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Digital bother and burden in older age: a transnational LEGO® Serious Play® exploration

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Abstract

Bother and burden are terms associated with older persons in the management of a range of health conditions. As healthcare becomes more digitalized, older persons are encouraged to use digital health and wellbeing technologies to manage their own self-care. To date, however, there has been little examination of how bother, as distinct from burden, with such technologies may impact engagement with digital self-management of personal health and wellbeing. Using the LEGO® Serious Play® method, the concepts of bother and burden are examined with older persons in Ireland and Belgium. Findings have implications for the successful implementation of digital health technology solutions intended for use by older citizens as well as the use of the LEGO® Serious Play® method in living lab contexts.

Key words (4 to 6 keywords)

Digital health; older persons; ageing; living lab: LEGO Serious Play

Subtitle

LEGO® Serious Play® exploration of digital bother

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Background

The term 'bother' is often used by older persons in relation to seeking assistance from others but its meaning is nuanced and varied by context. With the rapid digitalisation of society, and healthcare in particular, older persons are being encouraged to embrace new digital health and wellbeing technologies (DHWTs) for improved self-care. This requires ensuring such technologies are accessible and easy to use (Doyle et al., 2022). The concept of bother has been applied in clinical settings to examine patient experiences with various health conditions and treatments across cultures (Gawlicki et al., 2014). However, there has been little examination to date of how bother might influence engagement with DHWTs. At times conflated with the term burden, assuming older people mean they do not wish to be a burden when stating they do not wish to bother others, the two terms have differences. Synonyms for *bother* include worry, nuisance, inconvenience, trouble, irritate, and effort. Meanwhile, the meaning of *burden* includes: a heavy load or to encumber, impose, or place responsibility. Moreover, there has been no exploration of how the concepts of bother and burden may represent different or similar experiences for older end-users of DHWTs.

Language philosophers argue that the lived meaning of words can only be effectively understood within the real-world context where they are used (Wittzenstein, 1968; Austin, 1979). Living labs, as open innovation systems, explore solutions based on the real-world experiences of individuals. Arts-based methods are often used in living lab research. Such approaches can contribute multi-faceted insights by moving past rational-cognitive ways of knowing and communicating (Van der Varrt et al., 2018). Indeed, arts-based methods offer potential value when seeking answers to questions that may not be easily addressed using traditional qualitative research approaches. This is because symbolic aspects of individual experiences may be difficult to capture using traditional qualitative methods which rely on verbal or written competence (Comans & Hannes, 2017). Expression of individual experiences may also be suppressed through the process of consensus seeking inherent in group dynamics. As such, focus groups have limitations in the pursuit of discrete individual participant reflections. By contrast, arts-based methods can overcome hierarchical power imbalances that may influence expression and engagement of all participants. Such methods seek to valorise individual contributions, in group-based qualitative research seeking to explore perceptions and experiences (McCusker, 2020).

Since both terms, *bother* and *burden*, are often conflated in ordinary language use, each concept was examined separately using the LEGO® Serious Play® (LSP) method. An arts-based approach, LSP is partly underpinned by three, well-established and accepted theories. Theories of cognitive development and constructive play of Lev Vytosky (1962), who proposed that attention, sensation, memory and perception support language and the expression of thought.

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Further, Jean Piaget (Wadsworth, 1996), posited that personal understanding is derived from experience. Secondly, the theory of constructivism (Papert and Harel 1991) argues that knowledge construction is enhanced and facilitated by engaging the individual in the active (and often playful) creation or construction of an artifact. Central to LSP is guiding participants to construct tangible representations of individual or shared concepts, encouraging expression of ideas, using LEGO® brick models as metaphors to guide communication (McCusker 2020). This is achieved as participants build three-dimensional models, using LEGO® bricks in response to specific facilitator questions, and subsequently explain their model through storytelling. This process necessitates use of metaphors to convert intangible concepts into concrete artifacts (LEGO® models). These models facilitate comprehensible communication of meaning and experiences. A strict hands-on-the-model approach to building and storytelling induces a state of concentration, involvement, and altered perception of time, referred to as being in a 'state of flow' (Czikszentmihaly 2014; Krizan & Nienaber 2024) that can overcome initial reluctance to engaging in such 'playful' activities. Using the LSP method, this study explores the conceptualisation of *bother* and *burden* by older persons, as perceptions about digital health and wellbeing technology (DHWT). The implications for DHWT use and adoption are also considered.

