


Using Everyday Technology Independently When Living with Forgetfulness: Experiences of Older Adults in Barcelona

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Abstract

Older adults living with forgetfulness encounter difficulties when engaging with changing and dynamic everyday technology (ET). The capability to use ET is important for independence in later life and is affected by the contextual and individual characteristics of older adults. Using the capability approach as a theoretical lens, this phenomenological study aims to explore the experiences of older adults living with forgetfulness, in order to identify contextual and individual factors that facilitate the use of ET in everyday life. A qualitative methodology was used to interview 16 community-dwelling older adults participating in memory and technology workshops at local community centres in Barcelona. Findings show that motivation and openness to learning played a facilitating role in our participants' use of ET. The presence of social support in the form of "technology experts" and community centres offering learning opportunities were also enhancing factors that encourage independence when engaging with ET. In conclusion, our study demonstrates the importance of expanding intergenerational ET learning opportunities, through the creation of age-friendly spaces.

Keywords

everyday technology, capability approach, later life, cognitive impairment, qualitative methodology

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Introduction

Everyday technology (ET) has permeated every aspect of human activity and is almost impossible to avoid for users of any age (Joyce & Loe, 2010). It comprises a wide range of technical, mechanical and electronic devices that are present in everyday life, such as white goods, walking and hearing aids, and computers and smartphones (Nygård, 2008). To be able to engage with ET independently in later life can contribute to a sense of independence (Schulz et al., 2015), which in turn is considered a key factor contributing to wellbeing and social participation in older adults (Astell et al., 2019; Meijering et al., 2019).

Everyday Technology and Forgetfulness

A complex and dynamic technological context shapes the everyday activities of older adults in and outside the home (Gilleard, 2017; Schulz et al., 2015). However, using ET can prove problematic for older adults, especially those living with forgetfulness, as it often requires complex actions and commands that are difficult to follow and remember (Imhof et al., 2006; Rosenberg et al.,

2009a). Forgetfulness is considered as a subjective perception of (slight) cognitive decline (SCD) that has not (yet) been assessed by a cognitive test (Ballard, 2010; Beard & Fox, 2008; Cooper et al., 2011; Imhof et al., 2006). In older adults, forgetfulness is common and usually considered part of the normal ageing process (Beard & Fox, 2008). As a lived experience, it can negatively affect the quality of life and wellbeing of healthy older adults (Førsund et al., 2018; Imhof et al., 2006; Mol et al., 2007).

Older adults living with forgetfulness or cognitive impairment perceive more difficulties using technology than their age peers without cognitive impairments (Malinowsky et al., 2010; Patomella et al., 2018; Rosenberg et al., 2009b). Electronic devices, such as smartphones and computers, present challenges for

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users living with forgetfulness, as they require working memory and the capacity to navigate complex interfaces (Leung et al., 2012). Information and communication technology (ICT) devices and other white goods have been digitized and often only show context-specific functionalities, whereas their analogue predecessors would have shown all the information at once through panels, buttons and knobs. As relative newcomers to the digital environment, older adults perceive digital devices as more difficult to use than younger generations (Marston et al., 2019). Moreover, the interface design of these new devices typically does not take into account the issues that older adults with cognitive issues face when navigating their intricate functionalities (Fang et al., 2018). Another challenge for older adults living with forgetfulness is the rapid pace of change in ET, which requires them to (re)learn how to engage with devices to realize daily activities such as cooking, cleaning, entertainment and communication (Barnard et al., 2013; Rosenberg et al., 2009a).

Despite these difficulties, previous studies have found ET to be important for older adults living with early-stage dementia or cognitive impairment (Brittain et al., 2010; Cahill et al., 2007; Nygård, 2008). Longitudinal measurements have shown that the perceived relevance of ET devices actually increases over time for people with some form of cognitive impairment (Malinowsky et al., 2015); and Nygård (2008) concluded that ET can have a practical and existential meaning for older adults living with cognitive impairment, as it helps them to achieve valued goals and construct their self-image in daily life.

