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Designing in social benefits

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Abstract

It is a widely recognized fact that population ageing is progressing rapidly and this phenomenon is expected to continue in the next decades. The resulting demographic change is the driving force behind many current design challenges, including social isolation and loneliness which the older population is prone to. Although Inclusive Design has traditionally focused on enabling people to live independently, it seems that there are benefits to be gained from promoting social interaction through design. This paper details the results of a study of older adults' experiences with technology, particularly during the very early stages of interaction known as Out-of-Box Experience, from product acquisition through to first use. The Technology Biography method was adapted and conducted among twenty-four participants, grouped into 50-64 years old, 65-75 years old and over 76 years old. The findings indicate that even though older people value being able to perform tasks for themselves, they often enlist others as a means to engage in social interaction. This has strong implications for Inclusive Design, as designing social benefits into product experience could encourage the uptake of technology among older adults.

Keywords

Older adults, technology, user experience, social benefits

1. Introduction

Considering current demographic trends, with more people living longer and healthier lives, and technology infiltrating all aspects of modern life, a growing body of research has been looking into making technology useful to and usable by older adults. Older people are often late adopters of new technology and factors like computer self-efficacy and computer anxiety play a significant role in hindering technology adoption [1], but if the benefits outweigh the costs, many older people will invest the necessary time and effort to learn new skills [2].

When designing for today's diverse population, it is important to acknowledge that people's experience of technology is broader than the more objective usability goals of how useful or productive it is. A positive user experience occurs when technology fulfils more than just instrumental needs, by acknowledging its use as a subjective, situated, complex and dynamic encounter [3]. Even though designers cannot guarantee a particular experience, a sensitive understanding of the target users, their needs and

motivations to use a product or service enables designers to influence the user experience through design [4].

IBM extends the scope of user experience design to include the user's initial awareness, discovery, ordering, fulfilment, installation, service, support, upgrades, and end-of-life activities (cited in [5]). This definition clearly emphasizes the importance of peripheral experiences associated with the actual interaction between the person and the product or service, many of which are addressed by the Out-of-Box Experience (OoBE). Specifically, the OoBE refers to the very early stages of a user's interaction with a new product, from purchase decision to unpacking, set-up or installation, configuration and initial use [6]. Failure at this stage can negatively affect perception and acceptance of a new product.

There is evidence to suggest that only 33% of older computer owners choose them themselves, with the majority relying on friends or family to choose for them; 16% of older adults obtained their computer over four years ago and 28% had acquired second-hand models [7]. Furthermore, older adults experience the greatest problems with overly complicated applications and documentation [7] and may require custom-tailored support for proper installation routines [8].

In order to encourage successful adoption of technology by older adults, it is necessary to further understand the context in which these Out-of-Box Experiences occur. This is the focus of the study presented in this paper.

2. Methodology

The aim of this study was to obtain a more empathic insight into older people's use of technology; a method that would provide an engaging way of creating a dialogue between the researcher and the participants was therefore required. For this reason, Technology Biography [9] was chosen and adapted to suit the purpose of this study.

This method combines various elements which can be tailored according to the aim of the research [9]: Technology Tours, where participants show the researcher round their home and answer questions about their use of technology; Last Time questions which are adapted from the critical incident method; Personal History interviews focusing on technology and routines that participants remember from the past; Guided Speculation on possible future developments; and finally cultural probes adapted to elicit Three Wishes for products that participants would like to see. An integral characteristic of Technology Biographies is that they must be conducted in the participant's home, therefore ethical protocols with regard to interviewing older people in their own homes were observed and all procedures were approved by Loughborough University's Ethical Advisory Committee.

The first stage of this study involved a semi-structured interview about the participant's feelings when acquiring and using new technology in general. Participants were then

asked to show the researcher a technology product from each of the following categories: most recently acquired, favourite and least favourite. For each product, participants were asked about how these products were acquired, their expectations and the context of use. This element of the study was adapted from the Last Time questions and Personal History [9].

As with the original Technology Biography method, the next step was a technology tour of the house. Here, the participants show the researcher around their home and discuss the technology present in each room. Finally, the Guided Speculation [9] section of the study focused on understanding what products people don't currently own but would like to and why, and the benefits they expect technology to have in the future.

The familiar feeling of showing a person around their home and the informal nature of this method was an effective way of eliciting rich information, encouraging participants to share both negative and positive stories about their relationship with technology. Overall the participants were enthusiastic about engaging in the research, though two participants were unable to complete the technology tour element of the study due to health and mobility issues. This, along with the necessary intrusiveness of entering participants' homes, is a factor to be considered when selecting Technology Biography as a research method.

