of the game. The reflection cards are specifically designed to stimulate discussion rather than elicit definitive answers from participants.	Conclusion

Tangible consequences: tokens and earplugs. In this game, eliciting emotions to establish emotional empathy is achieved by making the consequences of actions tangible. Depending on the position of the pawn on the ladder, the voting and speaking rights of residents are different, demonstrating the shifting power dynamics within the participatory process. Through mechanics such as earning or losing voting tokens, which represent voting rights, and restricting residents from speaking or even requiring them to use earplugs, these shifting dynamics become both tangible for the residents and visible to the other players.

Immersion: recognisable background. Although the game is fictional, the situations and characters should feel recognisable and grounded in reality. To avoid players feeling confronted by exaggerated versions of themselves, careful attention was given to how characteristics were assigned to each persona. After all, the game is intended to reflect on how organisations operate within a participation process rather than evaluating individual behaviour. To maintain this focus, personas (except for residents) were assigned tasks from their employers, such as focusing on time constraints, publicity or money, ensuring that their decisions are driven by role-based responsibilities rather than personal traits. In contrast, players with the role of resident were given more freedom to shape their choices independently, allowing for a more open-ended and organic participation experience. Aside from the tasks, all personas were assigned a rung on the participation ladder as the end-goal, representing the different perspectives that organisations can have on what participation entails.

Redirection & conclusion: the facilitator. In order to allow players to experience as many phases (and tangible consequences) as possible, the structure of the game encourages frequent movement along the participation ladder. However, this sometimes required adjustments by the facilitator. Therefore, the role of the facilitator was carefully refined throughout the iterative design process, in order to find a

balance between enabling players to shape the game while ensuring room for subtle guidance. Prior to the game, the facilitator plays an active role in decision-making, particularly in assigning roles to players and, when necessary due to time constraints, adjusting the sequence of cards to facilitate significant shifts on the ladder. During gameplay, the facilitator remains largely in the background, offering only the initial game introduction and refraining from engaging in the discussions. However, if players forget their tasks or misinterpret their persona, the facilitator can intervene to maintain consistency and ensure the game progresses as intended. After discussions, the facilitator decides in what direction the pawn moves along the participation ladder, striving to ensure that players experience as many distinct phases as possible. Finally, the facilitator is responsible for leading the debriefing, which allows players to reflect on their experiences and the insights gained throughout the game. The debriefing questions were refined during the initial test sessions and have remained consistent since.

4. DISCUSSION

4.1. Game development

The primary objective of developing the participation game was to provide an immersive experience that conveys the consequences of participation, established through the main structural components.

Tangible consequences. The tangible consequences, such as receiving or handing in tokens, evoked strong reactions, including surprise, discomfort, feelings of power and injustice. During debriefing, negative experiences, such as losing tokens and especially the exclusion of residents from the discussion (both with and without earplugs), seemed to have left a deeper impact than positive ones. One participant shared about being excluded: "You couldn't even say anything! That really impacted me". Other participants remarked about wearing the earplugs: "That distrust, it became tangible, I understand it better now", and: "The feeling of 'I don't matter,' a sense of powerlessness, was confirmed, and it made me angry." One possible explanation for the stronger impact of the earplugs compared to the tokens is that, while players with reduced or no voting rights could not make decisions, they could still participate in discussions, allowing their ideas to be heard and potentially influencing the voting process. This dynamic mirrors many real-world neighbourhood development processes, where residents can voice their concerns or suggestions, but the final decision ultimately rests with the organisation. However, when individuals are entirely excluded from discussions and unable to hear or contribute to deliberations, they may feel completely disregarded, invoking even greater dissatisfaction and mistrust.

The experiences of the players varied depending on their assigned roles. Those playing as residents often reported a stronger emotional response than other personas. However, even witnessing unequal treatment, such as the unfair distribution of tokens, led to discomfort for others: "It feels uncomfortable to have the most tokens, you want residents to have a voice too." This suggests that making power

imbalances in participation processes visible, even without personally taking on the role of resident, can help the conversation among employees of social organisations about what influence older adults have or should have in shaping their own living environment. The debriefing showed to be crucial for reflecting on all these in-game experiences and emotions, fostering empathic understanding of different perceptions, and encouraging players to consider how to integrate these insights into their professional practice.

Immersion. The players found the incorporated elements that enhanced immersion, such as the scenarios presented in the discussion cards and unexpected events, highly recognisable. One participant noted: "That discussion about the bathrooms, that's exactly how we do it now". The players could relate their roles to past personal and professional experiences, integrating self-constructed details into their personas. This helped deepen the immersion making the experience more tangible and personal. Simultaneously, this personal connection created possibilities to relate back to in-game emotions and experiences during future real-life participation processes, providing a broader perspective for cognitive empathy.

While the primary aim of the game is to foster empathic understanding among professionals within social organisations, it is important to acknowledge that for the game to work it should also be enjoyable and fun. One of the strengths of serious games lies in their potential to make learning more engaging though playful, interactive experiences. If the game is perceived as dull or overly educational, it risks becoming a chore rather than a meaningful tool. Although the current design focuses on raising empathic understanding, we observed the element of fun naturally emerging during gameplay, with players often joking and laughing in character, especially through the relatable personas, dynamic role-play and collaborative problem-solving. One player stated: "It would be great fun to play this internally with colleagues!". Future game development can even focus more on this factor to balance the informative and enjoyable parts of the game.

Redirection & conclusion. Although the game encourages players' autonomy, the role of the facilitator proved to be essential in maintaining flow and consistency. For example, the facilitator is able to subtly influence the game by assigning assertive players the role of residents, encouraging them to express their experiences, which enriches the overall group discussion and learning process. However, different facilitators may lead to varying game experiences. To reduce this variability across sessions, facilitators should have prior experience with the game and receive detailed training. A structured guide for facilitators was developed to support this consistent facilitation.

4.2. Impact on participation in practice

The game emphasises the complexities of participatory processes rather than offering a solution, encouraging social organisations to adopt a human-centred and inclusive approach to participation. By stepping into the perspective of residents, employees, managers, and policymakers—especially those more distanced from daily interactions with residents—gain firsthand insight into participation dynamics. However, empowering older adults goes beyond creating space for participation; it requires organisations to actively involve older residents in decision-making and to adapt their working methods accordingly. Therefore, the game is now systematically applied within Wooninc., the social housing corporation involved in the living lab Voldijn, as a permanent part of the project approach, sustainably embedding the use of empathy as a design principle in organisational practice. Future research should assess whether this truly leads to more inclusive and deliberate implementation of participatory strategies in practice over time, ultimately contributing to more inclusive age-friendly environments.

5. CONCLUSION

This current study demonstrates that the participation game effectively raises awareness and fosters empathy among social organisation employees regarding the challenges vulnerable older adults face in participatory design processes. By simulating real-world scenarios, the game enhances understanding of the impact of participation trajectories and promotes more inclusive design practices. Although currently focused on the redevelopment of a residential care complex, the adaptable nature of the game allows it to be applied to a variety of neighbourhood (re)development projects. Moving forward, embedding the game within other social organisations will provide an interesting starting point for aligning expectations and further integrating empathy into participatory processes with vulnerable older adults, laying a strong foundation for continued development and wider application in the future.

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