Living with forgetfulness can be stressful because of the mismatch between a person's cognitive capacity and the demands placed on them by daily activities and social relationships (Berg et al., 2013; Lingler et al., 2006). To manage this issue, older adults employ various strategies, which include participating in cognitive stimulation activities (Hertzog et al., 2010; Montejo, 2003) and in technology learning environments (Rosenberg & Nygård, 2016). Such strategies not only help expand their capabilities regarding the use of ET but also have a positive impact on their wellbeing (Hill et al., 2015). Studies on community-based lifelong learning environments show that informal learning activities help sustain older adults' wellbeing by serving as a compensatory strategy to strengthen reserve cognitive capacities (Jenkins & Mostafa, 2015; Narushima et al., 2018). Participation in these learning environments thus becomes an expression of older adults' agency in the context of their changing cognitive capacities.

This agency is reflected in older adults' capabilities—that is, their real opportunities to do and be—and how they put these capabilities into practice. The capability of older adults living with forgetfulness to engage with ET independently is determined by the interaction between their individual characteristics and their specific social

and cultural contexts. Individual characteristics include, among other things, health status, personal resources and motivation. Contextual characteristics encompass, for instance, social norms about the use of ET, availability of ET, and the presence of social or community support on how to use technological devices. The aim of this paper is to explore the role of these contextual and individual factors that facilitate engagement with ET by studying the everyday experiences of older adults living with forgetfulness in Barcelona. This is a phenomenological study in which we use the capability approach (CA) as the theoretical lens.

Theoretical Lens: The Capability Approach

By focusing on the real opportunities (capabilities) that individuals have to achieve what they value in life (functionings) (Robeyns, 2005; Sen, 2000), the CA is well-suited to foreground the individual and contextual characteristics that are likely to impact engagement with ET among older adults experiencing forgetfulness. The CA defines individual and contextual characteristics as conversion factors, which can expand or constrain the freedom of individuals to translate resources into valued beings and doings (Robeyns, 2005). In this paper, we use the categorization of personal, social and environmental conversion factors provided by Robeyns (2005, 2017, p. 46). For instance, the capability of an older adult to use a computer depends on their own knowledge of computer use (personal conversion factor), having support for troubleshooting (social conversion factor) and having a comfortable place at home to work on a computer (environmental conversion factor). ET, in this sense, can be conceptualized as an important resource for wellbeing and independent living.

Traditionally, the CA has been used as an evaluative framework for social arrangements and their capacity to provide substantive opportunities for a good life (Robeyns, 2006). However, it can also be used to explore people's perspectives on their individual capabilities and on what they consider to be a good life. This "grassroots exploration of capabilities" is useful for understanding the factors that frame the agency of individuals from an emic perspective (Ibrahim, 2014, p. 27), thus supporting our use of the CA as a theoretical lens. Indeed, the subjectivity of participants plays a central role in studies like the one presented here, as it provides insight into the influence of individual and contextual factors on capabilities (Al-Janabi et al., 2013).

Methodology

Data Collection

To analyse the meaning and significance of the experiences of the study participants, we conducted 16 in-depth interviews. This phenomenological study explored

participants' views and experiences of ET, as well as the role of ET in valued activities and interactions in daily life. Similar to other studies in the field, we adopted a phenomenological approach to better understand the subjective aspects of the experience of using technological artefacts in older adults with cognitive impairment (see Genoe & Dupuis, 2011; Hill, et al., 2015; Nygård, 2008; Rosenberg & Nygård, 2016). The interview guide (see Annex 1 for the English version) addressed the presence and usage of ET devices in daily activities in and outside the home. Participants were asked to name the ten most important ET devices present in their lives, to state where they kept them at home, how they liked to use them and how they came to acquire them.

Study Setting and Participant Recruitment

Participants were recruited from two community centres for older adults in Barcelona. One was a Recreational Community Centre (RCC) for older adults (12 participants) located in an upper/middle-class area of Barcelona; the other was a Day Care Centre (DCC) for people diagnosed with some form of cognitive impairment (four participants) located in a working-class area. Participants attending the RCC had not been evaluated for cognitive impairment by centre staff, while those attending the DCC had received a diagnosis upon joining the centre. Both centres offered weekly "memory workshops" teaching memory exercises and mnemonic strategies for everyday life. The RCC also provided weekly computer and smartphone workshops. In both centres, the directors served as gatekeepers to access the attendees of these workshops. Participants from the RCC were invited to take part in the research at a pitch presentation delivered by the first author before the workshops. Participants from the DCC were invited to take part by the director of the centre and by family members. To meet the study's inclusion criteria, participants had to be 65 years or older, live in the community and attend the memory workshops. All the interviews took place in a private space in each centre, where only the first researcher and the participant were present. Interviews lasted between 45 minutes and 1 hour, and were carried out in Spanish. Most of the participants identified as bilingual, speaking both Spanish and Catalan. Spanish is the interviewer's native language. New interviews were carried out until no new topics emerged from the conversations, thus achieving data saturation. Table 1 presents the main characteristics of the study participants:

Ethical Considerations and Reflexivity

All participants were able to give full informed consent to participate in this research. Prior to each interview, the researcher read the informed consent form along with the participant, who then signed the document. For participants with a diagnosed cognitive impairment, an

additional verbal authorization was sought from a family member by the DCC director. The first author, who has extensive experience in conducting qualitative research with older adults living with various health conditions, respected the pace of the conversations, giving participants time to calmly explain themselves and to change the topic if they lost track of their ideas. At the beginning of each interview, participants from the RCC were asked to report on experiences of forgetfulness, categorized as subjective cognitive decline (Cooper et al., 2011) and participants from the DCC were asked to report on their cognitive impairment diagnoses. Two participants from the RCC did not report any experience of forgetfulness, but were included in the study as they met all the inclusion criteria, among these participation in a memory workshop.

Data Analysis

Interviews were transcribed verbatim and coded using Atlas.ti 8.0. Following the principles of informed grounded theory (Thornberg, 2012), we developed deductive categories around the conversion factors that influence the use of and access to ET. Within these categories, we coded the data inductively. At the start of the data analysis process, one interview was coded by both authors with the use of a joint code-book, to ensure inter-coder reliability. Similarities and differences in coding were discussed. Once both authors agreed on the coding process and contents, the rest of the data were coded by the first author.

Findings

Motivation to Use ET

Participants acknowledged the presence of a wide variety of ET devices in their lives and described different sources of motivation for learning how to use them. These devices included digital and analogue white goods, ICT devices (smartphones and computers) and other non-digital objects such as calendars. In the case of ICT devices, participants recognized their importance in modern daily life, but admitted that they also represented a challenge. Ignacia, who alluded to the increasing importance of smartphones outside the home, illustrated this sentiment:

You see how everything works with the phone, the day will come when we even pay for things with our phones, we'll do everything with the phone! [. . .] The time will come and with people my age [. . .] you keep up to date or it becomes a problem. (Ignacia, 77, lives with spouse, no memory complaints)

Ignacia's story suggests that the fear of becoming excluded was behind her motivation to use a smartphone. On a more positive note, other participants thought that they should engage with technology to

Table 1. Participant Characteristics.

Pseudonym	Gender	Age	Cohabitation status	Educational level attained	Self-reported condition	Type of centre attended
Enric	Male	84	With spouse	Primary	Mod CI	DCC
Jordi	Male	80	With spouse	PhD	MCI	RCC
Beatriz	Female	89	With daughter	Primary	No SCD/MCI	RCC
Antonia	Female	76	Alone	Primary	SCD	RCC
Assumpció	Female	80	With daughter	Primary	SCD	RCC
Sergi	Male	75	With spouse	University	SCD	RCC
Arnau	Male	82	Alone	Technical	SCD	RCC
Gemma	Female	76	Alone	University	SCD	RCC
Ignacia	Female	77	With spouse	Primary	No SCD/MCI	RCC
Eugenia	Female	76	Alone	Primary	SCD	RCC
Carme	Female	70	With spouse	Technical	SCD	RCC
Neus	Female	82	Alone	University	SCD	RCC
Josefina	Female	74	With spouse and son	No schooling	MCI	DCC
Carlota	Female	83	Alone	No schooling	MCI	DCC
Dolores	Female	78	With spouse	No schooling	MCI	DCC
María José	Female	70	With spouse and son	Primary	SCD	RCC

Note. DCC = day care centre; MCI = mild cognitive impairment; Mod CI = moderate cognitive impairment; RCC = recreational community centre; SCD = subjective cognitive decline.

benefit from the mental effort involved, interpreting ET use as a way to slow cognitive decline, particularly when faced with the prospect of intensified care needs. Carlota made this connection between the “good memory” that comes with ET use and the ability to live independently:

If you don't have memory, you have to be very careful, you have to have somebody in your house to take care of you and to cook for you, because if you're not able to think, then you'll have trouble, you know? (Carlota, 83, lives alone, MCI)

The usefulness of ICT devices to learn new things was also cited as a reason for engaging with ET. For instance, learning to use the internet was considered useful for finding information:

I'd like to know how to use the internet, but I told you I don't know how it works [. . .] but I think it's useful to know things, things that maybe I don't know about, look up things [. . .] but they have to be useful things. (Josefina, 74, lives with spouse and son, MCI)

Josefina's reflection focuses on her motivation to learn, but it also hints at the social support she would need in order to have the skills to use ET. This observation illustrates the importance of contextual factors, namely sources of support that enable older adults living with some form of cognitive impairment to access the necessary resources for their wellbeing. We now turn to this aspect in the next section.