Methodology

Recruitment of participants, over 70 years of age, was from the research panels of living labs in Belgium and Ireland according to established inclusion criteria (Table 1). Participants were provided with a participant information leaflet about the study, in either Dutch or English, and afforded an opportunity to ask questions before providing informed consent. Participants could withdraw from the process at any time. One participant opted to discontinue building at the final stage of the workshop. Data for this participant is not included in the findings.

Table 1

Inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
• Ability to provide informed consent • Ability to communicate verbally in English or Dutch	• Does not meet inclusion criteria • Cognitive decline sufficient to impair concentration during an extended activity.

• Physical dexterity sufficient to use LEGO bricks	

A single workshop protocol was applied by the same facilitator at both locations. Dutch-English translation of the presentation and participant responses was provided by a local co-facilitator in Belgium during the workshop. The LSP process can be applied to explore individual, joint or contextual identities (Krisnan & Nienaber 2024). This study used models to represent thoughts and subjectivities of participants to reveal insights on individual experiences.

Data Collection

Two LSP workshops were held with participants (n=15) in Belgium (BE) and two with participants (n=8) in Ireland (IE). LSP is a group-based methodology where participants are facilitated to express complex concepts or challenging topics using LEGO® bricks as symbols and metaphors. First, participants were encouraged to practice the physical assembly of a variety of brick forms. Next, from a LSP starter kit, each participant was guided to use bricks as metaphors, through a sequence of building and descriptive activities. The final building activity focussed on creating a model to express the participant's individual response to the question: What does bother/burden mean to you in the context of using digital health technologies? Bother was the focus of one group at each location and burden the focus of the other. The models created and each participant's explanation of their model were video recorded, without revealing participant identity. Images of all models by group are provided (Appendices A & B).

Data analysis

Audio recorded verbal descriptions of final models were transcribed verbatim. Transcriptions and video content, including both audio and visual components, were included in the dataset for analysis. Belgium workshop recordings were transcribed in Dutch using Word Dictate. A bilingual researcher reviewed the Dutch transcription against the audio recording of the session, to verify for both semantic and latent meaning accuracy. The transcripts were then translated into English, using Chat GPT. A bilingual researcher compared the English and Dutch transcripts for accuracy of translation from Dutch to English. The lead researcher and

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one of the bilingual researchers then met to review the transcripts and resolve any queries about word translations or meaning.

Thematic analysis of the dataset was conducted according to the steps outlined by Vaismoradi et al. (2016). Matrix analyses were conducted by country and group (Guetterman & James, 2023). First the transcripts were read and re-read to develop familiarity with the data. Initial reflections of meaningful and recurring ideas were noted. Next, transcript and audio-visual data were semantically coded into five code categories (concept, participant perspectives, participant characteristics, relationship, and metaphor codes). Two authors reviewed the first round coding and an initial codebook was agreed.

Next, semantic codes underwent a process of abstraction into themes including classification, comparison, labelling, definition and description. Following theme identification, the authors distanced themselves from the data for at least one week before returning to review the stability of the initial themes.

As Dutch was the language of origin for participants in Belgium, the two bilingual authors checked the themes with the Dutch language transcripts. This was to ensure original meanings were reflected in the final themes and had not been altered during translation to English. Thereby themes were stabilised against the dataset. Likewise, non-verbal data (LEGO® models) were reviewed by all authors to verify interpretation. As social scientists, the authors note the influence of this perspective on interpretation of the data and definition of themes.

Ethics

Approval for the study was granted by the Research Ethics Committee at the institution of the lead author.

Results

Participants comprised men (n= 9) and women (n=12) who were seventy years of age or more. (70+). There were fifteen participants in Belgium and eight participants in Ireland (Table 2). Findings from analysis of the LEGO® model stories are presented below according to identified themes. Descriptions are provided of bricks used as metaphors to represent conceptual elements. Where quotations are provided, the speaker is identified using: the workshop location (IE=Ireland, BE=Belgium) with a randomly assigned participant identification code, sex, and the workshop topic (bother or burden) in parenthesis e.g. (BE06,

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female, bother). Quotations from Belgian participants are provided in English, from the translated transcripts.