3. Results

A total of 24 people took part in this study. The sample was divided into three categories, with 8 participants in each: people aged 50-64, people aged 65-75, and people over the age of 76. All participants in the 50-64 and 65-75 age groups were interviewed individually. However, in the over 76 age group, six participants had their spouses present during the collection of the data and therefore spouses often participated in the dialogue.

Subject to participants' consent, the Technology Biographies were recorded in audio format for later transcription. In some cases, photographs of technology products and their context of use were also taken. The results were analysed and interpreted using open coding and thematic analysis [10].

One of the main themes to emerge from this study was the importance of other people in older adults' experiences with technology. Responses indicate that family, friends and other third parties such as sales assistants play a significant role in the following elements of older people's interaction with technology: means of acquisition, reason for acquiring, unpacking, set up, use, benefits, barriers and coping strategies.

The involvement of other people during each element of older people's interaction with technology is illustrated in Figure 1.

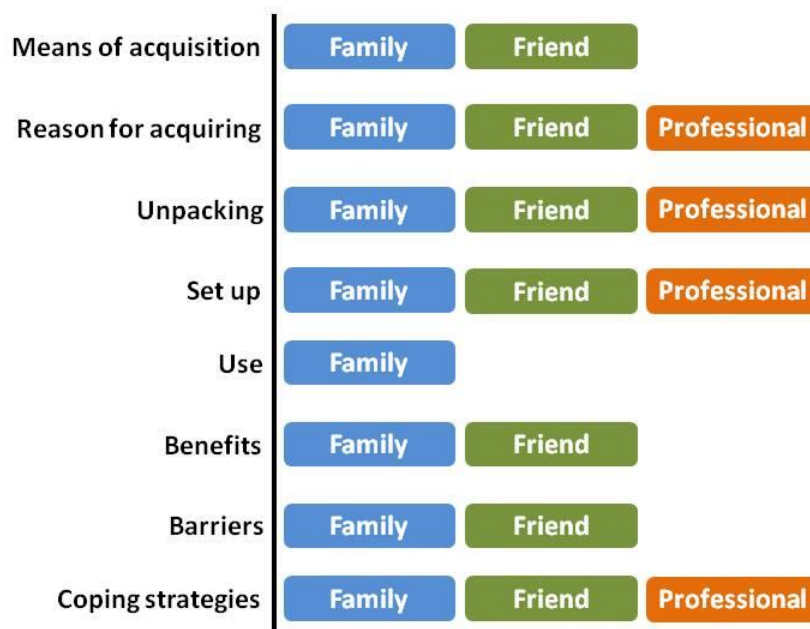


Figure 1: The involvement of other people in older people’s experiences with technology.

3.1 Sharing experiences: examples from the data

There was consensus among the participants that they do buy the technology that they are interested in having and using. However, the decision to acquire new products is strongly influenced by other people, in particular family and friends. This theme appeared across the three age groups, but was most prevalent in the over 76 year olds:

“Talking with my family the advice was ‘You need a computer’, so I got one.” (Male participant, over 76 age group)

Throughout the age range, choice of what product to purchase or product specifications usually had input from a third party like a relative, close friend or sometimes from shop assistants. And in some cases, such as the example below, this role was extended to the actual purchase of the product:

“(The computer) was ordered by a friend who knows these things. It was ordered online, it was delivered to me, it was charged to my card.” (Male participant, over 76 age group)

Once they have acquired the new product, most participants said they would avoid unpacking and setting it up themselves. Three main reasons were given for preferring someone else to unpack and install new products. Firstly, there was the belief that the

participant would not be able to do an adequate job and relying on someone else would ensure the process was done quickly and capably:

“I got my son to sort it out. I knew what I wanted to be able to do, but it would have taken me a lot longer and probably I’d have messed things up and got annoyed. I reckon that we all have things we can do, and like doing, and we should do those and get other ‘experts’ to do their things!” (Female participant, 50-64 age group)

Another reason was related to people’s coping mechanisms when dealing with an unfamiliar device. In these cases, having someone else present for the installation of new interactive products serves as a way to learn about unfamiliar devices and build confidence about using them. One participant stated:

“When we buy something new, setting it up is something we would normally avoid. Something major like a computer and a television, we would be prepared to pay to have somebody do it so I could ask questions and learn how to use it.” (Female participant, over 76 age group)

Finally, some participants mentioned the social benefits they gained from recruiting other people to assist them with new products. Older participants living on their own or couples whose children had moved away saw the process of setting up a new product as a chance to engage in social interaction, usually with family members.

“It’s not selfishness, I like my family to feel they are needed.” (Male participant, over 76 age group)

4. Discussion

4.1 The social Out-of-Box Experience

A strong theme which emerged from the data analysis was the role of social benefits in older adults experience with technology. Focusing specifically on the Out-of-Box Experience (OoBE), participants mostly agreed that they prefer someone else to set up or install a new device whenever possible. Even the initial decision to purchase a new product was heavily influenced or actually instigated by a third party.