Social Support

In terms of social support, most participants identified a “technology expert” who they could ask for help to

solve problems with ET. Usually, these experts were younger family members or salespeople at retail stores. Eugenia explained how she would expect one of her daughters to help her learn how to use a new device:

If something breaks, of course I'll replace it! And I'd ask one of my daughters to teach me how to use this new thing and I'll learn, I think. [. . .] Normally, when you start using a new thing, it comes with a bunch of papers with information on how to use it. It's good to read them! And if I'm still unsure about something, I might ask a neighbour, one of my daughters, or someone that could help me. (Eugenia, 76, lives alone, SCD)

This example illustrates how our participants used social relationships, particularly intergenerational support, in order to access ET and for troubleshooting. The assistance provided by “technology experts” mediates access to complex devices and facilitates the appropriation of technology in everyday life. Jordi explained how his daughter helps him use the TV set to watch the weather forecast:

We have the television set, but then it has three or four boxes [. . .] they're devices that I know nothing about, but my daughter shows them to me, so I can find out the weather forecast and things like that. (Jordi, 80, lives with spouse, MCI)

Jordi's example shows how family members help participants make proper use of ET in their homes. Our participants also saw the adoption of ET as a way to avoid becoming a burden for other people. Carlota explained how she makes the effort to cook for herself and do her own laundry (both activities involving ET) so as not to increase her daughter's daily care activities and in order to remain more independent:

I cook for myself. She [my daughter] is also a widow. [. . .] We're both widows and she lives alone at her place, and I live alone at mine. I could go to live with her, but I don't want to, because she has two daughters [. . .] and when one of them doesn't need her, the other one does. [. . .] I don't want to bother her too much, you know? I try to [. . .] I wash my own clothes and then I hang them out, I cook for myself and am careful with the kitchen stove [. . .] because I left it on once. (Carlota, 83, lives alone, MCI).

Engagement with ET in order to remain independent was discussed most explicitly by the participants recruited from the DCC, who had been diagnosed with cognitive impairment. In Carlota's case, the capability to carry out household tasks independently was enhanced by the presence of her daughter. Her story also shows how the lived experience of forgetfulness (i.e., leaving the stove on once) triggers behavioral adaptations to continue making use of the stove safely. Other participants with similar experiences reported using mnemotechnic strategies, supported by analogue or non-digital aids, as a way to avoid problems such as forgetting appointments or family plans. A common strategy was to write things down in notebooks and calendars. Eugenia, for example, explained the advice given to her by her daughter:

Since I started to realize I was forgetting stuff, the solution was to write things down, to write and see them [later] and that's it. Because I can still read, it's just a matter of writing and reading, nothing more, at least for me. [. . .] My daughter, the one I told you about, was a doctor, she said to me 'you have to write things down and later check them'. She's also the one that keeps an eye on this [my memory] because if this got worse, I don't know what else I could do, but for now there's no problem. (Eugenia, 76, lives alone, SCD)

The community centres represented another source of social support for independent engagement with ET. According to participants, the ICT courses offered by these centres allowed them to explore devices and practise using them in a friendly environment. For instance, the training showed participants how to use smartphones for calls or WhatsApp, and how to use computers to search for information on Google or to send e-mails. Additionally, the RCC created opportunities for its users to remain socially and cognitively active. Some participants considered that the workshops played a crucial role in their ability to control cognitive decline:

The worst thing you can do is stagnate [. . .] to stay still and do nothing, that's very bad, as long as you keep doing this [participating in memory workshops], the places you go, the people you speak with [. . .] like here in the [Recreational Community Centre], that's why I come here, because you see a lot of people, you can speak with everyone and that helps your head, your memory, to get better. (Eugenia, 76)

Eugenia essentially viewed the workshops as opportunities to socialize and remain active.