Table 2

Participant sex by group topic

Bother Group Participants (n = 10)	Burden Group Participants (n = 11)
BE01, male	BE09, male
BE02, male	BE10, female
BE03, female	BE11, male
BE05, male	BE12, female
BE06, female	BE13, female
BE07, female	BE14, male
IE21, male	BE15, female
IE24, female	IE22, female
IE27, female	IE23, male
IE29, female	IE26, female
	IE28, male

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Experiences of bother and burden with DHWTs

From initial coding categories, participant perspectives indicated mostly positive expectations about the potential benefits of engaging with DHWTs, '*there is unlimited possibilities*' (IE27, female, bother). Furthermore, resilience was identified as a common characteristic, '*if you have the tools, then I think you can manage, and if not, you can ask for help*' (BE06, female, bother). However, participants believed a relationship exists between challenges using DHWTs and older age, '*…to us, the poor old people, we don't know exactly what is going on and what it [*technology*] is used for*' (BE05, male, bother). Therefore, despite openness and resilience, descriptions of bother and burden were readily provided as final LEGO® models were explained. Three interlocking themes were identified: technology use is experienced as a journey of challenges, engagement with technology highlights vulnerability, and how DHWTs meet expectations (Figure 1).

Theme 1: Digital technology use is a journey of challenges

An overarching theme identified was that using digital technologies is experienced as a journey filled with challenges. Participants in both groups described the transitory nature of using DHWTs using descriptors such as a pathway, road, or journey. Metaphors used to depict the journey nature of using technology included long bricks to depict bridges and pathways between model elements. Bridges were particularly used as a metaphor in the workshops in Ireland. Here participants described the journey of engaging with DHWTs as transitioning from a pre-technology state to a technology-proficient state, '*I want to get a bridge from the old world to the new world and this new technology, that I don't know anything about*' (IE27, female, bother). However, this journey was described as presenting challenges in several ways.
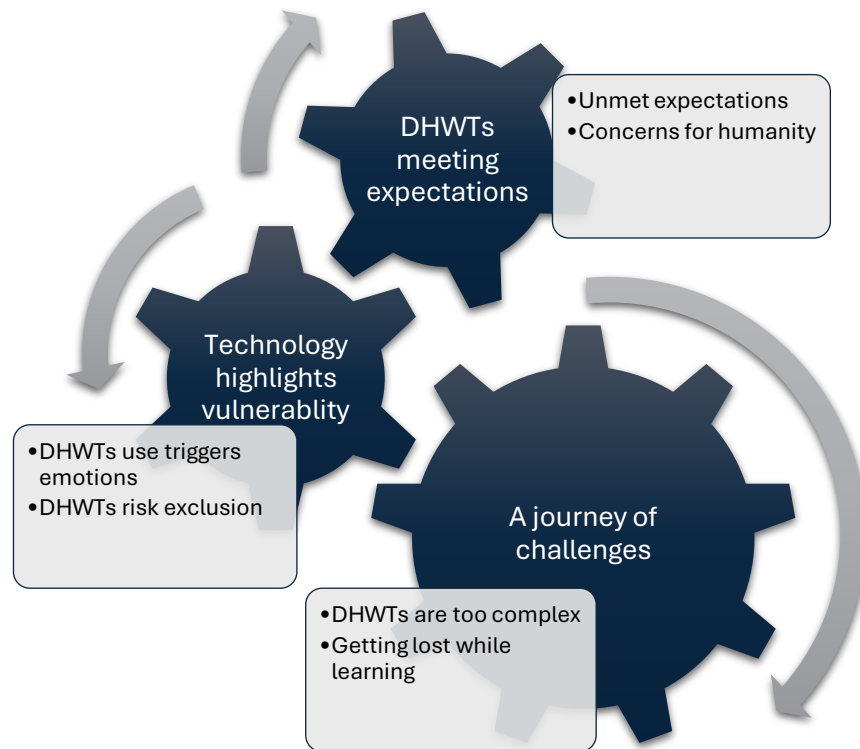
Figure 1. Themes and Sub-themes

