

# The Influence of Ageing on the Experience of Information and Communication Technology

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## ABSTRACT

At the individual level, ageing leads to functional losses and causes behavioural changes. These phenomena affect product experience on its four levels of response – physical, sensory, cognitive and affective. To explore the influence of ageing on the experience of ICT products a study was carried out with younger and older adults. The findings indicate that older adults tended to develop a less positive relationship with such products and consequently technology was less integrated into their lives. Overall, the study suggests that, with respect to product functionality, the two groups have different needs and expectations. This influences not only their motivation to use the product and the experience in itself, but also the extent to which technology is accepted and adopted, and divides younger and older adults according to their ability to navigate through the digital world.

## Categories and Subject Descriptors

K.4.2 [Computers and Society]: Social Issues

## General Terms

Design

## Keywords

Ageing, Product Experience, ICT

## 1. INTRODUCTION

In many countries, decreased birth rates and longer life expectancies have contributed to the ageing of the world-wide population. Forecasts show this trend will not change in the next decades [1]. Promoting social integration and independent life through technology is a way of improving older adults' well-being, and important in order to keep the resources that are required to provide special care at sustainable levels. However, for many older adults, the digital divide is difficult to bridge as products like computers and mobile telephones are frustrating and alienating. Moreover, these products are often simply not attractive for the older population. This could be due to the fact that, currently, older adults are expected to adapt to ICTs in a techno-deterministic view, instead of being involved in the

creation of socially shaped products [2, 3]. Consequently, although older adults might greatly benefit from what these technologies offer, they are often discouraged from adopting them because of unsatisfactory experiences with products.

This paper reports on a pilot study about electronic products, in which users in two age bands were interviewed – younger adults, aged between 25 and 35, and older adults, aged 65 and over. These age ranges were chosen because they mark the transition in users' social roles [4, 5]. For this study, this meant that the younger adults would typically be at the point of entering or establishing themselves in professional life, whilst the older adults were typically at the point of retirement or withdrawal from professional life.

## 2. METHODOLOGY

Volunteers were recruited from two Cambridge-based organisations – the University of Cambridge and the University of the Third Age. Six younger adults and eight older adults took part in the study. With exception of two older adults, members of both groups completed higher education in a variety of disciplines. The sample is consequently biased towards intelligent, literate and education-oriented individuals. The limitations of this sample are discussed later.

Informal semi-structure interviews, notes and photographs were used for data collection. All interviews were conducted by the first author on a one-to-one basis, took place at the interviewees' homes at a pre-arranged time, and were audio recorded. Participants were encouraged to talk generally about electronic products they own, and specifically about the product that they regarded as most important to them.

Notes were then made from play back of the interview audio recordings and these were combined with the notes and photographs taken during the interviews. By reading and comparing these materials, a number of common themes were observed allowing similarities and differences between the two groups' experiences to be identified.

## 3. FINDINGS

When asked to select the single product that was most important to them, ten participants chose their computers. One older adult preferred to talk about radio and the remaining participant regarded the telephone – mobile and landline – as the most important items in their life. Notable here is that all these products are used for communication of some sort, indicating that all users valued products that integrate them with their social circle and the world. The findings were grouped according to the levels of response.

### 3.1. Physical and Sensory Levels

At these levels, two main issues were identified: both younger and older adults complained about the weight of laptops and batteries. The second issue was raised by older adults who expressed their frustration of typing on keyboards and keypads that had small keys and that were labelled with small letters or numbers.

### 3.2. Cognitive Level

It was clear that all participants favour mobile telephones and computers' communication functions above their other uses. Generally, the use of computers is considered by both groups to be more important than the use of mobile telephones.

For younger adults, their products are also a way of organising daily tasks, entertainment and shopping. They usually carry their notebooks when travelling, even when they are not working, as they see the computer as an indispensable part of their lives. However, for the older adults studied here, technology was less integrated into their lives, and whilst they use it for communication, they did not always have a clear opinion about how technology products fitted into their lives.

In relation to learning, younger adults reported they seldom have memory problems; they like to learn by "playing" with the product and if they have any doubts they usually ask friends. In contrast, most older adults said they prefer to attend courses or ask younger people, usually children and friends. All users in this group reported memory problems and said that if they do not use a function for some time they easily forget how to repeat it.

### 3.3. Affective Level

When asked what the chosen product meant to them, younger adults mentioned abstract qualities such as 'freedom', 'peace' and 'safety', and more concrete qualities such as 'productivity enhancer' and 'organiser'. When asked the same question, only one older adult considered the computer a toy; others attributed to it qualities such as "companion", "servant" and "just a tool".

In general, younger adults in this study were excited when they first used their products. Contrastingly, most older adults reported being constantly afraid of using their products.

Regarding the technology, younger adults said that they cannot imagine life without a computer and reportedly feel safer when they have all their personal data, such as organiser, diary, music and videos, close to them. For the older adults, however, life without computers and mobile telephones is easily possible, sometimes even a relief.

## 4. DISCUSSION

The findings reported here indicate that younger and older adults have different goals when using technology, and different patterns of technology usage. For the younger adults in this study, the use of computers and mobile telephones is not limited to communication, because work, organisation, entertainment and shopping are also important. The use of computers by this age group generates more positive than negative feelings towards the product and the technology is far more integrated in younger adults' lives. In contrast, for the older adults in this study, computers – not to mention mobile telephones – were rarely associated with joy and satisfaction. Difficulty in understanding how to use products led these users to develop fear, frustration and more negative than positive affective response towards the product. As a result, in the cases where the cognitive demands were too high, the product was

merely seen as a useless artefact. This could be because most designers are young, able-bodied people who still focus on providing products for users with similar capabilities [6, 7]. However, as this study shows, ageing influences product experience in many different ways, and designers should consider this when designing products that are to be used by people at different stages in life.

## 5. LIMITATIONS AND FUTURE WORK

The interviews reported on here were conceived as a pilot study that sought to explore how ageing influences the experience of ICT products. Whilst it has been successful in that regard, the study is also limited in certain ways. Firstly, the small sample reported on here is not representative of the broader population, because of its socio-economic setting and literacy level. Secondly, the study primarily relied on the participants' self-report and made only supporting use of other data collection methods such as contextual observation. To make generalisations across the broader population, and to establish whether the participants' accounts correspond with their normal behaviour further work is required. This could involve a much larger-scale study, with a more representative sample and various methods of data collection, including questionnaires and focus groups.

## 6. CONCLUSIONS

This study indicates that younger and older adults have different needs and expectations with respect to product functionality. The degree to which these needs and expectations are met generates feelings such as attachment, satisfaction or frustration, excitement or fear, motivation or avoidance. The sum of these feelings makes up the so called affective response, and according to its positive or negative nature, this response will determine the acceptance and use of a product and, beyond that, will determine the acceptance and use of the technology provided by the product. When the findings from this preliminary study are combined with those from future work, it is hoped that guidance can be developed that will effectively support the design of products for the older population. Such products will potentially assist in bringing gratifying experiences to older adults' lives, and encourage them to adopt technology that sustains both their social integration and their independence.

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