In this section, we have discussed social support networks as a conversion factor enhancing engagement with ET. "Technology experts," in the form of family members and salespeople, provided the necessary knowledge to navigate the wide range of ET products, whereas community centres provided ICT support and learning opportunities in a social environment.

Discussion and Conclusion

The aim of this paper was to identify contextual and individual factors that facilitate the use of ET in the experience of older adults living with forgetfulness. We explored individual and contextual factors modulating the capability of older adults living with forgetfulness to engage with ET independently. We found that individual motivation and social support can act as conversion factors that mediate the translation of ET resources into valued functionings in daily life. These conversion factors play a critical role in the configuration of real opportunities (i.e., capabilities) for older adults to engage independently with ET. Similar to our study, other research has highlighted the potential of digital technologies to enhance wellbeing in old age (Kottorp et al., 2016; Nygård, 2008; Wilson, 2018), and has also found a positive relationship between the use of ET devices and cognitive function in older adults (Wu et al., 2019). Our study confirms the importance of ET as a way to remain independent when living with forgetfulness, reinforcing the idea that independence is an overarching capability in later life (Meijering et al., 2019). This significance is revealed through the strategies our participants employed to remain engaged with ET in everyday tasks, asking for help and participating in learning activities. In the context of ongoing and ever-increasing digitalization, understanding the factors enabling ET access and adoption is crucial for the social inclusion and independence of older adults living with forgetfulness.

One prominent individual conversion factor was having the motivation to learn how to use ET, especially new digital ICT devices. Participants reported feeling motivated to try new devices, as they recognized their usefulness and widespread application in life in and outside the home. At the same time, participants were willing to experiment with new—and more complex—devices, because they saw the mental effort required as a way of maintaining their cognitive abilities. Other studies support this finding by identifying perceived usefulness and a positive attitude as facilitating factors for the use of ET (Riikonen et al., 2013; van Boekel et al., 2019). Our study further demonstrates that the motivation to engage with ET is also related to autonomy and self-reliance, which represent key pre-conditions for the valued functioning of independence in later life (Schwanen et al., 2012).

Having social support from "technology experts," including family members and shop workers, was an important social conversion factor that enabled access to

new devices and help with troubleshooting. Our study shows that older adults living with forgetfulness seek support from younger family members as well as other people in their local environments, reinforcing the notion that social support in the form of guidance and practical assistance is key for the adoption of ET (Riikonen et al., 2013). Furthermore, community centres offering learning activities and memory workshops represented age-segregated spaces of social connection and opportunities to obtain guidance. Rosenberg and Nygård (2016) suggest that participation in such learning contexts shows the diversity of ways in which older adults with cognitive impairment actively seek to enhance their capability to engage with ET independently; this conscious act therefore becomes an expression of their agency.

There are some limitations to our study: participants could only be interviewed once, and inside the community centres. Additionally, our sample was composed of participants who were already attending a technology or memory workshop, and who therefore may have had a more positive attitude toward ET than the general population. Future research could benefit from an ethnographic approach to produce detailed accounts of daily activities involving ET and the obstacles or enhancing factors older adults encounter. Furthermore, there is a need for research into ET engagement among older adults who take a less active approach in improving their technology and memory skills.

In conclusion, our study underscores the importance of expanding opportunities to learn how to use ET, through the creation of age-friendly spaces (i.e., spaces that respond to the aspirations and needs of people regardless of age) that facilitate intergenerational support for older adults. Public policies aimed at increasing the capabilities of older adults should take into consideration the intergenerational perspective as exemplified by our participants, who sought support from younger “technology experts.” When older adults learn how to use ET with the help of younger generations, they are likely to feel more socially included. Community centres similar to the ones included in this study could benefit from an intergenerational approach to ET education and learning. This approach is in line with the recommendations and initiatives of critical gerontologists and the World Health Organization, calling for the creation of age-friendly communities as a way to promote and achieve the social inclusion of older adults (Fields et al., 2018; Gilroy, 2008; Kendig & Phillipson, 2014; van Hoof et al., 2020).

Author Contributions

Samuel Briones designed the data collection instruments, carried out the data collection and analysis and drafted the article. Louise Meijering supervised the study, contributed to the data analysis and critically reviewed the data collection instruments and the article draft.

Declaration of Conflicting Interests

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Ethical Approval

This study followed the procedure of the Research Ethics Committee of the Faculty of Spatial Sciences of the University of Groningen to obtain ethical clearance.

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Supplemental Material

Supplemental material for this article is available online.

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