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The first of two sub-themes, is that participants experienced DHWTs as complex and reported a lack of understanding about how to use technology, '*It's hard to understand what is… how these things work, the logic of it.*' (BE05, male, bother). For those in the bother groups, finding solutions to challenges, without the necessary knowledge, was identified as a trigger for bother when model building, '*The bother was translating what was up here* [in head] *into the model. I felt I didn't have sufficient skills*' (IE27, female, bother). Lack of digital skills required regular effort to learn how to use new technologies, '*I am someone who often needs to be able to repeat and repeat, and if I don't use it, I lose it again*' (BE13, female, burden). Poor success in gaining digital proficiency was depicted in models as walls or barriers, representing obstacles to moving forward on the digital journey, '*…and this is the brick wall, when you are trying to* [use technology]' (IE23, male, burden).

The second sub-theme is, being interrupted by technical issues during efforts to accomplish a task. Here, the metaphor of a path or journey continued with such interruptions equated to getting lost, '*there are side roads everywhere where I can go wrong*' (BE14, male, burden). Those in the Ireland bother group described making many changes to their models as they attempted to decide how to depict bother. The process of not knowing what to do and having to decide on a course of action was described as bothersome, '*well, they were just bridges to try something else. But they didn't work, so, were a bother*' (IE29, female, bother).

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By contrast, those in the burden groups were most concerned about repeatedly encountering challenges. This was equated with traveling without making any progress, '*This* [round black plate brick] *is trying to do something on technology. And you just go round in circles*' (IE23, male, burden). For others, engaging with DHWTs was presented as an obstruction and a mess, depicted using many colours and multiple disconnected or loosely connected components, '*that's all the mess you see here* [on the model*]. Those are side roads*' (BE14, male, burden). Such challenges were represented as problems for which a solution could not be easily found, '… [I] *have four little* [LEGO®] *heads and they still couldn't work it out!*' (IE29, female, bother).

Theme 2: Technology highlights vulnerability

Across both groups, uncertainty using DHWTs triggered a range of emotions associated with vulnerability. A matrix analysis of emotions by group, showed more content and a wider variation of emotions coded from those in the bother group including annoyance, '*I don't know where I'm going with this. I'm really bothered with this. This is annoying me so much*' (IE21, male, bother); and frustration, '*These are all the possibilities that are there. But I did get myself a bit frustrated because I couldn't figure* [it] *out firstly*' (IE27, female, bother). Anxiety was also present,

> '*there's a whole anxious feeling and anxiety, of being monitored. On many levels. If it's going to, perhaps, what it's going to portray, what it's going to show*' (IE24, female, bother).

Participants in Ireland were focussed on the personal experience of bother either with DHWTs or the bother of building the LEGO® model. However, one bother group participant in Belgium was more concerned by the overall digitalization of healthcare. This bother was expressed as a sense of gloominess, using only black and grey bricks as metaphors, '*I've worked in healthcare. The changes I see there, they hurt me. That's my gloom between grey and black. I would like to get rid of it* [technology in healthcare*]*' (BE03, female, bother). For this participant, digitalisation of healthcare represented a potential loss of highly valued interpersonal interaction in the provision of care. A range of circumstances triggered emotions associated with bother including: DHWT use challenges, unmet expectations, and the impact of technology on interpersonal communication in service experiences. By contrast, those in the burden group mainly expressed feeling either frustration or despair,

> '*The frustration when you want to book a flight, book a train ticket, book whatever, and you end up going round in circles and other people are dependent on you to do it. That's the burden*' (IE23, male, burden).

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However, for one Belgian participant whose worry was associated with bother, his model (a single white brick) represented a rejection of being bothered, *'You have enough food, you have a warm bed. You don't have to worry about things. Why bother?'* (BE01, male, bother).