Contrary to what might be expected, these attitudes were not necessarily influenced by ability since a number of participants who considered themselves capable with technology had the same view. Figure 2 categorises participants based on ability and the desire for social engagement during the early stages of interaction with a new product.

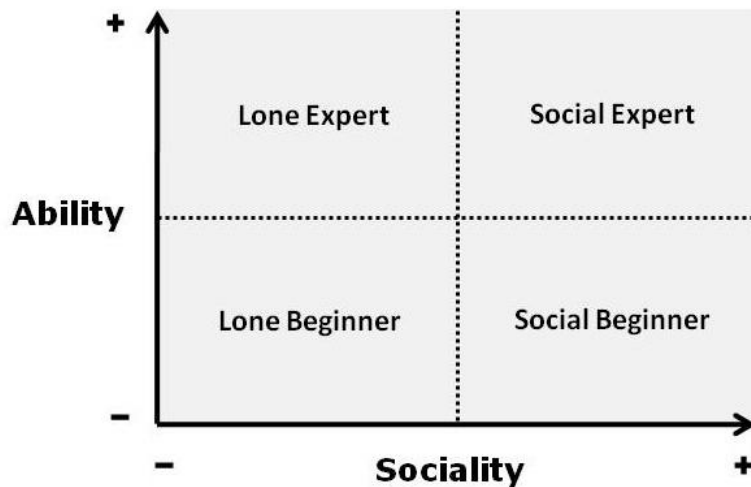


Figure 2: Participant profiles according to ability and engagement of others.

Three main reasons were given for preferring to have company during the OoBE. Firstly, some participants mentioned that other people would set up the product faster and more effectively; this reason relates to issues of computer anxiety and self-efficacy beliefs already identified in the literature [1]. This type of response occurred across the range of ability to use technology, but was prevalent among Social Beginners who are less familiar with technology.

A second reason given by Social Beginners, but also by Social Experts, was that the presence of another person gave them an opportunity to learn by observing the process and asking questions. In this case, it is clear that the presence of another person is a mechanism for learning how to use an unfamiliar device but it also serves a deeper purpose. Having someone present during the early stages of interaction with a new product is a confidence building strategy, particularly for people who may have some degree of computer anxiety but have a strong desire to learn, too.

Lastly, participants identified as Social Beginners and Social Experts said that acquiring a new technological product provided them with an opportunity for social interaction. Participants who cited this reason had positive feelings towards sharing their experience, and generally did not feel burdensome when recruiting someone else to take part. The sporadic nature of the OoBE serves as a good excuse to spend time with other people and it is likely that people would not ask others to participate in more frequent, routine activities.

4.2 Problem solving

When barriers are encountered, two styles of coping strategies were identified in this study. On one hand, participants took action to overcome the barrier to their use of a given product. One participant in the over 76 age group said that he borrowed books

from the library or from family members to help him overcome problems with the computer. Another example of this approach is the labelling of cables on a device to enable them to be disconnected and easily reconnected, as can be seen in Figure 3.

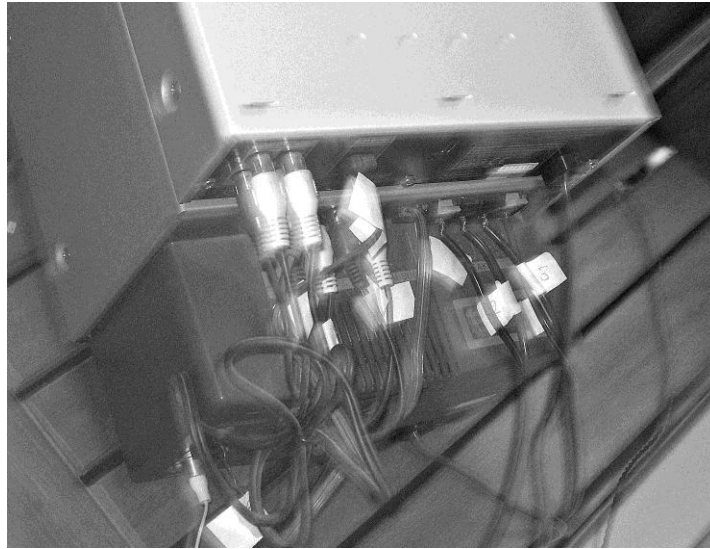


Figure 3: Back of a stereo with a label system devised by the user (male participant, over 76 age group) to remember how to reconnect the cables.

On the other hand, participants mentioned coping with the emotions generated during interaction with technology without necessarily addressing the cause of their problem. Again other people were key participants in older people's coping strategies, to provide both technical support with the problem and emotional support in a wider context. This twofold approach to problem solving is similar to that identified in a study on food packaging, which further highlights older people's desire for social engagement during their interaction with products [11].