The second sub-theme, under the theme of vulnerability, was concern about the ability to keep up with the constant changes in technology. Burden group participants explained this as worry. Model elements such as segmented strings and ladders were used to reflect the inability to accomplish some tasks using technology. Ladders were used to represent concerns about expected skill progression limitations, such as only being able to climb a few steps of the ladder, '*I just put the ladder there because I suddenly saw a tower. But in fact, this could be a side road that you take, and then you fall down, right?*' (BE14, male, burden). Self-directed lifelong learning was valued across participants in all groups, '*I always think that you should try to climb higher on the ladder and keep learning*' (BE06, female, burden). However, anxiety about keeping up with emerging DHWTs was evident, mainly in the burden group,

> '*Now you have to use that app first to see if: 'is my blood pressure not too high'? Yes, then I might use that app, and then I have to use another app to make an appointment with the doctor because that can't be done by phone anymore, and so on…*' (BE14, male, burden).

Consequently, some participants feared that a time would come when they would need to decide whether to continue using technology, '*will I stop and give in or...*' (IE28, male, burden). One bother group participant reflected resignation that should this occur, he would be satisfied he had tried his best, '*I've made my attempt. It mightn't work but I'm fine about having tried*' (IE21, male, bother). However, participants in the burden groups were concerned that being unable to keep up with the pace of technological change would result in being excluded. For example, IE26 explained a tall tower of bricks in her model as representing the life restriction and exclusion that occurs when people are no longer able to sustain engagement with technologies. An example was given of a friend who only has access to two television stations and how this has restricted her life,

> '*an awful lot of older people have shared to me that they couldn't be bothered with technology, how their life is affected as they get older, 'oh I couldn't be bothering asking people again* [to help with technology] *'*(IE26, female, burden).

Theme 3: DHWTs meeting expectations

Participants expressed expectations about what DHWTs should do and how technology should work. Overall, efficient data transfer, transparency of processes, and ease of use were

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identified as anticipated features of technology. These were represented in models as bridges, paths, connecting strips, and clear bricks. Even as reluctant users of DHWTs, willingness to use these technologies was predicated on an expectation of some benefit, '*You don't like being having this monitor done, but same time there's also an element of, some good will come from it. That there will be accuracy*' (IE24, female, bother). However, for most participants these expectations were not being met. Frustration was expressed with poor information transfer between care professionals despite the implementation of digital technologies in healthcare settings,

> '*these are all your tests and god knows what* [selection of small bricks different colours and shapes]. *And this is just one wire* [connector] *to there, which is the test centre, which should by right be going into this computer over here and transmitted back here* [to originating doctor]. *The chain is actually quite good [as a metaphor] because everything doesn't come back in total* [from various tests]*…so you have broken information going back* [to the doctor]' (IE22, female, burden).

Those in the burden groups were more likely to represent ongoing difficulties as obstructing the ability to continue using DHWTs,

> '*Even here* [on DHWT use journey*], we can make mistakes, and it is finished. And again, we cannot go further. Therefore, all these things we receive, like watches and everything, are very difficult for us*' (BE11, male, burden).

Persistent difficulties in developing digital proficiency were considered commonplace for older persons, '*my friends who are 85 - 86 years old, they have taken I don't know how many courses, and they tell me, 'we know nothing''* (BE13, female, burden). Experienced challenges were linked to an expectation that DHWTs should make engaging with healthcare services easier, '*I also find it annoying that you need a different adapter for every device*' (BE02, male, bother). There was an expectation that end-user support should be forthcoming, as would have occurred when acquiring a new technology in the past, '*You don't get a booklet* [paper-based instruction manual] *anymore. You have to go to the computer...*' (BE13, female, burden). Despite bother and irritations, persistence in attempts to engage with DHWTs was deemed likely to continue. However, experiencing DHWTs as a burden was associated with a time when engagement would no longer be feasible.

Some participants were irritated that technology was not meeting their expectations. Others worried that if technology achieved promised functionality the result would be a diminishment of humanity. Such concerns were based on experiences as well as fears that DHWTs may replace human care provision and interactions,

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'*The nursing staff, everyone has their computer. They stand at the door looking at the screen… ask the patient, I say, but they don't ask anything anymore. Everyone is staring at their screen*' (BE06, female, bother).

Participants talked of depending on others, especially family or neighbours, for help with technology. Nonetheless, concerns were expressed that such help may not always be forthcoming, as eventual self-sufficiency in digital proficiency was expected,

'*I got on to him* [son] *and he was contrary. 'Mam, I showed you how to do this before. Press this button, that one, you should know how to do it now!'*' (IE26, female, burden).

Such experiences generated worries about diminished community care and support,

'[technology] *displaces normal interaction within society. Where people used to expect that others would take care of each other. Well, that doesn't happen anymore*' (BE03, female, bother).

Finally, for some, digitalisation of society represented a threat to the natural world. Using trees and blue glass bricks to represent nature, sky, and sea, participants cautioned that in a digital society we must be mindful to protect the environment.

Discussion

A range of challenges confound scaled implementation of DHWTs and uptake by older persons. Poor adoption is attributed to environmental conditions such as cost or internet connection, or individual characteristics such as cognitive ability or inadequate digital skills (Heponiemi et al. 2022). Older persons are also often assumed unwilling to use digital technologies more generally. Nonetheless, the resilience of older persons is reflected in persistence among this cohort who are increasingly using DHWTs to counter health and wellbeing challenges (Doyle et al., 2022). Indeed, despite technical difficulties experienced with DHWTs (Smith et al., 2022) older persons have been found willing to use digital technologies if supported to do so. Nonetheless, while largely open to the potential benefits, older persons find interacting with DHWTs to be bothersome in the first instance. There is also an expectation that using technologies will become excessively burdensome over time.

Bother and burden were both found to have an emotional basis. Largely due to repeated interruptions when trying to accomplish an objective using DHWTs, such as pressing the wrong button or 'getting lost' within an application. Bother was, therefore, characterised as a recurring phenomenon. Older persons equated DHWT use to taking a journey towards a moving destination, without directions. Such experiences triggered a range of emotional responses such

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as frustration, annoyance, fear or self-doubt. Nonetheless, experiencing bother was not itself a factor in withdrawing from engagement with DHWTs. Indeed, the findings suggest that acceptance of the potential value of digital health and wellbeing solutions sufficiently motivated older users to persist in trying to use DHWTs, even when mildly bothered by them. However, as challenges continue to be experienced over time, and expectations about what DHWTs should be able to do are unmet, there is a risk of older persons experiencing technology use as excessively burdensome. Engagement may continue for a time, even when DHWTs become a burden. However, the emotions associated with burden are more likely to reflect feeling pressurised to engage with technology while being unable to do so effectively.

Precarity in older age is a concept based on the uncertainty and vulnerability generated during times of significant transition (Gonyea and Grenier, 2021). Our findings show that the digitalisation of health and wellbeing care is experienced as a significant transition, not simply one of doing something differently but of traveling to 'a new world'. Uncertainty is represented as not understanding or knowing how to negotiate the new digital world. Meanwhile, vulnerability is also reflected in concerns about unreliable transfer of the health data considered essential for effective decision making by primary healthcare professionals. Furthermore, awareness of personal vulnerability is compounded by concerns about ultimate digital exclusion if unable to gain or maintain digital proficiency. Uncertainty about personal ability to continue using DHWTs, raises concerns about personal vulnerability to exclusion from healthcare access, as use of technology reduces with age (Heponiemi et al., 2022).

Organisations seeking to implement DHWT use with older persons should consider actions to mitigate bother for older users. Such actions may postpone or avoid experiences of burden and potential disengagement from digital health interventions. Measures to achieve this were identified by participants in this study. Other researchers have offered related suggestions including simplification of DHWT interface and designs, widespread and ongoing digital skills training, clear instructions and training provided on DHWT use, and provision of support to respond to user queries (Frishammar et al., 2023; Heponiemi et al., 2022). Further collaborative research is warranted with older users of DHWTs to explore the findings from this study and develop specific measures to mitigate for digital bother and burden. Such research can then inform more effective design of DHWTS.

Finally, the LSP method provided a novel means for participants to convey their understanding of the concepts of bother and burden. Even with the same selection of over 150 bricks from which to choose, a core selection of brick forms was used by most participants. The use of similar bricks as similar metaphors by participants at both locations suggests LSP is both an effective tool for exploring such complex concepts and for interpretation and analysis. The concepts of journeys, (dis)connections, obstacles, confusion, isolation, and circular repetition

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were represented by recurring metaphors of bridges, connectors, towers, ladders, mixed colours, and circular plates. Further research is needed to examine how LSP can be used effectively to explore other topics with this and other cohorts of stakeholders.