An obvious downfall of engaging others to interact and solve problems with technology is the risk of becoming dependent. Participants who could rely on someone else to interact with technology would sometimes not bother even to learn how to do things for themselves. This theme occurred across the age ranges but was more prevalent in the over 76 age group, especially in married couples. For instance, one participant mentioned the case of one of his friends who was a keen gardener; his wife had catalogued all his seeds and planting system on the computer but, since she had recently passed away, he was unable to make any sense of his gardening system and had given it up as a result. And with increasingly more older adults living by themselves, having someone present during the first stages of interaction with a new device is not always going to be practicable.

Even so, given the choice, older adults' often decide to involve other people in the various stages of their interaction with new technology. On the surface, this finding seems at odds with the essence of Inclusive Design, which has always been an advocate for independent living. Yet maybe the problem lies with how 'independence' is

defined – usually taken to mean a lack of reliance on others – and how it is actually perceived by the older population [12]. As society changes, there is a need for the traditional concepts of Inclusive Design to be revised and redefined according to the current reality [13, 14].

5. Conclusions and further work

A person's dignity is deeply rooted in independence. Older people value being able to make their own decisions and perform tasks for themselves. Nevertheless, findings from this study reveal they often enlist other people during their initial stages of interaction with new technology. This hints at a disparity between the definition of 'independence' traditionally assumed in the Inclusive Design literature and older people's own perception of 'independence'.

As traditional assumptions from the Inclusive Design literature are being challenged and the concept of Inclusive Design evolves to address the ever-changing realities of today, it is important for researchers and designers to ask themselves whether they are fully catering for modern day wants and needs. Designing social benefits into the Out-of-Box Experience could encourage the take up of technology among older adults.

Future studies are planned to further understand what factors influence older people's need for social engagement during their interaction with technology, and what the implications for design are. The focus of the next study will be to determine how older adults perceive independence, dependence and interdependence. Findings from this study will inform how design can promote older people's feelings of independence in the context of their interaction with new technology, even when (inter)dependence is required or desired.

References

- 1. Czaja, S J, Charness, N, Fisk, A D, Hertzog, C, Nair, S N, Rogers, W A and Sharit, J** (2006). Factors predicting the use of technology: findings from the Center for Research and Education on Aging and Technology Enhancement (CREATE). *Psychology and Aging*, vol 22, no 2
- 2. Melenhorst, A S, Rogers, W A and Bouwhuis, D G** (2006). Older adults' motivated choice for technological innovation: evidence for benefit-driven selectivity. *Psychology and Aging*, vol 21, no 1, 190-195
- 3. Hassenzahl, M and Tractinski, N** (2006). User Experience – a research agenda. *Behaviour and Information Technology*, vol 25, no 2, 91-97
- 4. Visser, F S** (2009). Bringing the everyday life of people into design. PhD thesis presented at Technische Universiteit Delft

- 5. McCarthy, J and Wright, P** (2004). Technology as experience. Massachusetts (USA): MIT Press
- 6. Ketola, P** (2005). Special issue on Out-of-Box Experience and computer devices. *Personal and Ubiquitous Computing*, vol 9, no 4, 187-190
- 7. Goodman, J, Syme, A and Eisma, R** (2003). Older adults' use of computers: a survey. Paper presented at BCS HCI 2003, 8-12 September
- 8. Peacock, S E and Kunemund** (2007). Senior citizens and Internet technology. *European Journal of Ageing*, vol 4, no 4, 191-200
- 9. Blythe, M, Monk, A and Park, J** (2002). Technology biographies: field study techniques for home use product development. Paper presented at Conference on Human Factors in Computing Systems, CHI 2002
- 10. Aronson, J** (1994). A pragmatic view of thematic analysis. *The Qualitative Report*, vol 2, no 1
- 11. Yoxall, A, Langley, J, Musselwhite, E M, Rodriguez-Falcon, E M and Rowson, J** (2010). Husband, daughter, son and postman, hot-water, knife and towel: assistive strategies for jar opening. Chapter 18 in P Langdon *et al.* (Eds) *Designing Inclusive Interactions*. London: Springer-Verlag, 187-196
- 12. Specker, J, Hill, R, Villeneuve, L and Parkman, S** (2003). Promoting independence: but promoting what and how? *Ageing & Society*, vol 23, 375-391
- 13. Donahue, S and Gheerawo, R** (2009). Inclusive Design 2.0 – evolving the approach and meeting new challenges. Paper presented at Include 2009, Royal College of Art, London, 5-8 April
- 14. Wilcox, S** (2009). Inclusive Design and aging: are we addressing the right problems? Paper presented at Include 2009, Royal College of Art, London, 5-8 April