Limitations

Central to the effectiveness of the LSP method is the verbal communication of individual ideas and insights in the form of storytelling from models built during the workshop. For this reason, Krizan & Nienaber (2024) argue that linguistic ability, of participants, is an important prerequisite for effective participation in LSP workshops. However, even when participants have the language proficiency to engage, the effectiveness of LSP as a research data collection method is predicated on the ability of the facilitator to understand the stories told by participants. It was a limitation of this study that the primary facilitator did not have proficiency in the Dutch language, used by participants in the Belgium workshops. However, in-workshop translation was provided by a co-facilitator and interpretation of audio recordings and transcripts facilitated two bilingual authors. This attention to participant meaning not only provided direct linguistic translation but also added value since models were the starting point of the participant's story, thereby moving meaning beyond strictly words and speech. Collaborative interpretation of data ensured robust findings. Finally, the study was undertaken with a small homogeneous sample of self-selected living lab panel members. Further research should replicate the study with a larger and diverse range of participants to explore how other groups reflect on and express the concepts of bother and burden.

Conclusions

The purpose of living lab research is to provide insights into real-world phenomena. The findings presented contribute to the current body of work on the experiences of DHWTs by older persons. This paper offers initial insights on the concept of bother, a poorly defined but widely used term in healthcare, but not yet explored in relation to DHWTs. These findings suggest further practical benefits for the inclusion of older persons in collaboration with DHWT designers and developers. Finally, this paper contributes to the limited body of work on the use of the LEGO® Serious Play® method to explore poorly defined and challenging concepts with older persons. Further research is needed on the application of the LSP method to other

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complex concepts explored in living lab studies and to explore other research applications of the LSP method.

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Appendix A

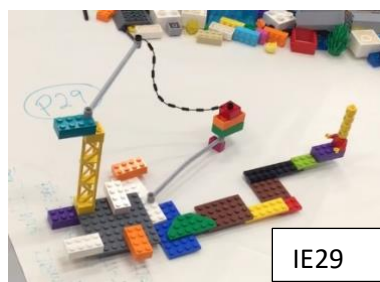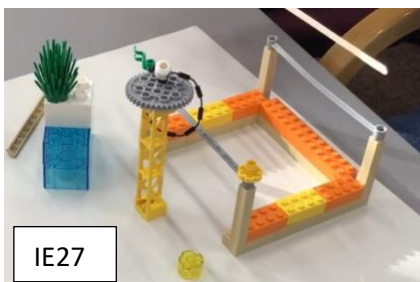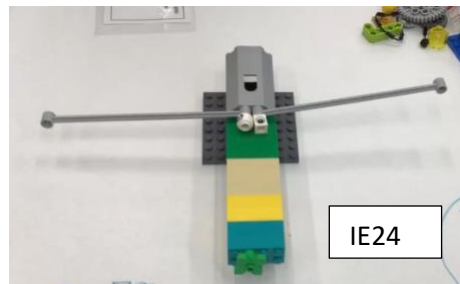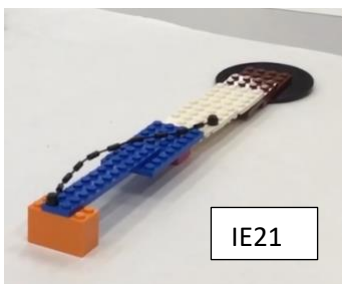Burden Group Models

BE09

BE10

BE11

BE12

BE13

BE143

BE15

IE22

IE233

IE26

IE28

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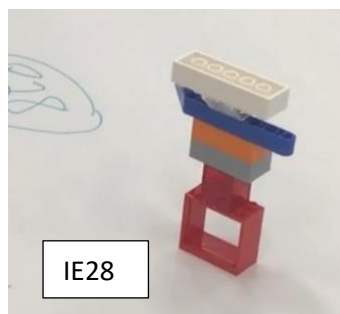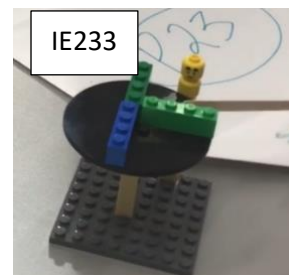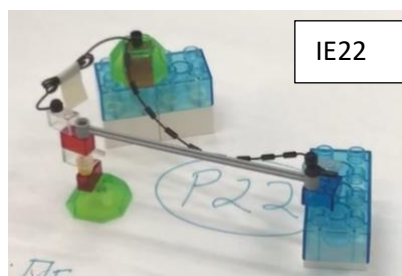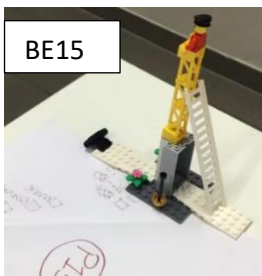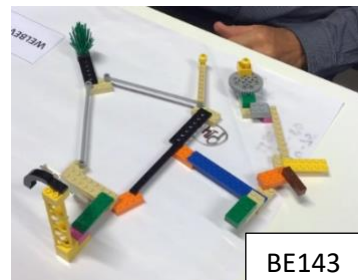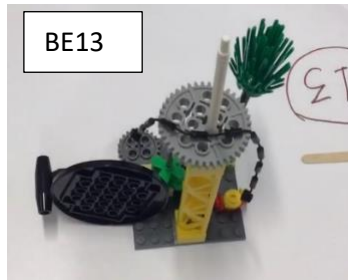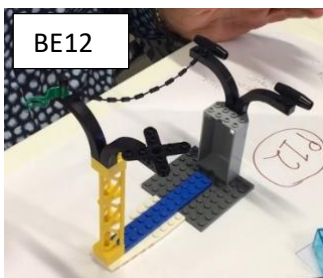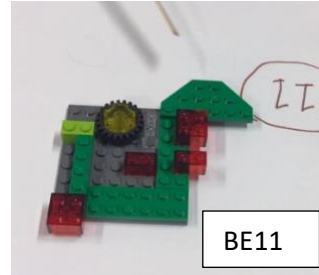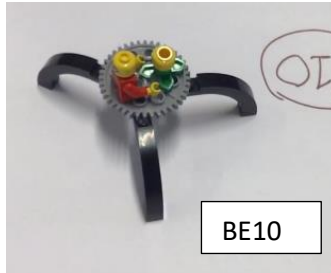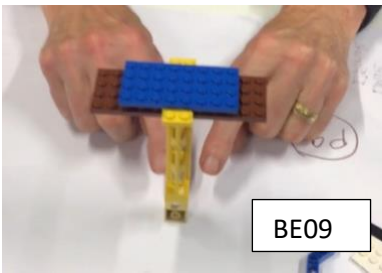
Appendix B

Bother Group Models
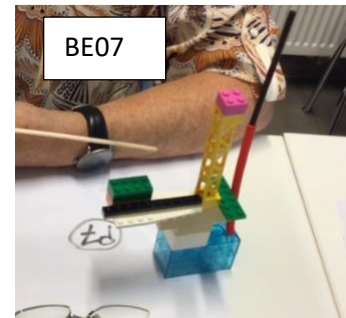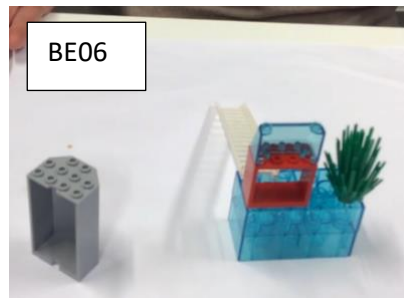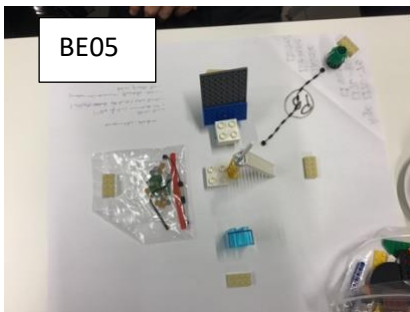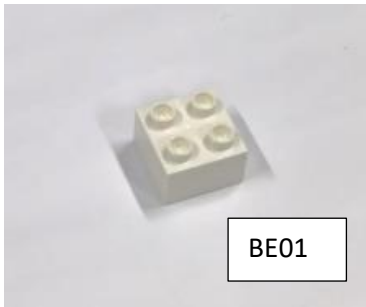
BE01

BE02

BE03

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